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UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA
INDUSTRY AND HUMAN SETTLEMENTS DIVISION

MISSION REPORT
INTERNATIONAL TECHNOLOGY FAIR FOR SMALL AND MEDIUM SCALE INDUSTRIES - TECHMART 1992
NEW DELHI, INDIA, 14 - 25 NOVEMBER 1992

I. INTRODUCTION

1. Economic and social progress is synonymous to continuous and increased industrialization. In other terms, industrialization is a sine qua non of economic progress. What distinguishes an underdeveloped economy from an industrialized economy is the level of industrial transformation, the existence of a solid industrial base, a diversified technological infrastructure, the level of development of basic and heavy industries, R & D institutions in all economic sectors, i.e. a high level of self-reliance and self-sustainment of national economy.

2. The history of economic and industrial development has shown, with practically no exception, be it in market economy or centrally planned economy, that the State has played and continue to play a greater role in fostering industrialization and further economic achievement. The nature of the role of the State and its interventions in economic policy formulation have taken different forms. The ultimate objective remains the same, i.e. economic and industrial growth for a higher standard of living and a world prominence.

3. For small and medium scale industries to foster, they need an input from basic and heavy industries in whatever form it might be. The establishment of these heavy industries is beyond the capacity of private sector in Africa today. Thus, the State has to play a pioneering role in creating those industries as it has been the case in the advanced countries in the North and in today's newly industrialized countries.

II. TECHMART 92 - INTERNATIONAL TECHNOLOGY FAIR

What is a Techmart?

4. Techmart is an international technology fair, a market place for technology shopping, sourcing of products and equipment, gaining know-how, seeking collaboration, joint ventures and technology transfer.

5. Techmart India 92 was mostly devoted to exhibition of technologies of Indian small and medium scale industries with the participation of other development partners in the sector from the developed and developing countries. It is the third in series of UNIDO Techmart or Technology Transfer Fairs. The preceding Techmart events were held in Beijing, China in December 1991 and Bulawayo, Zimbabwe in September 1992. Further Techmart events are being planned for 1993.

6. Techmart India 92 was organized by the National Small Industry Corporation of India (NSIC) in collaboration with the United Nations Industrial Development Organisation (UNIDO), the India

Trade Promotion Organisation (ITPO) and the Ministry of Industry of India. The main objective of Techmart India 92 was to facilitate dissemination of information on technologies to small and medium scale enterprises on the one hand and to create a platform for technology transfer and negotiation on the other. Techmart is an event where one can see so many technologies at the same place.

7. Parallel to the technology fair, NSIC organized a series of seminars for dissemination and sharing of information and knowledge about technological developments in certain key sectors and discuss project opportunities. There were six highly topical seminars and all addressed technology issues on one way or another. They were most relevant to technological development and transfer in Africa. This aspect will be dealt in more details in subsequent chapter.

8. The Techmart India 1992 was deliberately made to coincide with the India International Trade Fair 1992, another major technological and trade event in its own right. India is a subcontinent, a federation of 22 States with each a tremendous industrial base, competing among themselves in a coordinated and harmonious manner with a view to uplifting the Indian industrial development. India is one of the major industrialised countries in the world and has the third largest source of technical and scientific manpower.

III. PARTICIPATION AND PARTICIPANTS PROFILE

9. More than 50 countries, 150 companies and 1500 participants attended Techmart India 92. They displayed and demonstrated their latest quality-products, technologies and related services. The participant companies/organisations were mostly drawn from:

- small and medium enterprises from all over India;
- large-scale industries interested to promote ancillary industries;
- institutions, R & D organisations, associations, federations and companies from India and abroad;
- international companies whose products, technologies and related services are of interest to SME's
- promotional organisations in various developing countries;
- various government of India undertakings, etc.

