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**ARCEDEM AND ITS ROLE IN THE
ECONOMIC RECOVERY OF AFRICA**

by

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INTRODUCTION

1. Africa today is going through the painful process of industrial development. Presently, most of its industries heavily depend on the industrialized countries for survival. Capital goods which form the nucleus of industrial development have to be imported. So also are consumer goods. There are many reasons why this is so. Technology, the back bone of industrialization is yet to be fully developed. Dwindling economic situation is also taking its adverse toll on the efforts for socio-economic development. Although the Continent is endowed with abundant deposit of mineral and material resources, it is hardly able to process these gifts of nature into usable products for its consumption.

2. Africa now stands at a road crossing. The economy is in bad shape. It is heavily indebted to the industrialized world. To free itself from this economic bondage, the economic recovery strategies must be based on programmes that will promote self sufficiency and reliancy through APPROPRIATE TECHNOLOGY. In the "Lagos Plan of Action", African countries were called upon to increase their quotas in the production of capital goods of the world total. True to the course of industrial development, many countries have taken giant steps in this direction. Many have established core metal processing industries capable of producing some capital goods. Women have even established assembly plants to put together pre-fabricated component parts to form finished products. However, the progress made in the technological development has been minimal. We must examine more critically the factors mitigating technological and industrial development if the goals of the economic recovery programmes are to be achieved.

PROBLEMS CONFRONTING AFRICAN INDUSTRIAL DEVELOPMENT

3. The catalyst to a buoyant economic society is through a self-sufficient and self-reliant industrialization. However, the problems confronting industrial development can be summarized as follows:

- i) Lack of specialized skills and manpower especially in engineering design and production.
- ii) Lack of adequate production facilities.
- iii) Problems with procurement of spare parts.
- iv) Problems with obsolesce of workshop and industrial equipment.
- v) Difficulty of getting the foreign exchange for material procurement.

4. One of the major factors mitigating against technological and industrial development in Africa is the lack of specialized skills and manpower. Capital goods production whether in the "Agricultural, Industrial, or Transportation Sector" requires the ability for design and development of equipment, experience in various types of metal pro-

These include:

- o Foundries capable of ferrous and non ferrous metal casting.
- o Metal cutting and Forging Workshops.
- o Heat treatment facilities.
- o Surface coating facilities

6. In many instances in which industries are equipped with equipment purchased from developed countries, such cases have been plagued with problems of obsolescence of machines and equipment, difficulty of availability of spare parts and in some cases equipment that are not suitable to the local conditions for which these equipment are intended. The technology for many of the developed countries is that of a dynamic nature. This means continuously changing technology which renders machines and equipment obsolete at faster rates than the rates for which many of these industries can cope with. This creates problems with the acquisition of spare parts. Many of the developed countries are unwilling to retool for parts production of these obsolete equipment. The result is idleness and even wastage of capital equipment.

7. Many initial studies for project implementation are carried out based on foreign experience without regards to the level of technology and or other local conditions. This has led to selection of Workshop and industrial equipment unsuitable to the prevailing environment. Thus such industries are left with machines that can neither be operated or maintained which in turn results in under utilization of capacity.

8. It is a widely accepted fact that Africa is endowed with abundant deposit of mineral and material resources. The problem is the processing of these resources into the form which can be used for development of capital goods. For example, many countries have large deposit of iron ores from which iron and steels from which many machine and other equipment components are produced. It is regrettable that in many of these situations such steels are still imported.

9. The vicious link between the level of industrialization and economy is another area of concern. For many countries, the demand for both capital and consumer goods is ever increasing. The level of technology and industrialization to meet this increasing demand is however lagging behind. This therefore continuously increases the pressure for importation. The result is a stagnant build up of external debt which inevitably worsens the economic situation.

ARCEDEM IN BRIEF

10. As a result of the above problems, African countries started to deliberate on how to build up capability in design and manufacturing of capital goods in African countries in order to help progressively the process of industrialization. In the Fourth Conference of African Ministers of Industry held at Kaduna in 1977, it was then decided to create a Regional Centre for Design and Manufacturing and in 1980, the "African Regional Centre for Engineering Design and Manufacturing (ARCEDEM)" was established with its headquarters in Ibadan, Nigeria.

11. The Centre which is sponsored by UN-ECA is an African inter-governmental institution and is co-sponsored by Organization of African Unity (OAU) and the United Nations Industrial Development Organisation (UNIDO).

