



TOGETHER
for a sustainable future

OCCASION

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



TOGETHER
for a sustainable future

DISCLAIMER

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

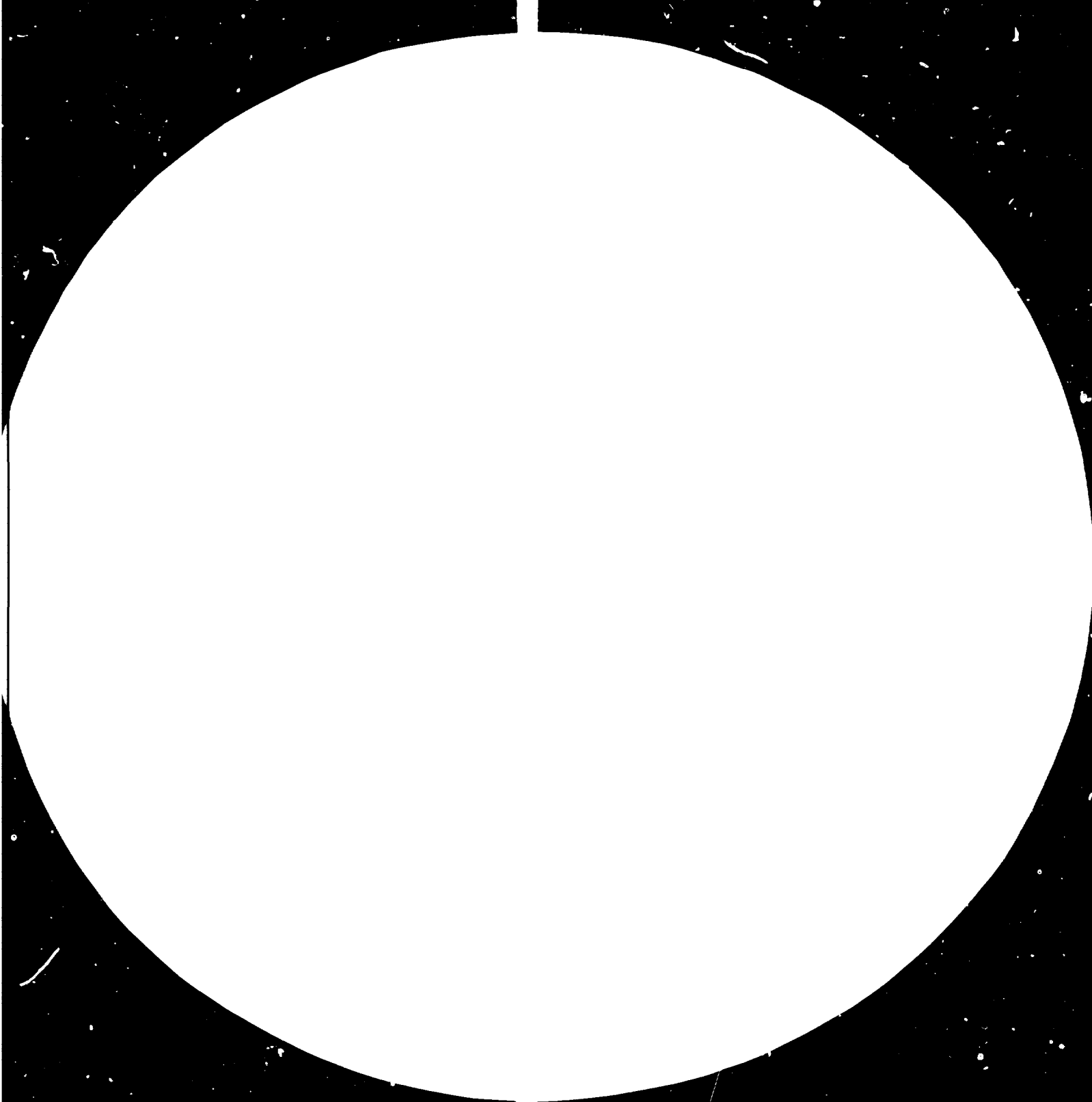
FAIR USE POLICY

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

CONTACT

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

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





28

25



32

22

20

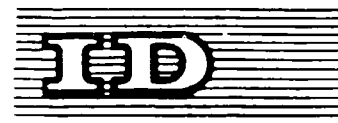
18



1.25 1.4 1.6



10378



Distr.
GENERAL

ID/B/252
5 March 1981

ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Industrial Development Board