10. The countries of Asia were in massive presence at Techmart and International Trade Fair. There was a demonstration of their keen interest in economic development in general and in the transfer of technology in particular. Asian countries are advanced in mastering the importance of technology development and transfer in today's context of world economic globalisation and competitiveness.

11. A number of advanced countries actively participated at the Techmart and offered their technologies in various fields. There were France, Belgium, Italy, Spain, Great Britain, United States, etc. Those countries exhibited fairly advanced technologies.

12. Few African countries were present at Techmart India 92. Their level of participation in terms of technology displayed and range of industrial goods was negligible. These countries were Cameroon, Egypt, Ethiopia, Kenya, Zambia and zimbabwe. Other African countries participated not as exhibitors but as sectors of technologies and business.

13. Other countries of Asia: China, Viet Nam, Thailand, South Korea, Sri Lanka; Middle East: Iran, Central Europe: Tchcoslovakia, also participated.

IV. TECHMART INDIA 92 AND TECHNOLOGIES DISPLAYED

14. A Techmart is a unique technological event where a "Technology hunter" can find a multiplicity of "preys" concentrated at one shooting range. Hundreds and hundreds of technologies have been displayed and made available for purchase, transfer, collaboration and joint ventures. A wide spectrum of quality products manufactured by small and medium scale enterprises from India and abroad, a whole range of machineries, consumer durable and products, technology upgradation aspects, technology transfer to and from India, institutional assistance and entrepreneurship development were focused on. Technologies from the following broad categories of industries were exhibited:

- Engineering
- Components and Ancillary Industries
- Chemicals and Pharmaceutical
- Electricals, Electronics and Telecommunications
- Computers and Peripherals
- Plastics and Petrochemicals
- Energy
- International subcontracting
- Technology-Transfer
- Food Processing
- Construction and Building Materials
- Export oriented units
- Joint ventures and collaboration'

15. The range of technologies displayed goes from simple soap making by small industry (handicraft level) through normal engineering goods to robotics and laser industries. The spectrum of technologies was impressive and fascinating. It only shows the tremendous potential of R & D in science and technology and what heights technology offers to the betterment of mankind.

16. There is no need at this point to list all technologies displayed. There are in thousands and available for consultations in the rich documentation brought by the mission. Suffice to give one example to strike one's mind. The Bhabha Atomic Research Centre (Technology Transfer Group), a Government of India undertaking, has generated more than 74 technologies for small and medium entrepreneurs which are being shared with government agencies, public sector companies and private industries. These technologies are divided into four major groups:

- Environment and Health
- Electronics, Electrical and Mechanical
- Chemicals and Metallurgy
- Radio-Isotope Applications

17. The technologies developed at the Bhabha Atomic Research Centre ranged from defatted peanuts technology to Air Quality data processor and Laser Tube Power Supply for Low power HE-Ne LASERS.

18. Among the technologies displayed in the Bhabha atomic energy pavilion was the Intelligent Braille System - "Generation and Pronunciation of Text System for Blind" - It is a unique technology with immense social impact. The system enables a blind to create, print and read a text document conveniently. It also reads and pronounces the printed document to the blind. Thus, the system serves as virtual eyes for the blind which is a positive step towards his independence and status.

V. PROFILE OF THE NATIONAL SMALL INDUSTRY CORPORATION OF INDIA AS A PIONEER IN THE DEVELOPMENT OF SMALL AND MEDIUM INDUSTRIES AND TECHNOLOGIES FOR SME'S: RELEVANCE OF SUCH AN INSTITUTION TO INDUSTRIAL AND TECHNOLOGICAL DEVELOPMENT IN AFRICA.

19. The National Small Scale Corporation is a Government of India undertaking under the Ministry of Industry established in 1955 to promote and foster the growth of small scale industries in the country. Over years, NSIC grew and extended its coverage abroad. The corporation provides a large spectrum of support and financial assistance to small scale enterprises in the following areas:

- Supply of both indigenous and imported machines on easy hire purchase terms. Special concessional terms have been introduced for units promoted by entrepreneurs from weaker sections of the society, women entrepreneurs, ex-servicemen and those units located in the backward areas.