12. The main objective of the Centre is to assist Member States in development of capability for engineering design and manufacturing of industrial and agricultural machines and equipment.

The functions of the Centre are:

- design, development and adaptation of machinery and equipment and dissemination to member countries,
- development of prototypes of machines and equipment and promotion of entrepreneurship by demonstration,
- manufacture of machines and equipment and promotion of same in Member States in collaboration with manufacturers from other countries,
- training of engineers and technicians in the fields of machine design and manufacture and also maintenance of plant and equipment,
- co-operation with national and international centres involved in design and manufacture of machines and equipment,
- provision of engineering consultancy services especially for the development and operation of plants and factories.

13. CENTRE'S PHYSICAL DEVELOPMENT - Nigeria, as host government has provided 85 hectares of land free of cost for the capital development of the Centre. The infrastructural development plan of the Centre includes an office block including the Design and Consultancy Offices; Machine Shop including Tool Room; Fabrication Shop; Forging Shop including Heat Treatment; Metal Casting Foundry; Experimental Testing and Development Shop; a Student Hostel for Seventy-two participants; a Conference Centre and other ancillary facilities.

ACCOMPLISHMENTS

14. DESIGN/DEVELOPMENT OF MACHINES AND EQUIPMENT

The Centre has completed the design of some machines/equipment for which the engineering drawings and other technical information for production are available. These include: Plough, Palm Oil Processing Plant, Rice Processing Equipment, Garri Processing Plant, Hand and Tractor Drawn Farm Carts, 5T Overhead Crane, Water Pump, Block-making Machines, Concrete Mixer and Wood-turning Lathe.

15. TRAINING

Since beginning operation, the Centre has already executed five training programmes since 1982 of three and six months duration for graduate mechanical engineers in design and manufacturing techniques. The total number of engineers trained so far have been 77 and they came from different African Member Countries. In 1986, 21 participants from 12 countries (Benin, Congo, Guinea, Kenya, Mali, Niger, Nigeria,

17. ENGINEERING CONSULTANCY SERVICES

In order to conduct realistic appraisal studies in the development of plants and factories, the Department of Engineering Consultancy Services was established in 1985. To date, the Department has carried out a number of studies which include:

- Development of a mobile palm oil plant with M.R.N in Sierra-Leone,
- metal working industry in Togo,
- production of electric motors and allied copper based equipment in Central and Eastern Africa,
- production and maintenance improvement for the Nigeria Paper Mills in Jebba, Nigeria.

ARCEDEM ROLES IN THE AFRICAN ECONOMIC RECOVERY PROGRAMMES

18. As has been pointed out before, economic recovery must be viewed in terms of sustained industrial growth. ARCEDEM is poised to take leading roles in this aspect.

- i) The Centre will continue to conduct appropriate engineering design and manufacturing training programmes. It will also continue to introduce trainings to enhance development of specialized skills such as in design, maintenance of machinery, project studies, production techniques, etc.
- ii) In collaboration with national institutions, the Centre will work relentlessly for the design and manufacturing of equipment suitable to the local conditions of Africa. Where applicable, it will carry out an adaptation of existing imported machines and equipment to the level and conditions of Africa.
- iii) Whereever identified, it will continue to develop spare-parts for imported machines and equipment so that they can be manufactured by local Workshops.
- iv) With the reservation of experience and knowledge as provided by the various backgrounds of its staff, it will provide consultancy services including studies for a realistic approach to project implementation.
- v) The Centre will continue to assist African countries in their efforts to set up National Centres to supplement the efforts by the Regional Centre in development of engineering skills.
- vi) The Centre will continue to take the leading role in the establishment of a technical information network. Through the network, African Countries will be able to share vital information in the development and procurement of machines.
- vii) The Centre will also continue to play a leading role in achieving technical co-operation among national institutions in Africa especially those in the related activities.

national community for assistance, development will only come from within Africa through self-efforts geared towards development of relevant specialized manpower and skills.

20. The African Regional Centre For Engineering Design and Manufacturing (ARCEDEM) was set up by African Countries to assist in the industrial development of Africa. All African countries must take full advantage of this. Co-operation by all African countries will be required to make the idea a success.

21. Africa must continue to encourage establishment of industries equipped with machines and equipment made within Africa. It must continue to reduce its dependence on imported goods and materials. Economic recovery will only come when we are able to produce what we consume.

In conclusion, ARCEDEM is ready and will be willing to assist in any area of its endeavour in the struggle for economic recovery through technological and industrial development.