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UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA

REPORT OF THE SEVENTH MEETING OF THE INTERGOVERNMENTAL COMMITTEE OF EXPERTS FOR SCIENCE AND TECHNOLOGY DEVELOPMENT (IGCESTD)

Addis Ababa (Ethiopia), 4 - 8 November 1991

I. ATTENDANCE AND ORGANISATION OF WORK

A. Attendance

1. The seventh meeting of the Intergovernmental Committee of Experts for Science and Technology Development was held at the headquarters of the United Nations Economic Commission for Africa, Addis Ababa, from 4 to 8 November 1991.

2. Representatives of the following member States attended the meeting: Angola, Burundi, Cameroon, Chad, Congo, Côte d'Ivoire, Ethiopia, Gabon, Ghana Guinee, Kenya, Lesotho, Malawi, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sudan, Tanzania, Uganda, Zambia.

3. The following United Nations bodies, specialised agencies and other organizations were also represented: Food and Agriculture Organisation (FAO), International Labour Organization (ILO), United Nations Development Programme (UNDP), United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Industrial Development Organization (UNIDO), World Health Organization (WHO), United Nations Centre for Science and Technology for Development (UNCSTD). The African Regional Centre for Technology (ARCT), Organization Regionale Africaine de la Propriété Industrielle (OAPI), Organization of African Unity (OAU),

B. Opening of the meeting

4. The meeting was opened by Mr. Ali Tall, who read an opening statement on behalf of Mr Issa Diallo the Acting Executive Secretary who could not be present because of other obligations. In extending a warm welcome to the participants, he thanked their governments and organisations for having sent high level delegations to the meeting, a testimony to the seriousness they accorded to science and technology. He stressed that the Intergovernmental Committee was an important subsidiary organ of the Commission responsible for advising and offering guidance on strategies for the development and utilisation of science and technology in the member States. Often the crucial role of science and technology is not reflected in the priorities of member States resulting in the low level of investment in these areas which in turn diminishes their impact on their economic development. He drew attention to the limited progress in the implementation of the activities of the Working Groups which was mainly due to resource constraint, and also called for measures to enhance the role of member States in this regard.

5. With regard to the rest of the agenda, he indicated that the Committee would consider the report and conclusions of the review of the performance of science and technology policy institutions in five member states and make its recommendations thereon. With regard to the financing of science and technology in member States, the secretariat would present a report based on government responses on the Special Funds for science and technology set up in their respective countries. Another item concerned the impact of new technologies on Africa's primary products, and the need to initiate necessary policies and programmes in order to cushion

the African economies against adverse consequences which might arise. Finally the Committee would take up the all important question of the development of endogenous capacities and offer fresh strategies in this regard. He also drew attention of the Committee to the impact of science and technology to Africa's rich cultural heritage, and the important role played by women in transmitting technology and extending the cultural values to the offsprings. These issues were considered in a training workshop, conducted by the secretariat, whose report was before the committee. All these were important issues to the secretariat and to the member States as well; and the outcome of the committee's work was expected to make a valuable contribution to the development of collective self reliance in science and technology. He expected the committee to address all those issues with the determination.

6. Mr. P. Gayama, Assistant Secretary-General of the Organization of African Unity (OAU) also addressed the meeting on behalf of Mr. Salim A. Salim the Secretary-General of the OAU and opened his address by extending a warm welcome to all the participants. He informed the meeting that the OAU attached special importance to science and technology sector by doing its utmost in implementing the resolutions and declarations adopted by the African leaders. Though the goals had not been achieved fully, it was highly important to realise the spirit they conveyed, and in this regard he hoped that the Committee's work would contribute to the implementation process.

7. He then drew attention to the Treaty Establishing the African Economic Community, signed by the African leaders in June 1991, which amply emphasised the importance of science and technology in relevant articles of its provisions, and urges member States to take specific measures for strengthening their capabilities in science and technology. He expressed hope that the deliberations of the meeting, being the first of its type to be convened after the signing of the treaty, would lend assistance to the member states and the secretariats of the OAU and the ECA in implementing the existing strategies so as to narrow the technological gap between the developed countries and the countries of Africa. He added that the creation of a viable science and technology base is a necessary ingredient of a sound strategy for attainment of the desired socio-economic development, and the related questions of technology transfer and the consequences of new scientific and technological developments required special attention.