- Marketing of Small Industries products within the country.

- Export of Small Industries products and developing export worthiness of Small Scale Units.

- Enlisting competent units and facilitating their participation in government Stores Purchase Programme.

- Developing prototypes of machines, equipment and tools which are then passed on to Small Scale Units for commercial production.

- Technical training in several industrial trades, with a view to creating technical culture in the young entrepreneurs.

- Development and upgradation of technology and implementation of modernisation programmes.

- Supply and distribution of indigenous and improved raw materials.

- Supply of both indigenous and imported machines on easy lease terms to existing units for diversification and modernisation.

- Providing of Common Facilities through Prototype development & Training Centres.

- Setting up of Small Scale Industries in other developing countries on turnkey basis.

20. Over the years, it has been contributing substantially to the development of entrepreneurs, building of solid industrial base, spreading of technical culture, promoting balanced regional development, development of rural and backward areas, diversification of industrial production base, and expanding employment generation throughout the country. During the last ten years, the corporation has spread its network of services far and wide, both within the country and abroad. Today, it has got 36 offices including 10 training centres spread in the length and width of the country, providing a unique package of financial and technical assistance for the development, modernisation, diversification in the small scale sector.

21. Annually, the corporation assists directly more than 30000 units through its various schemes. NSIC is playing a crucial role for the development of small scale industry in areas of technology, finance, marketing, exports, technical training consultancy and entrepreneurship.

22. The role played by NSIC in the development of small scale industries and in contributing to strengthening the industrial base of India in terms of technology development, prototype development, industrial and technical training, and various schemes designed to enhance small scale entreprices deserves a particular attention and is a source of inspiration to African countries which are committed to industrialisation and the development of small scale industries. The creation of a similar institution at national, subregional or even regional levels will go a long way in contributing to industrial development in Africa. In particular, the past experience of industrial policies and development in setting up large scale industries has led to very poor performance of those industries and has not created a truly industrial base and culture in practically the majority of African countries. It was a top-heavy approach to industrialization. African countries should reassess their national development capabilities at the national and subregional levels in terms of financial and investment capacity, entrepreneurial and skills capabilities, management market, etc, with a view to setting up a realistic course of economic development. In doing so, they would inevitably come to the decision that initially they should give priority to the development of small and medium industries at the national level and gradually or parallely move to large and investment-intensive industries at the subregional level.

23. For the development of small and medium industries to succeed, a similar institution to NSIC and the package of incentives and assistance provided by the latter should be replicated by African countries. Revitalized and strengthened small industry development organisations in African countries could play the enlarged role of SNIC.

VI. TECHNOLOGY DEVELOPMENT ISSUES, RELEVANCE WITH ECA WORK PROGRAMME AND DEVELOPMENT TRENDS IN AFRICA.

24. The development of technology goes hand in hand with industrialisation. Technology development and industrial development are twin acts of the same economic development process. There can be no truly industrial development without import or indigenous development of technology.

25. Recent reappraisal of industrial policies in Africa gives priority to the development of small and medium scale industries. Because of developmental constraints at the national level, constraints such as narrow domestic market, weak investment capabilities, poor level of managerial and other manpower skills, the development of small scale industries is more appropriate at initial stage than large scale industries. This does not relegate basic industries to a second position. Rather for a balanced development and with a view to providing necessary support to

SSI's, selected core industries and large-scale consumer and intermediate goods production units need to be developed simultaneously.