Fifteenth Session

Vienna, 15 - 29 May 1981

Agenda item 14

DEVELOPMENT AND TRANSFER OF TECHNOLOGY

Progress report prepared by the UNIDO Secretariat

001010

V.81-21770

Distr.: 10 March 1981

CONTENTS

	<u>Paragraph</u>	<u>Page</u>
Introduction	1 - 2	3
I. PROGRESS ACHIEVED	3 - 17	4
Technological advances	3 - 7	4
Industrial technology in Africa	8 - 9	6
Technological policies and plans	10	7
Programme of Action on Appropriate Industrial Technology	11 - 14	7
Technology development	15 - 16	8
Co-operation with regional and other organizations	17	9
II. FUTURE ACTION	18	10
III. ACTION REQUESTED OF THE BOARD	19	10

Summary

In reporting progress, certain significant activities which will become increasingly important in the coming years are highlighted. A programme of activities in the field of technological advances has been initiated to assist developing countries in reorienting their policies and developing the requisite technological capabilities. Efforts to develop a strategy for industrial technology development in and transfer to Africa are described. Other activities reported include technology policies, acquisition of technology, appropriate technology and technology development. Within the framework of the programme directions endorsed by the Board at its fourteenth session, particular emphasis will be given in future to: activities in Africa; technological advances; energy and energy-related technologies; and disaggregation of technology, with special attention to local manufacture of capital goods.

Introduction

1. The Board at its fourteenth session (May 1980) stressed that high priority should be accorded to the operational and promotional activities of UNIDO in the development, selection, acquisition, adaptation, transfer and use of industrial technology and decided that the Secretariat should report regularly to it on the progress achieved in the implementation of the programme in the field of development and transfer of technology.^{1/} This report is submitted in compliance with that decision. Since May 1980, however, the Secretariat has had the opportunity to present a preliminary assessment of the progress achieved in this field subsequent to the Third General Conference of UNIDO, viz. in its Report to the Permanent Committee at its fourteenth session in October 1980.^{2/} Owing to the short space of time which has elapsed since then, the present report is brief and highlights only certain significant activities which will become increasingly important in the coming years. It concerns itself with development and transfer of technology activities only, activities concerning industrial and technological information being covered in a separate report on the Industrial and Technological Information Bank.^{3/}

2. The General Assembly^{4/}, the Third General Conference^{5/} and the Board^{6/} have all emphasized the need to strengthen institutional arrangements within the UNIDO Secretariat for the development and transfer of technology. As a result, the Technology Programme has been placed under the supervision of a Senior Technical Adviser and relevant organizational proposals are under consideration by the Secretary-General of the United Nations.

^{1/} A/35/16, vol.II, paras.71, 74.

^{2/} ID/B/C.3/100/Add.1.

^{3/} ID/B/259.

^{4/} General Assembly resolution 33/78, of 15 December 1978, section IV.

^{5/} ID/CONF.4/22, chap.VI (New Delhi Declaration and Plan of Action), paras.190-199.

^{6/} A/35/16, vol.II, para.73.

I. PROGRESS ACHIEVED

Technological advances

3. The implications which technological advances hold for developing countries and the capabilities these countries must acquire to make full use of such advances have not yet been subjected to sufficient examination or clarification.^{7/} Advances with wide-ranging inter-sectoral applications, such as in micro-electronics and biotechnology, as well as advances in specific industrial sectors are relevant in this respect. It is now widely recognized that such progress will profoundly affect the industrial structure in developed and developing countries and will have major implications for long-term industrial development. It is essential that policy-makers in developing countries be made aware of the implications of technological advances, so that these factors may be heeded in industrial and technological policy formulation as well as in decisions concerning important large-scale projects.