8. Finally he expressed appreciation to the efforts so far made in securing funding for the implementation of the projects developed by the Working groups, and appealed to the donor community and the african institutions to fund these projects. He concluded his statement by reaffirming the OAU's continued cooperation with the ECA in general and in promoting the activities of the Working Groups, as part of science and technology development in particular.

C. Election of the officers

9. The Committee unanimously elected the following officers:- Chairman: Prof. Thomas Njine, (Cameroon); First Vice-Chairman: Dr. J. H. A. Maida (Malawi); Second Vice-Chairman, Mr. Amha Mulugeta (Ethiopia), First Rapporteur: Dr Alexis Ndibwami (Rwanda); Second Rapporteur: Mrs N.Maphasa (Lesotho).

D. Adoption of the agenda

10. The Committee unanimously adopted the following agenda;

1. Opening of the meeting
2. Election of the Bureau
3. Adoption of the Agenda and Programme of Work
4. Matters arising from the report of the Sixth meeting
5. Activities of the Working Groups of the Intergovernmental Committee
6. Performance review of science and technology policy institutions in selected African countries
7. Financing the development of science and technology in the ECA member States
8. Implications and potential for African countries of technologies on new materials
9. Endogenous capacity building in science and technology in Africa
10. Cultural prerequisites and the role of women in the application and development of science and technology in Africa
11. Environment and development
12. Issues for the Eighth meeting of the Intergovernmental Committee of Experts for Science and Technology Development (IGCESTD)
13. Adoption of the report and closure of the meeting

II. ACCOUNT OF PROCEEDINGS

Matters arising from the report of the sixth meeting (Agenda item 4)

11. A representative of the secretariat presented matters arising from the sixth meeting of the IGCESTD held in November 1989. Its report was presented to the Eleventh Meeting of the Technical Preparatory Committee of the Whole in Tripoli in May 1990 which took note of the report and adopted one draft resolution on strengthening of capacities in Africa for the development and application on science and technology in the 1990s. The draft resolution was subsequently adopted by the ECA conference of Ministers as resolution 689 (XXV).

12. As regard to science and technology indicators ECA and UNESCO are interested in carrying out a joint activity in this subject. Contacts between the two organizations have been made but work has not started due to lack of resources.

13. ECA and OAU have collaborated in organizing meetings of the Working Groups and in the search for funds for the implementation of subregional projects. However, OAU's funds were no longer available to finance meetings of the Working Groups. As regard to funding projects, donors are more and more asking that the participating countries fund a share of the projects. Member countries should involve themselves more in the formulation and execution of the projects and in participation to the meetings.

14. Regarding the concern expressed by Member States on the need to stress the transfer and dissemination of technologies, specific activities are under way through the pilot and demonstration units established by ARCT under UNDP project RAF/87/068 in the field of food processing and energy generation. Member States can benefit from these activities.

15. Following the decade review of the Vienna Programme of Action on Science and Technology, for Development the secretariat is completing the second phase of a study on the performance of science and technology policy institutions in Gambia, Senegal, Sierra Leone, Malawi, Zimbabwe and Madagascar. The results of the study will be distributed the Member States during the first half of 1992.

16. The problem of communication between ECA and Member States and the concern for the continuity of meetings were raised. It was agreed that the situation would be improved if participants would inform their respective authorities on the activities of the committee, take actions on follow-up and keep ECA informed of any change in the names of representatives and institutions dealing with the IGCESTD.

17. The issue of project funding was also raised. This would be discussed extensively under item 7 of the Agenda.

Activities of the Working Groups of the Committee (Agenda item 5)

18. A representative of the secretariat introduced document S&T/IGCESTD/7/5 by first providing the background to the developments which led to the establishment of Working Groups of the Intergovernmental Committee of Experts for Science and Technology Development (IGCESTD). With respect to the activities of the Working Groups since the sixth meeting of the IGCESTD, it was indicated that these fell into two main categories (1) the meetings of the Working Groups and (2) the promotion of the Working Groups'projects for the purpose of securing funds for them.