26. The development experience of developed and newly industrialized countries have shown that most small scale industries have developed into large-scale industries. In many of the countries, they have laid down the foundation of large scale industrialisation

27. Over the last ten years, ECA has been advocating the development of small scale industries at the national level and selected multinational industrial projects with subregional dimension. In this direction, a number of directions of project profiles on small scale industries in Africa have been prepared. The first directory prepared in 1986 dealt with profiles of SSI's in (i) food products, (ii) leather products, (iii) textile products, (iv) paper and paper products, (v) metal working and engineering products, (vi) building materials and (vii) r household products. The second directory was prepared in 1989 and was discussed at a regional workshop. It addressed agro-allied small industrial project profiles. The last directory in two volumes (1990 and 1991) dwelt on metal working small industries and medicinal plant processing industries.

28. All these directories aim at providing African countries, especially policy-maker industrialists, investors and entrepreneurs with general information and easy reference to industrial opportunities in small scale industry development. The areas selected are areas where African countries have a great potential, resource-based industries, in particular in agro-allied small scale industries.

29. It goes without saying that the development of small scale industries entails at an initial stage the import of technology from where it exists and at a second stage the upgrading of locally available technologies or their development at national level through R & D efforts.

30. The United Nations Economic Commission for Africa is presently embarked upon the implementation of the programme of the Second Industrial Development Decade for Africa (IDDA-2) of which technology transfer and development is a major component. The success in the implementation of IDDA-2 programme will depend to a large extent to a massive transfer of technology. ECA activities in the field of technology should focus on (i) transfer of technology of small scale industries from developed and developing countries, (ii) upgrading and commercialisation of indigenous technologies, (iii) development of indigenous technologies and (iv) import of technologies through joint-ventures and subcontracting.

31. On the example of the African and Pacific Regional Centre for Technology Transfer (APCTT) under the aegis of ESCAP, ECA should develop a regional mechanism to accelerate the transfer of technology in the African region. Small and medium scale enterprises (SME's) are the main target of APCTT's activities. APCTT's role in the transfer of technology among the countries of the subregion is catalytic. At the national level, the Centre collects and disseminates information on new technologies for eventual use by member countries. At the enterprise levels, the main emphasis is to assist SME's in technology acquisition, adoption and upgradation through technology information and promotion services.

32. APCTT collects the techno-economic details of specific technologies offered or sought by enterprises/entrepreneurs and presents them in a "Tech Offer" and "Tech Request" format respectively to identify potential partners interested in business collaboration. The format is so designed to enable the users to take a technology decision based on their commercial viability and transfer potential to other countries.

33. APCTT compiles technology information in a computer database which is accessible on-line from all over the region and available through an electronic network.

34. Besides information dissemination, the Centre organizes specific technology transfer programmes such as technology missions and expositions at the regional level to strengthen TCDC and promotes indigenous technologies. In doing so, APCTT has organized several regional technology market fora called a "Techmart" to assist SME's in developing countries in identifying multiple technology sources as well in choosing optimal business partners for industrial collaboration.

35. APCTT maintains close and effective linkages with key sources and users of technology, other national and international centres involved in technology management, development, transfer and utilization. These include various government and non-government S & T, R & D institutions, trade and industry associations, techno-banks, NGO's and other United Nations agencies such as UNIDO, UNCTAD, UNEP, UNESCO, WHO, FAO and ILO. To strengthen the technology information, APCTT has established linkages with national focal points in most of its member countries.

36. The projected centre for the promotion of South-South Partnership to be set up in near future through cooperation arrangement between India, ECA, ADB and most likely UNDP could play similar role to APCTT. However, at the difference of APCTT, the South-South Partnership Centre would have additional role to play in conducting a regional census of indigenous technologies existing at laboratory and R&D levels, translating them into investment terms and assisting in their commercialisation in

cooperation with industrial enterprises and private entrepreneurs. Lack of commercialisation of R & D results and of indigenous technologies has to a great extent impeded industrialisation in Africa and has marred national efforts in creating an indigenous technological infrastructure.