4. Studies have been commissioned by UNIDO covering micro-electronics, biotechnology and long-term technological trends in the machine-tool and petrochemical sectors. These studies are particularly concerned with the potentialities and limitations such technological advances hold for developing countries; the implications for important parameters such as capital and employment; and the capabilities that have to be acquired by developing countries, should they decide to profit from these advances. The studies will be reviewed by a meeting of the Consultative Group on Appropriate Industrial Technology, in which experts from the selected subject areas will participate.

5. To provide further depth to the studies commissioned, it is proposed to undertake a number of country-specific studies, as well as detailed studies on the applications of micro-electronics and biotechnology in selected industrial sectors. The latter studies will essentially be concerned with the implications

^{7/} ID/B/C.3/100/Add.1, paras.8-13. See also "Report of the United Nations Conference on Science and Technology for Development": A/CONF.81/16, annex IV.

for developing countries and the capabilities to be developed. Work initiated in this field is expected to lead to the convening of an international forum on technological advances in the biennium 1982-1983.

6. As regards genetic engineering, it is clear that this will substantially enhance the potentialities of biotechnology and that, over a period of time, it will have implications for several industrial sectors, such as fermentation, energy, fertilizers, pesticides and pharmaceuticals. To enable developing countries to apply such technological advances as and when they reach the point of commercialization, no time should be lost in starting the basic ground-work viz. training scientists and technologists from developing countries in genetic engineering and its applications, particularly in industry. To this end, the UNIDO Secretariat, in co-operation with the Club de Genève, the International Federation of Institutes for Advanced Study (IFIAS) and the RIO Foundation (Foundation Reshaping the International Order) held consultations with ten leading experts in this field in February 1981.^{8/}

7. At the national level, a project to monitor technological advances and incorporate them into national policy-making has been initiated by the Government of Mexico. The project is financed by the Interim Fund for Science and Technology for Development (IFSTD) which has already approved the first phase, and it is executed by the UNIDO Secretariat. The object is to draw up, organize and put into action a permanent national team to examine industrial technology perspectives and assist the Government in the formulation and implementation of development plans and policies, with particular regard to industrial development. The Government of Mexico, which in its global development and industrial plans has defined perspectives of accelerated growth in the industrial sector for the coming years, considers that in view of the rapid pace of world technological development, systematic activity is needed in order to examine technological perspectives and, at a national level, incorporate the resultant knowledge concerning trends and tendencies into the development of the world economy. The Government thus wishes to design this activity as a policy- and strategy-oriented one which will also provide Mexico with the necessary technological preparedness. The output of the project is also expected to be of assistance

^{8/} "Report. Exchange of views with experts on the implications of advances in genetic engineering for developing countries" (in draft).

to the Government in formulating decisions in the fields of inter alia: industrial policies and strategies; long-term technological policies; commercial and trade policies; and investments in large and strategic projects.

Industrial technology in Africa

8. On the occasion of the African Trade Fair in Khartoum (November 1980), a joint OAU/UNIDO Symposium on Industrial Technology for Africa was organized in co-operation with the Economic Commission for Africa (ECA) and the African Regional Centre for Technology (ARCT).^{9/} The main objective of the Symposium, which was attended by delegates from 35 African countries, was to help African countries apply the Lagos Plan of Action for the Implementation of the Monrovia Strategy for the Economic Development of Africa, adopted by the Assembly of Heads of State and Government of the OAU (Organization of African Unity) in Lagos, in April 1980. The Symposium discussed action at national, subregional and regional levels, as well as UNIDO efforts, in the fields of: technology policy and planning; technological infrastructure, including institutions and manpower; technological information; and co-operation among developing countries.

9. The Symposium recommended that as a matter of priority each African country should formulate and implement a basic national technology programme to develop, inter alia, a set of policy tools and a mechanism for monitoring and regulating the inflow of foreign technology and equipment. The Symposium also recommended that an in-depth analysis be made of African experience regarding the impact external assistance has made upon technological development. It proposed that the progress achieved in implementing the Lagos Plan of Action, in particular section V (science and technology), should be reviewed by the African countries in a symposium to be organized jointly by OAU and UNIDO in co-operation with UNDP, ECA and ARCT in 1982. Several project proposals are being considered, in order to implement the recommendations of the Khartoum Symposium. A major element in the follow-up action would be the stimulation of efforts at the

^{9/} "Draft report. Joint OAU/UNIDO symposium on industrial technology for Africa", (ID/WG.332/11 and Corr.1).

national level to adopt a framework for action in the field of industrial technology. To this end, several national seminars have been planned, which are open to participants from an entire region. Each seminar will take place in a different geographical area of Africa; the first is expected to be held in the Sudan. Work in this field is closely co-ordinated with the work of UNIDO's Task Force on the Industrial Development Decade for Africa.

