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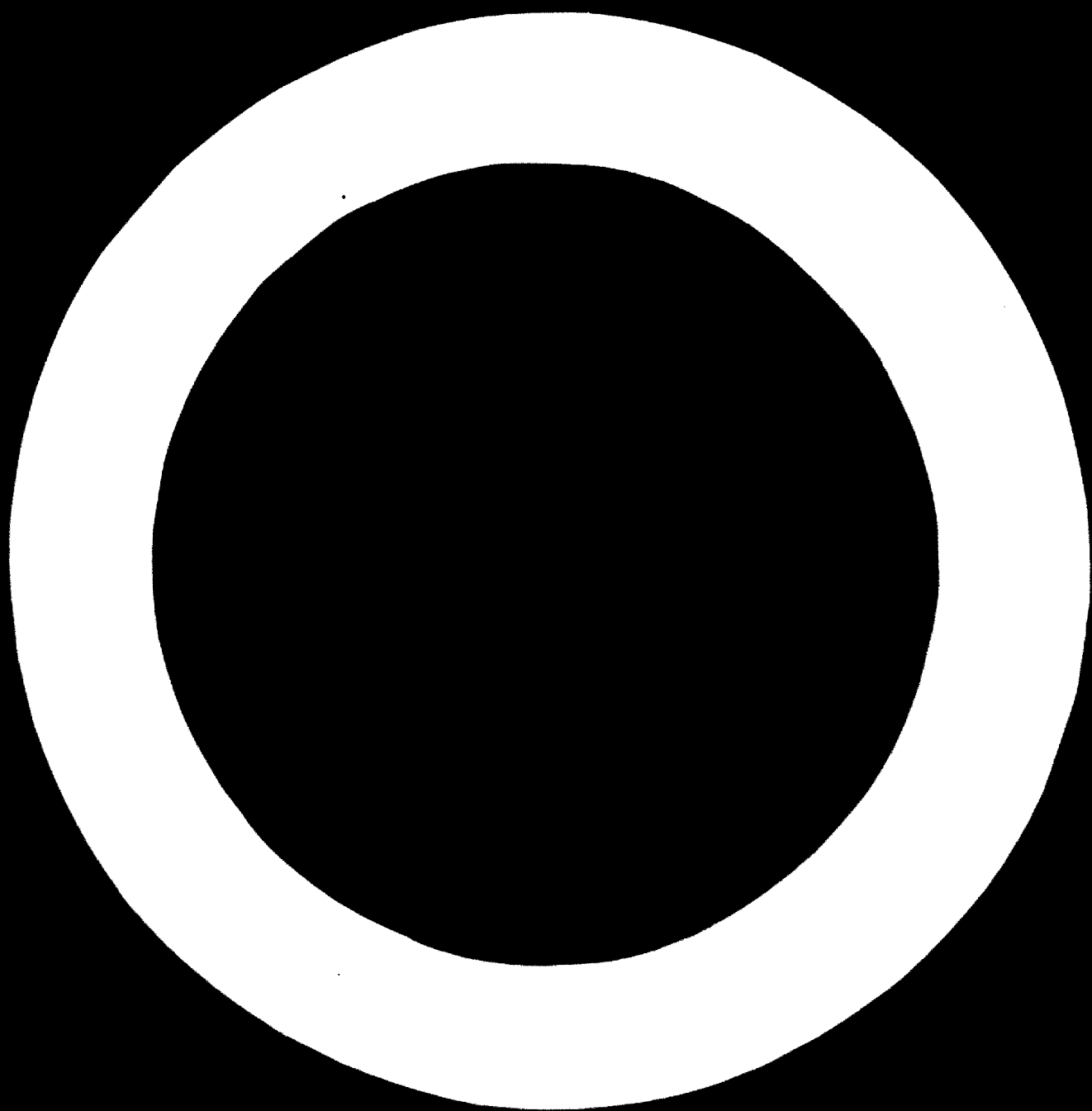
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