VII. HOW CAN ECA CONTRIBUTE IN THE TRANSFER AND DISSEMINATION OF TECHNOLOGIES IN AFRICA COUNTRIES?

37. "Technology transfer is not something that one can transfer like goods. Technology transfer is a transfer of experience and knowledge from one capable party to another capable party."

38. In the process of technology transfer, African countries which are, at this stage, technologically lagging behind are the weak party to transfer technology to. In other terms, a home work has to be done by African countries to be capable of receiving technologies developed abroad. ECA is to play a role, together with other national and regional S & T, R & D institutions in bridging the gap.

39. The first approach would consist in assisting African entrepreneurs and enterprises to locate given technologies, negotiating and acquiring those technologies for indigenous application and absorption. Learning by utilizing seems to be a most rational approach in technology assimilation.

40. The next stage would be to promote, encourage and spread joint-venture and subcontracting arrangements from within and between African and foreign enterprises. A number of schemes can be designed whereby indigenous industrial enterprises may come together to negotiate and acquire a foreign technology for the production of industrial goods. Joint ventures between enterprises of the South or with enterprises in the North has to be encouraged as a means of technology transfer.

41. The ultimate objective of technology transfer is to absorb, assimilate and adapt technologies acquired abroad to prepare ground for building up indigenous technological capabilities. In other words, in order to optimize the generation and utilization of indigenous technologies, a strategy of technology development which embeds indigenous technologies into the texture of technologies initially acquired abroad is recommended, a strategy which integrates them into the process of adaptation, assimilation and upgradation.

42. In the efforts to transfer foreign technologies in African countries industrial development process, ECA has already made a preliminary ground work in preparing directories of project profiles and disseminating those profiles to end users. The

logical sequence would be to promote small industries based on the profiles, to assist indigenous entrepreneurs willing to venture in these small industries, to negotiate and acquire corresponding technologies. In particular, these profiles are locally resource-based and African countries individually and collectively have a great potential in raw materials on which to build up these industries locally.

43. If only ECA helps African countries and entrepreneurs in acquiring the wide spectrum of technologies from India and other developed and developing countries in the field of agro-allied industries (food, leather, textile, paper, wood, building material goods, etc.) as a starting point, a lot could have been achieved. This can be implemented in involving entrepreneurs themselves, technology transfer agents and financial institutions, among others.

44. Other aspects of encouraging technology transfer in Africa may take the following forms:

- continuous preparation and dissemination of industrial project profiles;
- organization of workshops/seminars on technologies for small scale industries;
- study tours on technologies available for small scale industries in selected developing countries;
- organization and participation to technological fairs;
- technological training;
- promotion of joint ventures;
- promotion of subcontracting arrangements;
- promotion of technology transfer agents.

VIII. SOME REFLECTIONS: INDUSTRIALIZATION AND TECHNOLOGY

45. In participating to Techmart India 92, the impression and feelings one gets are those of yawning gap in overall development existing between African countries and other developing countries, particularly with Asian countries. One measures the profound lag accumulated by Africa in terms of industrial development diversification and technological development and mastery and related issues such as technology negotiations, transfer, acquisition, adaptation and assimilation. A whole industrial culture and technological set up is missing in Africa.

46. The task ahead, and ECA is to play an important role in it, is to sensitize and mobilize African Governments, business communities in Africa, entrepreneurs and industrialists, investors, s & T, R & D institutions for a massive transfer of technologies to the continent. Technology being a vast domain with wide intricacies, African countries should develop negotiation capabilities. To this

end, ECA should assist member countries in training teams of highly skilled negotiators for the negotiation of transfer and acquisition of technologies to ensure the right and appropriate technology is acquired.

47. ECA should equally assist African countries in creating a similar institution to the Asian and Pacific Centre for Technology Transfer whose role and activities are described earlier in this report. One of the functions of the Centre would be to take a census of all technologies available in African countries in S&T, R&D institutions, universities, technology development centres, etc. with a view to translating research results in investment terms and commercial production ventures.