Technology policies and plans

10. National-level actions for the formulation of technology policies and plans continue to be promoted, with ongoing activities in China, Nigeria and the United Republic of Tanzania. Activities have also been proposed for Guyana and the Sudan; in this latter case, the aim is to set up a national centre for technology transfer. Technology acquisition policies continue to receive special attention. In this respect, the need for co-operation and the exchange of information was further underlined by the Fifth Meeting of Heads of Technology Transfer Registries held in Buenos Aires in September 1980, under the auspices of UNIDO's Technological Information Exchange System (TIES). In addition to the ongoing projects, assistance to the Governments of Antigua, Bangladesh and Lesotho is anticipated in the field of technology transfer and acquisition. A meeting of senior officials of the ASEAN (Association of South-East Asian Nations) region is planned, in order to exchange experience and review policies in this regard. A programme of training workshops for negotiation of technology contracts was implemented in China and Portugal.

Programme of Action on Appropriate Industrial Technology

11. In the field of mini-hydro-generating units, the 1979 Kathmandu meeting was followed up by a seminar/workshop organized in October-November 1980 in China and the Philippines, two countries with relevant experience in the field. In the course of the programme, representatives of both countries compared their approaches to planning and operating mini-hydro-generating units and views were exchanged on the ways and means of promoting production of the relevant equipment in developing countries. A Hangzhou-Manila Declaration on mini-hydro-power generation was adopted and recommendations were made covering, inter alia, the establishment of "centres of excellence"

for training, for R+D and for the development of standards, test procedures etc.^{10/}

12. In co-operation with the Latin American Energy Organization (OLADE), progress was made in compiling a manual for decision-makers in the field of mini-hydro-generating units. The manual is expected to be part of UNIDO's contribution to the forthcoming United Nations Conference on New and Renewable Sources of Energy. These activities are being carried out in co-operation with the Division of Industrial Operations and under the guidance of an inter-divisional task force.

13. Activities to encourage technological co-operation at plant level in the field of small-scale industry^{11/} have made further progress in the engineering industries sector, with expert surveys undertaken in Egypt and Kenya to identify the requirements of small enterprises. A similar programme of co-operation is being developed for small-scale industry in the food-processing sector. Assistance in furthering co-operation in the field of small-scale industry is also being provided to Western Samoa and Nepal.

14. In co-operation with UNDP, UNIDO organized a technical congress on the occasion of the Technology for the People Fair which took place in Geneva in September 1980. Plans have been made for a workshop to be held in Utrecht in May 1981 to deal with the selection of technology for the assembly of electronic products and to examine technological alternatives under developing country conditions.

Technology development

15. As a follow-up to the joint UNDP/UNIDO evaluation of industrial research and services institutes (IRSIs), a meeting of heads of selected research institutes is planned for the second half of 1981, to establish a network for promoting co-operative R+D and for reviewing such major IRSI concerns as

^{10/} "Report. Second seminar-workshop/study tour in the development and application of technology for mini-hydro power generation (MHG)" (ID/WG.329/4).

^{11/} For details see ID/B/C.3/100/Add.1, paras.25-27.

(a) growth strategies in relation to national industrial economic development, (b) management, and (c) the commercialization of research results. In response to a Secretariat questionnaire, some 400 research institutes in developed and developing countries submitted replies which are being analyzed to identify specific possibilities for co-operation in R+D. Co-operative research was also discussed at a seminar jointly organized by UNIDO and the World Association of Industrial and Technological Research Organizations (WAITRO). During the seminar, proposals for strengthening WAITRO also emerged and these were submitted to IFSTD.

16. Implementation of an initial phase of a project to establish a pilot plant for the enzymatic conversion of cellulose to ethanol^{12/} has been initiated by the Division of Industrial Operations, with support from the Technology Programme.