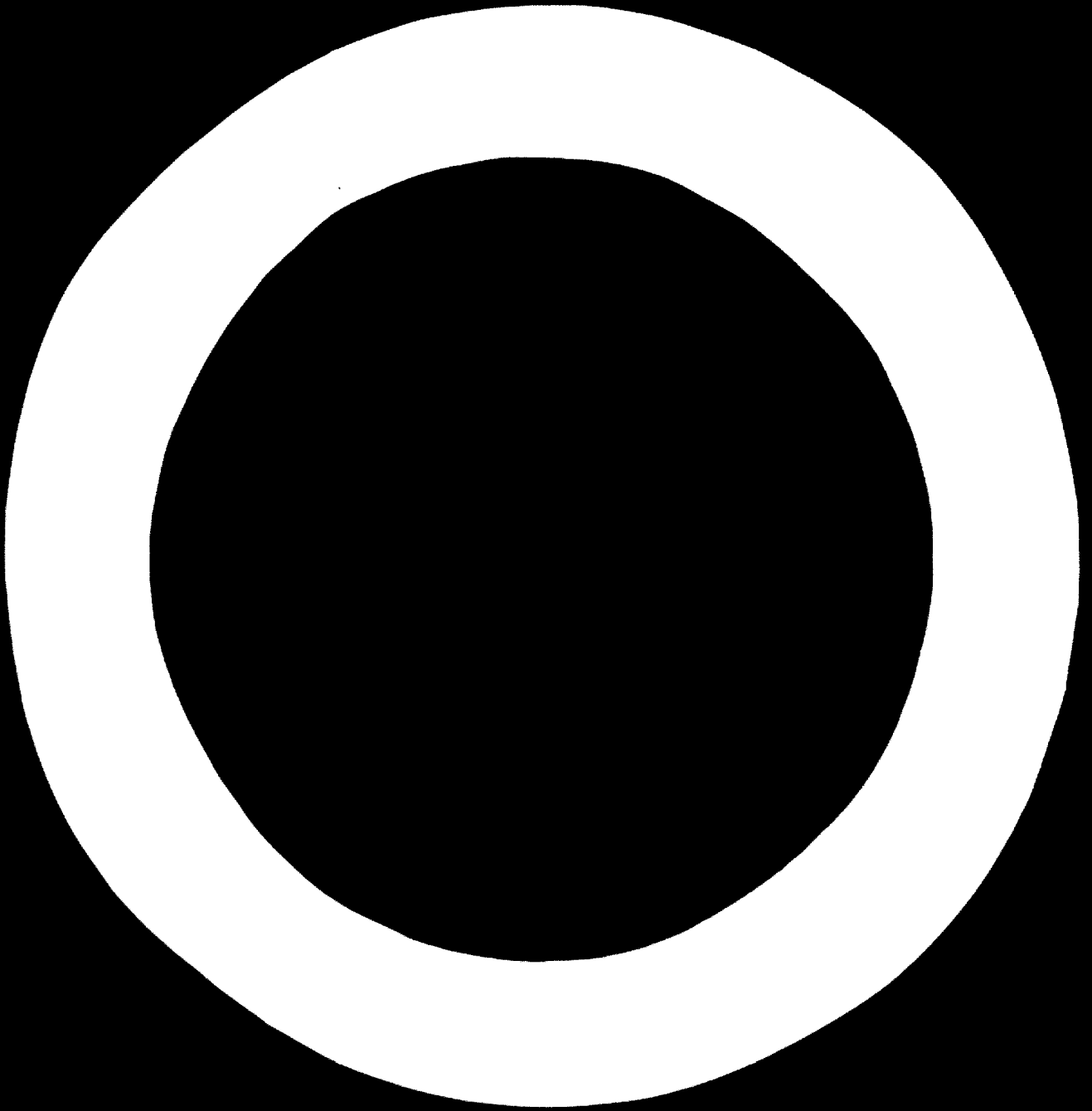
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The significance of training to industrial development