19. He pointed out that during the period under review both the Central and Western Africa Working Groups held meetings in May 1990 and March 1991 respectively. The two groups elaborated projects in science and technology for execution on subregional basis, and requested the ECA and the OAU to assist in the mobilization of resources for the implementation of the projects. Regarding the promotion and funding of subregional projects the secretariat presented the eleven projects to twenty five organizations and donor agencies in November 1990 and also undertook promotional activities amongst the African member States. A number of organizations had responded but many did not indicate willingness to fund the projects. So far only two i.e. the Carnegie Corporation of New York and the Islamic Foundation for Science, Technology and Development (IFSTAD) had expressed interest in the matter. The IFSTAD agreed to fund three projects i.e. the technology assessment in East Africa: training programme; development of a subregional policy in science and technology for the Eastern African countries; a workshop on the harmonization of science and technology policy in Central African subregion. Furthermore, IFSTAD indicated possibilities of extending support to similar activities in the Western and Northern Africa subregions. As a follow up to this offer the secretariat hopes to organize a subregional workshop on the West Africa subregion in March 1992. The secretariat had also contacted various countries and the SADCC secretariat for support in the implementation of the Working Group projects. The OAU secretariat was in contact with a number of agencies, and in particular the African Development Bank with a view to securing funding for the said projects.

20. Finally the secretariat appealed for greater involvement, by the member States, in the follow-up, promotion and funding of the projects emanating from the Working Groups, and suggested that specific national focal points be designated for this purpose. Furthermore, the Working Group activities needed to be fully integrated in the work of the relevant ECA MULPOCs.

21. During the discussion which ensued, participants commended the secretariat for the report and expressed concern regarding the relatively low response from the donor community; and questions were raised on the nature of the projects and whether the correct strategy was used in launching the appeal for funds. It was pointed out that there was need to define more clearly the scope of the projects and where possible to discuss the projects with donors in order to demonstrate their expected impact on the problems addressed. Some participants felt that

projects aimed at reducing Africans dependency in science and technology might have difficulty in attracting funds from certain donor agencies.

22. On the question of resource mobilization for subregional projects, some participants felt that member States should be fully involved in this exercise. In this respect, the need for self-reliance was stressed and the ECA was called upon to follow-up the resource mobilization activities of the member States who were expected to play a big role in the search for resources to ensure the implementation of the subregional projects.

23. In order to ensure smooth coordination of activities in the subregion, the meeting stressed that the priorities identified by the Working Groups should coincide with those emerging from the relevant MULPOCs. The guidance provided by Commission resolution 629 (XXIII) should ensure that the promotion and implementation of the Working Group activities is fully integrated in the overall programmes of the MULPOCs.

Performance review of science and technology institutions in selected African countries (Agenda item 6)

24. A representative of the secretariat presented results of a study on the performance of science and technology policy institutions (STPI) in five African countries: Ghana, Guinea, Kenya, Nigeria and Tanzania. The study was carried out by ECA in 1998-1989 and was supported by a grant provided by the International Development Research Centre (IDRC).

25. The study pursued five specific objectives:

(a) to ascertain the statutory characteristics of selected institutions for science and technology policy in regard to their stated aims and their functions, prescribed organizational structures, the compositions of their Councils or Boards, links with other institutions, existing promised legal powers as well resource allocations;

(b) to review comprehensively the institutions past and present activities, highlighted their ways and means for attaining stated objectives in order to establish their characteristics, to compare these with those indicated by local needs, and by the institutions'statutes, to account for disparities, if any, and to relate them to the institutions'past and present performance;

(c) to compare the institutions'statutory and actual aims and functions with those of other relevant national institutions, including government departments, in order to determine the extent to which statutory and actual similarities in aims and functions either spawn rivalries or encourage cooperation between those and other institutions;

(d) to study the nature and working of decision-making machineries with respect to institutions for science and technology policy especially with regard to the allocation of resources to those institutions;

(e) from the emerging conclusions and comparisons with successful institutions for science and technology policy in other parts of the world, to suggest ways in which African institutions for science and technology policy could be strengthened and/or to propose alternative arrangements that would be more effective in promoting and utilizing science and technology for development.

26. The main conclusions and recommendations which come out of the report are:

(a) Most science and technology policy institutions need statutory power to require other science and technology institutions to abide by national science and technology policy guidelines.

(b) Accountability channels for science and technology activities should be articulated in such a manner as to provide for a clear hierarchy and avoid ambiguity in the roles of the different organs.

(c) Science and technology policy institutions should provide adequate mechanisms for commercialization of research results, through the creation of appropriate infrastructure and provision of risk-venture capital, in order to have meaningful impact.

(d) The goal of science and technology policy institutions in initiating and sustaining the application of science and technology should be given more emphasis than at present.

(e) The goal of having science and technology policy institutions influencing planning processes may be easier to achieve if science and technology policy institutions are given a visible role on the planning commissions or ministries.

(f) Actual and potential conflicts of goals and overlapping powers and functions where they exist should be minimized within inter organizational relations in the science and technology structures in order to avoid possible jurisdictional conflict and goals incompatibility.