Co-operation with regional and other organizations

17. Co-operation between UNIDO and other organizations in the field of technology development and transfer included: participation in the ESCAP Consultative Meeting on the Follow-up to the United Nations Conference on Science and Technology for Development (UNCSTD); discussions with ARCT officials on the implementation of its programme of work; discussions with the Economic Commission for Latin America (ECLA) concerning a programme of regional activities for 1981; discussions with the Secretariat of the Board of the Cartagena Agreement covering the fields of technology acquisition, technological information, disaggregation of technology, and technological advances; and collaboration with the United Nations Centre for Science and Technology for Development to draw up the operational plan for science and technology which will be submitted to the Intergovernmental Committee on Science and Technology for Development in May 1981. A meeting on the implications of micro-electronics for developing countries will be held in the Latin American region in co-operation with the ECLA Secretariat during the second half of 1981.

^{12/} Ibid., paras.18-22.

II. FUTURE ACTION

18. Following the Third General Conference, the general direction of future action was indicated in the Secretariat's report to the Board at its fourteenth session,^{13/} which broadly endorsed the programme.^{14/} In future activities, particular emphasis will be given to: industrial technology development in and transfer to Africa; the implications of emerging technological advances - a subject which so far has not received sufficient attention; energy and energy-related technologies; and the disaggregation of technology, with special attention to the local manufacture of capital goods. In addition, consideration may have to be given to drawing up an operational plan covering the field of industrial technology in general and taking into account the need to monitor and implement activities in this field in accordance with the terms of the Vienna Programme of Action on Science and Technology for Development^{15/} and the New Delhi Declaration and Plan of Action.

III. ACTION REQUESTED OF THE BOARD

19. The Board may wish to provide such guidance, comments and recommendations as it may deem appropriate for the further elaboration of the Secretariat's activities in the field of development and transfer of industrial technology.

^{13/} ID/B/242, para.15.

^{14/} A/35/16, vol.II, para.70.

^{15/} A/CONF.81/16, chap.VII.



with
10378-E



United Nations Industrial Development Organization

Distr.
GENERAL

ID/E/252/Add.1
1 April 1981

ORIGINAL: ENGLISH

Industrial Development Board

Fifteenth session

Vienna, 15 - 29 May 1981

Agenda item 14

DEVELOPMENT AND TRANSFER OF TECHNOLOGY

Progress report prepared by the UNIDO Secretariat

Addendum

ADDENDUM

The following paragraph and footnote should be added to the text contained in document ID/B/252:

20. The Board may wish to include in its recommendations the allocation of additional resources in order to implement the programme, with due emphasis on future activities - and in particular on industrial technology development in, and transfer to, Africa. The additional resources required for the biennium 1982-1983 are one Professional post, at the P-4/P-5 level, and consultant and contractual services amounting to \$175,000 (approximately 30 work-months).^{16/}

^{16/} (a) Consistent with the Secretary-General's instructions for the preparation of the programme budget 1982-1983, UNIDO's proposals maintain zero growth over resources for the biennium 1980-1981. Accordingly, the additional resources for this programme are not included in UNIDO's draft programme budget 1982-1983. In connection with the work programme for 1981, all possibilities to provide necessary resources through redeployment have already been exhausted.

(b) The additional resources are required in order to implement the major recommendations of the OAU/UNIDO Symposium on Industrial Technology in Africa (ID/B/252, para.9) which have as their primary objective the application of the Lagos Plan of Action in the field of industrial technology. Follow-up action would include assisting African countries in formulating a basic industrial technology programme; strengthening their capacity for negotiating the terms of, and acquiring, technology; and monitoring and reviewing progress in applying the Lagos Plan of Action. The additional Professional post is needed in order to implement the several concurrent activities arising from the Symposium and to develop special programmes for least developed countries (LDCs). About 30 work-months of consultant services are required, of which 20 will be used to assist selected LDCs in formulating a basic technology programme and to prepare for national seminars (vide para.9). The remaining 10 work-months will be used to assist African countries in strengthening their capabilities to negotiate the terms of and acquire technology. Meeting funds of the order of \$60,000 will be needed for the review meeting (for 50 African countries) to be organized jointly by OAU and UNIDO in the biennium.