1. It is increasingly recognised that economic growth and particularly industrial development demand more than for instance the construction of roads, the establishment of power facilities, and the building of steel mills and fertiliser plants. This process also requires the transformation of people - a fundamental revolution of values, motivations, attitudes, workhabits and skills. Manpower on all levels will have to be developed to design and build the plants, to operate and maintain the machinery, to introduce modern, appropriate industrial techniques, and to provide the manifold ancillary services that a modern industrialised society unconditionally demands.

2. Measurements of the contribution of human resources to economic growth are not easily to be quantified. However, a significant proportion of total increase in national product has been ascribed by economists to the so-called "residual factor". This residual factor represents that part of growth brought about partly by such intangible factors as up-graded skills of the industrial labour force and improvements in the organisation and management of industry.

3. At the beginning of the Second Development Decade, many developing countries are faced with vast unemployment and underemployment problems while there is at the same time a concurrent demand in most of these countries for skilled personnel in almost all categories and levels. It is easy to identify the industrial projects and plants that are either inoperative or operating at low production capacity for, among other factors, a lack of adequately trained personnel.

4. The development of appropriate industrial skills can indeed be crucial to a country's development process. 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 capital and technology can be imported and enterprises likewise established, the importation of a sufficient number of qualified individuals to effectively utilize and maintain such facilities and equipment is largely impossible, uneconomic and not socially desirable. The problem is intensified in the case of highly competitive export-oriented industries that have a greater need for employing modern technologies and accordingly readapting skills to rapidly changing processes.

5. The problems of manpower in the developing countries are not merely those of quantity and allocation, of numerical strength and its proper distribution to meet the needs of the national economy; they are also those of quality and of fitness for the tasks to be accomplished. The inspiration for a better and fuller life has spread more rapidly than the development of skills, the discipline and personal motivation for a more productive effort. The practice of workers picking up some knowledge of a trade in the course of their work was sufficient so long as industry consisted of small artisan workshops but does not suffice for today's increasing demand for skilled industrial personnel. Often the organizational base for training is either deficient or almost entirely lacking.

The magnitude of the problem

6. Although the forecast of manpower requirements of developing countries is very complicated by the lack of reliable statistics in most of these countries, comprehensive assessments in this regard are permanently being made by the United Nations. According to these assessments, 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 Development Decade which means that, on the average, about 3 million new entrants per annum should receive some form of initial industrial training. To these estimates must be added the number of those members of the existing industrial labour force in developing countries - currently calcu-

ted at about 100 million - who will require continuing training during this period. These figures are based on the estimation that on a global average industry will represent a share of about 10 per cent of the overall economy of the developing countries.

7. There is practically no doubt that industrialization is to be considered the motor of economic development, and it is not an exaggeration to say that training is the key to start and run this motor. Therefore, the significance of industrial training and, accordingly, the role of personnel carrying out such training on whatever level cannot be overestimated with regard to the economic development of the developing countries.

Training abroad

8. One important consideration within the overall framework of industrial training 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. There are several determining factors: the type and level of the training required; the ability of the existing domestic training facilities to provide the required training; in some cases, the level of qualifications required for candidate acceptance in training programmes.

9. 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 the actual situations in the home country, and the danger of alienation of the trainees from their cultural background and the incentives to brain drain may be substantially reduced.

10. Training abroad in industrialised countries should be considered only for key industrial personnel from priority industrial areas, and only if this type of training is unavailable in the home country or in another developing country.

Selection of training facilities and candidates

11. A major criterion for training abroad is the degree to which the candidates are expected to act as efficient multipliers or innovators after their return into their familiar environment.

12. These considerations bring up the catchword "selection". The importance of a thorough and differentiated selection process to organized training abroad can indeed not be overemphasized. This selection process as a whole has to cover different stages and areas. On the one side there is the selection of the host country and the host training facilities. This selection has to take into account factors such as technological standard of training facilities offered, applicability of gained skills in the participants' home countries, training language. On the other side, there is the selection of the candidates. It has to take into account two major aspects, namely the personal qualification being prerequired as to the subject and level of the training offered as well as sufficient opportunity for later application of the knowledge gained abroad. UNIDO permanently endeavours to improve the overall selection process in all its different stages and adapted to the conditioning factors in both the home and the host countries.

