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PROGRESS REPORT ON  
THE AFRICAN REGIONAL CENTRE FOR ENGINEERING  
DESIGN AND MANUFACTURING

Ibadan, Nigeria

Ibadan (Nigeria)

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## I. INTRODUCTION

1. The decision to establish the African Regional Centre for Engineering Design and Manufacturing was taken by the Fourth Conference of African Ministers of Industry held in Kaduna, Federal Republic of Nigeria from 23 to 25 November 1977. Resolution 1(IV) embodies this decision and requests in its point 7 the Executive Secretary of the Economic Commission for Africa, the Administrative Secretary-General of the Organization of African Unity and the Executive Director of the United Nations Industrial Development Organization to report back to the Conference at its subsequent sessions concerning the progress achieved in the establishment of the Centre for Engineering Design and Manufacturing.

## II. ESTABLISHMENT OF THE CENTRE

2. Following the submission of the report of a field mission on the establishment of the Centre May/September 1978, an Ad hoc Meeting of Intergovernmental Experts on the establishment of the African Regional Centre for Engineering Design and Manufacturing was convened at Addis Ababa, Ethiopia, from 30 October to 2 November 1978 to discuss the findings and recommendations of the report.

3. Seventeen member States sent representatives to the meeting which commended the field mission report and recommended that the Follow-up Committee on Industrialization in Africa take urgently necessary measures for the adoption of the Constitution of the Centre by African Governments and urged the Follow-up Committee to convene the meeting of the Council of the Centre for the selection of its headquarters.

4. The follow-up Committee on Industrialization in Africa at its Fifth Meeting held on 8 to 10 November 1978 at Addis Ababa requested the ECA Executive Secretary to convene a meeting of Plenipotentiaries early in 1979 to sign the agreement which will set up the Centre.

5. Subsequently, the meeting of Plenipotentiaries on the African Regional Centre for Engineering Design and Manufacturing was convened on 4 to 5 April 1979 at Cotonou.

### Member Countries

6. On the occasion, the Plenipotentiaries of fifteen countries signed the Constitution. As of 30 August 1981 seven more countries signed the Constitution of the Centre thus bringing the total to the following 22 member States:

Algeria	Comoros	Guinea	Mali	Rwanda	Sudan	Upper Volta
Benin	Egypt	Kenya	Morocco	Senegal	<del>Tanzania</del>	Zaire
Burundi	Ghana	Liberia	Niger	Sierra Leone	Togo	Zambia
			Nigeria			

Members of the Executive Board

7. In accordance with Article II of the Constitution, the Council of the Centre at its inaugural meeting held at Cotonou on 6 and 7 April 1979, and inaugural meeting of the Executive Board held at Ibadan 29-30 November 1979, the following countries were elected to serve on the Executive Board of the Centre:

West Africa	Benin and Liberia
North Africa	Sudan
Central Africa	Burundi
Eastern and Southern Africa	Kenya
Host country	Nigeria

III. WORK PROGRAMME AND TRAINING PLAN (1981-1982)

8. The African Regional Centre for Engineering Design and Manufacturing (ARCEDEM) has started functioning from last quarter of 1980 with objective to develop design and manufacturing capabilities in the Member countries, particularly, for capital machines for which almost all African countries are over-dependent on developed countries.

9. The constantly increasing prices, multiplicity of varieties, too frequent changes of models and over-sophistication of these machinery are making establishment and operation of any industrial units in Africa more and more difficult. ARCEDEM is to assist Member countries to progressively overcome these difficulties.

10. The Lagos Plan of Action puts stress on creation of an industrial base for self-sustaining industrialization at the National and Subregional levels (paras 75, 85 and 86). Production in sufficient quantity of industrial inputs, such as agricultural tools and machines and development of intermediate and capital goods industries are the targets of Lagos Plan of Action (Para. 85).

11. The present work-plan of the Centre has been up-dated keeping the above objectives in view. Though the Centre would be engaged in next two years in its organization build-up and physical development, the submitted work-plan incorporates commencement of engineering activities. Thus the work-plan contains the following three major activities:

- (a) Organization build-up;
- (b) Physical development; and
- (c) Engineering programme.

12. A number of member countries have since been visited and they are yet to indicate their training needs as also products priorities. Yet the Centre has plans to commence design activities by end 1981 and design training early 1982, thus it endeavours to offer concrete assistance to member countries within a **short** period in the priority sectors of agriculture, transport, building materials and construction industry.

13. The Lagos Plan of Action (para. 159) envisages topmost priority on "learning-by-doing" method of skill transfer as also demonstration effect in production and services "in order to produce professionals with versatility required to solve design problems in the country". Furthermore, it "calls for the establishment of training programme in technical fields where there are acute shortages of manpower, such as production engineering, industrial design, chemical engineering and metallurgy and in fields related to project preparation, evaluation, etc." (para. 162) besides giving direction towards training of entrepreneurs for installation and operation of industrial establishments (para. 161).