Practical training

13. Modern industrial training on whatsoever level should be carried out to an utmost degree as practical training responsive

to the clear and specific needs of industry and geared closely to the technology and working practices actually and in the near future prevailing in industry. One of the major handicaps of skill development in most of the developing countries is due to the predominance of purely theoretical education and training. This, in turn, in many cases is due to a grievous lack of practical training facilities - let alone social attitudes and prejudices. On the other side, traditional ways of practical training such as apprenticeship, certain types of on-the-job training, and what may be called "in-plant sightseeing tours" have often proved inadequate to meet the needs of modern industrial skill development. Therefore, the philosophy of in-plant and in-service training abroad of industrial and related personnel from developing countries should be based on the concept of a dialogue between equivalent counterparts. Consequently, in-plant and in-service training cannot be limited to a mere procurement of practical or even manual abilities, but must also encompass and brighten such areas as rhythm, systematics and organisation of production; responsibility for manpower, equipment and flow of production; decision making in the given field of responsibility; increase of productivity; internal information and communication systems; trouble shooting; socio-economic relations in industrial working communities - just to mention a couple out of a large number of possible items.

Modern training methods and techniques

14. It is common ground that modern industrial in-plant or in-service training require the development and application of modern appropriate methods and techniques which in case of training abroad may have to be modified and adapted to the specific circumstances. Furthermore, it has to be emphasized that the crucial point in this connexion is the training staff. It is not an exaggeration

to say that training staff in industrialized countries responsible for in-plant and in-service training of nationals of developing countries have to represent a triple competence: high level technological skill in their respective field plus talent and capacity in teaching plus thorough knowledge - if possible enriched by practical experience of the specific problems facing industries in developing countries.

15. There is unanimity of all concerned that the respective host countries and their training facilities should offer only the very highest standard of industrial training on whatsoever level to participants from developing countries. To achieve and maintain this standard it is necessary both to permanently revise the appropriateness of the training methods and techniques applied, and up-date the competence of the training staff employed.

Training organisation and administration

16. Another important factor for a successful in-plant or in-service training abroad is that of the organisation and administration of training programmes. The work of the international, governmental and non-governmental agencies concerned is an essential contribution in this regard. Their role is that of a mediator between the personnel to be trained and the training enterprises or institutions respectively, and they have - to the full satisfaction of both the latter - to carry out activities such as: determination of the training needs; location of suitable training facilities; assistance in designing training programmes and curricula; advice on training methodology; securing of financing training programmes; advance information on planned training programmes; recruitment and selection of candidates; preparation of candidates; programme organisation including travel and accommodation; introduction and continuous

guidance of participants; taking care of personal welfare and social contacts of participants; financial programme administration; assisting in designing and carrying out meetings with all parties concerned; trouble shooting; continuous, final and post-hoc evaluation of programmes; follow-up activities.

17. The benefit of the personnel to be trained depends largely on a permanent, confident and fruitful co-operation and inter-action between those agencies on the one side and the training enterprises or institutions on the other.

Training costs

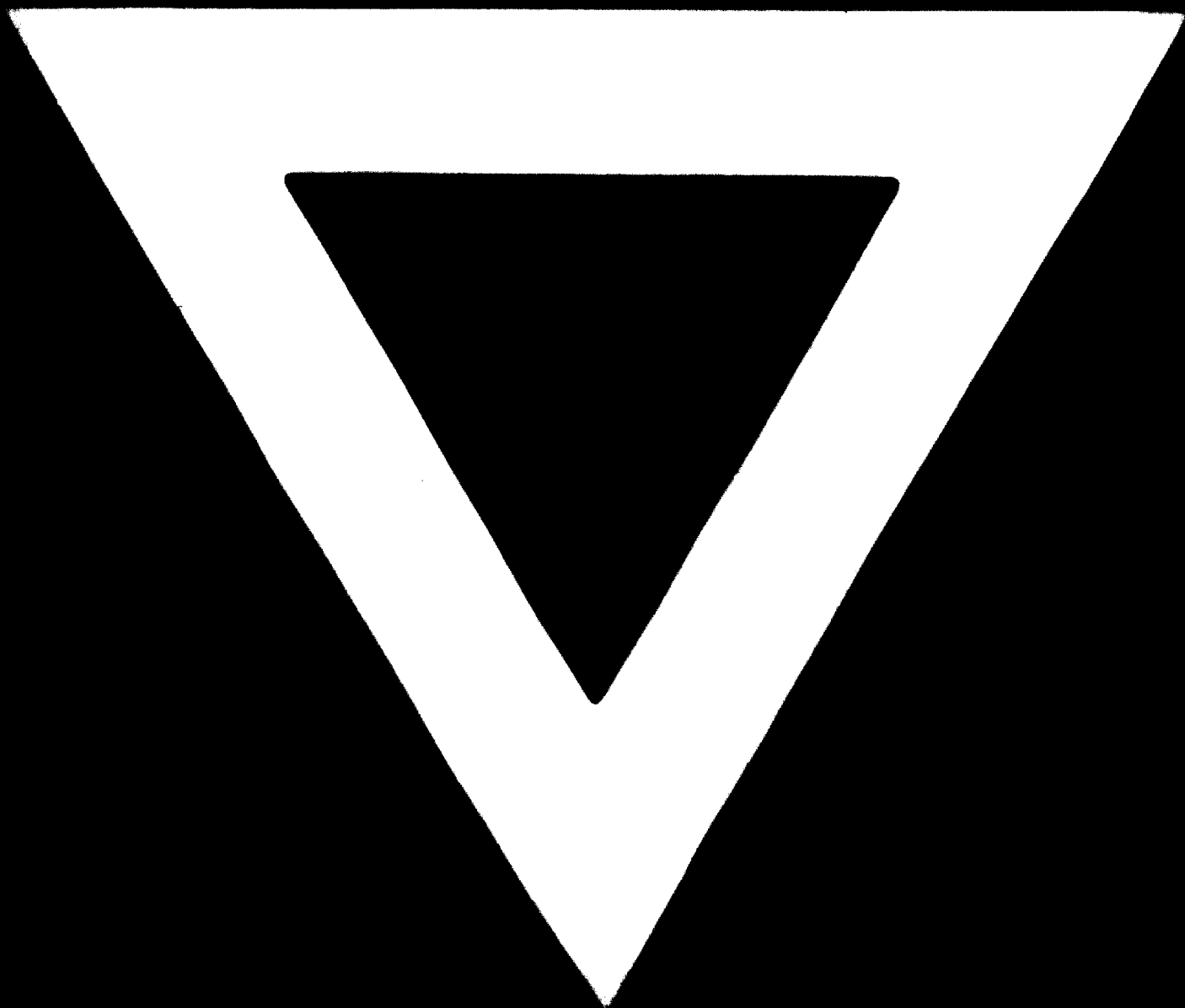
18. It is well known that the costs for all types of education and training are permanently increasing all over the world. So do in-plant and in-service training costs. More often than not the rate of increase of training costs is considerably higher than the average inflation rate in the respective countries. This to some extent may be due to the fact that during the past the significance of training has been underestimated by far which, accordingly, led to an artificial keeping down of training costs. Today, however, industry as well as international agencies and government authorities concerned will more and more have to learn to consider modern appropriate training of personnel an integral part of the overall investment cost in both the public and the private sector and, consequently, calculate training costs on a realistic basis.

19. On the other side, training and particularly industrial training must be considered more than in the past a product, to the production of which quite normal industrial rules have to be applied such as cost-benefit analyses, product design, quality control, research, and application of modern technologies. The arising of a tremendous education and training industry can already be identified at the horizon of social development.

20. However, since the financial resources for industrial training in the developing countries still are limited and for the time being even seem to be recurrent, rigorous cost control is of greatest importance. The target of all efforts in this connexion, therefore, must be to achieve a most favourable cost-benefit ratio of industrial training, which, as a matter of fact, is still far from being reached in the majority of cases. Many of the traditional staff in charge of carrying-out, supervising or organizing training may feel this to be a challenge and, indeed, it is; but the idea that that type of training that is most closely related to industry might reinforce the principles of productivity and efficiency within the realm of education and training would seem to be not without fascination.

The human approach

21. Finally, it should be recalled that training and particularly industrial training is not an end in itself. From the point of view of the general task of UNIDO it is a contribution to the process of industrial development. But since all types of education and training necessarily lead to a development of the personality of individuals and since industrial development is nothing but a part of that overall economic development which is expected to lead to a better and worthier life of billions of human beings, the human approach has to be in the foreground in all stages of planning and implementing industrial training. Therefore, trainees as well as training staff as training organizers have always to be aware that the undertaking of modern industrial training implies not only technological and economic aspects but, what is more important, impulses for socio-cultural change which ever so often have proved stronger than those proceeding from the traditional education and training systems



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