14. One of the objectives of African Regional Centre for Engineering Design and Manufacturing (ARCEDEM) is to assist the member countries in building up trained manpower capable of designing and manufacturing, particularly capital equipments for which African countries are over-dependent on imports.

15. To comply with the above directives, the work programme of ARCEDEM for 1981 and 1982 envisages commencement of industrial training though of a limited number of designers and production engineers in 1981-1982, partly in the temporary premises of the Centre and partly abroad with the help of UNIDO and friendly countries. This will prepare the commencement of operational phase of the Centre by about 2 years.

16. For physical planning of the Centre, it is proposed that 75 engineers and technicians consisting of the following categories and durations may be trained annually in the Centre in its full phase.

In full phase of the Centre

<u>Category</u>	<u>No. of Trainees</u>	<u>Duration (Months)</u>	<u>1981-1982</u>	
			<u>(at Centre)</u>	<u>(thro. UNIDO)</u>
Manufacturing	50	6	-	15
Design	20	12	15	25
Testing	5	6	-	-
Total:	75		15	40

This works out provision of in-centre hostel accommodation for 50 participants.

17. The aim of this training is to create specialists in fields identified in Lagos Plan of Action (para. 169), namely, agricultural tools and equipment, transport equipment and equipment for building industry. These specialists would be so trained during the process of actual design and production work in the Centre or Centre's nominated places that on return to their home countries, they will have sufficient confidence to independently design and produce the industrial machines and equipment. The Centre, of course, will give extension services to solve their technical problems for the first 2 or 3 years after training.

18. The adequacy of number of trainees envisaged now (75) may be reviewed later depending on funds availability as also interactions with African Institute of Higher Technical Training and Research, Nairobi (AIHTTR) and national Centres which are to be promoted later. In-plant home-country training also may be assisted and guided by ARCEDEM on request from member countries.

19. With the above aims in view, the present training programme will commence during the end of 1981 on receipt of the training needs from the member countries. So far, 6 member countries have been visited and their training needs are still awaited.

20. Since the permanent site will take about two years to be built, the training programme for 1981 and 1982 incorporates training

At Centre: in machine design  
Abroad: in design and production.

UNIDO has been requested to assist the Centre by organizing training of 40 African engineers per year in 1982-1983 in the following branches:

(a)	Training of Trainers	Design of machines and implements	Agriculture	10
(b)	Training of Trainers	Design of machines and spares	Transport and material	10
(c)	Training of Trainers	Design of machines and spares	Building industry	5
(d)	Training of Trainers	Production	Mechanical machines	15

21. The Centre is preparing training programmes, syllabi, curricula and working papers for training. Attempts are also being made by the Centre to persuade other developed and developing countries to help by organizing appropriate training of engineers and technicians.

#### IV. VISIT TO MEMBER COUNTRIES

22. With the above aims in view, as also to establish personal contact, the Executive Director of the Centre and the ECA Project-Officer visited Kenya, Zambia, United Republic of Tanzania, Sierra Leone, Nigeria and Togo. Visits to other member countries have also been scheduled.

23. The national institutions engaged in research and development faculties of mechanical engineering of different Universities and Polytechnics, National and railway workshops, parastatals and private companies and consultancy organizations of the concerned member countries also were visited by this field mission between March - May 1981.

24. The countries visited were requested to indicate even on preliminary basis, their priority machines for development by the Centre for indigenous production and their training needs. These two pieces of information are required to work out Centre's plans and projects. The Centre is liaising with the member States to fix up the above requirements.

#### V. RECRUITMENT OF SENIOR TECHNICAL STAFF

25. The inaugural meeting of the Executive Board held on 29-30 October 1979 at Ibadan decided among other things, to speed up the implementation of the project and appointed a Selection Panel for the recruitment of Senior Technical Staff of the Centre. The Panel is composed of Kenya, Egypt, Nigeria and Zaire, each country representing a subregion.

26. Following the appointment of the Selection Panel, three meetings were held at Addis Ababa on 16-17 March 1980, 8 August 1980 and 11 November 1980 respectively to shortlist applicants for senior professional posts of the African Regional Centre for Engineering Design and Manufacturing.

27. As results of the recruitment efforts, the Selection Panel recommended the appointment of the Executive Director of the Centre, the Assistant Director of Administration, the Director of Design, the Director of Manufacturing and a Senior Production Engineer (Manufacturing). The Assistant Director (Administration), Dr. A. Ijose, who joined on 1 October 1980 has 22 years of experience in Administration.

28. At its second regular meeting held on 7-8 August 1980 at Addis Ababa the Council approved the appointment of Mr. S. Kundu as Executive Director for a period of five years. Prior to joining ARCEDEM, Mr. Kundu was a Senior Deputy General Manager (Production) with the Heavy Machine Building Plant at Ranchi (India), India's largest (and one of the world's largest) machine design and manufacturing plant with 7,200 men and an annual production

of 20,000 - 25,000 tons of machines and structures. Mr. Kundu has over 27 years of experience and accumulated knowledge in design, industrial production, development and manufacture operations. He possesses considerable experience in industrial management and is familiar with general operational problems and procedures of manufacturing industrial establishments involved in metal working operations as well as relevant experience in engineering R & D. Mr. Kundu speaks English, German, Russian and French. Mr. Kundu reported for duty on 10 October 1980.

29. The Chief Technical Adviser (CTA) of the Centre under UNDP financing has reported to duty on 5 February 1981. Chief Technical Adviser, Dr. V.A. Javoronkov has 35 years of experience in fields of machine design, research and projects and has been associated with UN for 5 years.

30. Instead of waiting for permanent office buildings, etc. the Centre plans to commence functional activities in 1981 itself on design development hence the Centre recruited Director (Design), Mr. C.P. Goswami, who joined in May 1981 has 25 years' experience in design, project, production and management. The Senior Production Engineer is expected to join during the second half of 1981 and Director (Manufacturing) is to join thereafter depending on the progress of construction of workshops.

## VI. CAPITAL DEVELOPMENT

31. (a) Capital Development Funds: Action on the capital development of the Centre has been initiated following a grant of ₦ 5 million (\$US 9 million) by the Host Government of the Federal Republic of Nigeria. It is a matter of pleasure that the Government of Nigeria has paid ₦ 1.84 million (\$US 3.33 million) for capital development of the permanent site.

(b) Land: A plot of land of about 100 hectares has been earmarked for the Centre and now is in the process of acquisition.

(c) Office and Residences: Temporary office and residential quarters for the senior officers have also been provided by the Nigerian Government.

(d) Project Management Consultancy: International advertisements were issued, five shortlisted parties have been requested to submit their quotations by 30 June 1981.

The selected Project Management Consultants were expected to prepare master layout of the Centre, detailed implementation plan for the approval of the Projects Implementation Committee and will assist in follow-up through construction.

After the opening of the bids it was found that the quotations received were much higher than the allocated budget, therefore the PIC had recommended that the Centre should undertake the task of organizing the planning and supervisory services required.

(e) Projects Implementation Committee: The first meeting of the Project Implementation Committee was held at Lagos on 8 December 1980 with the Honourable Federal Minister of Industries of Nigeria, Mallam Adamu Ciroma, in chair. The decisions of the session were closely followed up by the Centre as also by the Host Government. The second meeting of the Committee was held on 29 June 1981 to review the progress as also took such actions to expedite the implementation of the project.

## VII. FINANCING OF THE CENTRE

32. (a) Nigerian grant: The Federal Government of Nigeria has pledged ₦ 5 million (\$US 9 million) towards the capital development of the Centre. ₦ 1.84 million (\$US 3.33 million) has already been paid up to the Centre till end of 1980.

(b) Contribution from member States: Centre's current budget up to and including 1982, as approved by the Council, amounts to \$US 14,416,740 comprising of \$US 4,780,000 from the Host Government for capital development and balance of \$US 9,643,000 (rounded up) from the member States. As of 30 August 1981, out of 22 member countries, eight have paid their contributions; total amount being \$US 1,623,880.

(c) UNDP Contribution: UNDP assistance has been crucial in financing the preparatory activities towards the establishment of the Centre. As of today UNDP has disbursed about \$US 450,000 financing various activities related to the Centre as also payments for Chief Technical Adviser.

Further UNDP assistance of \$US 3,364 million is being sought during the next Programming Cycle 1982-1986. During that period, apart from technical assistance, UNDP is requested for substantial funds for non-expendable equipment and collaboration on technical know-how documentation.

(d) Friendly Donor Countries: The Governments of USSR, India and West Germany have been approached to help the Centre to come up in time with their financial assistance in the form of donation of machinery. Their responses are awaited.



#### VIII. TECHNICAL COLLABORATION

33. The Centre is seeking technical collaboration with developed and developing countries, as also within the UN system, in particular, with UNIDO, UN Interim Fund for Science and Technology, UN Centre for Science and Technology, UN Department for Technical Co-operation for Development.

#### IX. RECOMMENDATIONS

34. The Lagos Plan of Action envisages (para. 89d) strengthening of this Centre on urgent basis, hence in order to help in the smooth and effective realization of this important regional centre, a cornerstone in the implementation of the Lagos Plan of Action, the following actions are recommended:

- (a) Urge all African States that have not yet subscribed to the Constitution of the Centre and paid their contributions to the 1979, 1980 and 1981 budgets of the Centre to do so as expeditiously as possible;
- (b) Urge African member States to designate a focal Ministry or Government institution to follow-up the matters of the Centre at national level and to inform the Executive Director of the Ministry or the institution so designated;
- (c) Urge all African States, particularly, the French speaking ones to encourage their nationals to offer to serve the Centre;
- (d) Seek all possible sources of financial and technical assistance inside and outside Africa, with Governments, financial and technical institutions, bilateral and multilateral donors, UN systems, etc.;
- (e) Urge the ECA Executive Secretary in co-operation with OAU and UNIDO to continue in his efforts to mobilize adequate resources so as to complete the construction and make the centre fully operational by 1983.