(g) The promotion of science and technology development and application should be strengthened through adequate resource allocation and improvement of status for scientific and technological workers, as well as creation of openings that can retain the qualified personnel.

(h) The composition of policy-making bodies should be improved to reflect a wider inter-sector mix.

(i) Horizontal transfers which are likely to affect continuity on the policy-making bodies should be minimized.

(j) Delegation and sub-delegation of representative roles on policy-making bodies should be minimized.

(k) Sectoral linkages may be made easier if each ministry established its own science and technology unit to deal with science and technology issues and collect all necessary information, and pass it to enterprises under it, and to other ministries and science and technology policy institutions.

(l) An attempt should be made to confer more executive than administrative powers over science and technology policy institutions, so as to accelerate the implementation of set policies.

27. Many participants commended the secretariat for the indepth study presented. The discussion that followed highlighted the following points.

(a) In many countries science and technology are still construed as research and development, so activities to promote training, transfer, adaptation, assimilation, commercialization, diffusion, etc., do not receive enough attention and research remain largely ineffective.

(b) The involvement of the whole business community and the consumers is not facilitated by the present science and technology structures and more effort has to be made to incite and assist the entrepreneurs to participate in science and technology activities.

(c) Most countries which have not yet created a science and technology policy institution are in the process of doing so and ECA can assist, upon request, in the setting up of such institutions.

(d) The issue of linkages between science and technology and socio-economic development should be one of the main concern and one for which actions should be taken urgently in order to increase the efficiency of the resources allocated to science and technology for development.

Financing the Development of Science and Technology in ECA member States (Agenda item 7)

28. The representative of the secretariat introduced document S&T/IGCESTD/7/7 and stated that the development of science and technology and its contribution to the socio-economic development were dependent on the availability of adequate financial support backed by relevant

policies. This view was underscored in the Lagos Plan of Action (LPA) which called for substantial increases in the governments' allocations to science and technology and advocated the establishment of a National Science and Technology Development Fund among the measures to broaden the sources of funding at national level, and work towards the target set by the LPA.

29. The secretariat sent out questionnaires to all the ECA member States requesting each to provide information on the main features of its national science and technology development fund. Seven countries returned the questionnaires on 10 such special funds and the information constituted an annex to the document under consideration. The questionnaire from one country arrived during the course of the meeting. From the submissions received, most of the funds were relatively new; they were established by ministries or agencies responsible for science and technology, and in a few instances the initiative was taken by Heads of States. Besides national Governments which were the dominant funding sources, voluntary and assessed contributions from private and public enterprises were used.

30. The objectives of the funds varied considerably but they included support to general and sector specific research, research commercialization, pilot scale development programmes, popularization of science and technology and stimulation of inventiveness. Eligibility to use the resources was open to individual scientists or groups of scientists demonstrating basic qualification skills or proven innovative capacity, the relevance of the research proposals to the national economy was an important consideration. Mechanisms were instituted to screen applications and monitor the sponsored activities and their related funds. Overall a wide range of activities were supported by the special funds, research being dominant one. In conclusion it was stressed that though funds were small, they were good examples which could be emulated by other countries in the region.

31. During the discussion which ensued many participants expressed their appreciation to ECA secretariat for taking the initiative of carrying out this study which will be useful to them. Concern was expressed at the low level of response from the governments on the science and technology development funds. Note was taken of the fact that such was the situation with respect to other questionnaires sent in by the various UN and other organizations. Regarding the special funds reported on, it was felt that these were small in relation to the needs for strengthening the science and technology base in the member States. Several participants expressed concern about the serious underfunding of science and technology by African member States, and urged for more resources to be made available. However it was pointed out that in order to get countries to contribute more to science and technology, the activities in these fields should be conceived with greater precision, clearly indicating their contribution to the solution of concrete problems faced by the countries. Governments expected tangible returns from their investment in science and technology, hence R&D and other science and technology activities and programmes must be targeted and problem oriented, and their execution should show a high degree of resource management. Such an approach is necessary in any attempt to seek increased resources or to explore new resources funding.

32. Regarding the general question of raising additional resources for science and technology, it was observed that many countries were poor and faced with similar problems some of which could be tackled on regional or subregional basis; and individual efforts were disproportionate to the problems faced. The meeting therefore recommended that African countries should work together on this matter, and that efforts should be intensified to expand the funding sources by urging the private sector to invest in science and technology; and by the establishment of a regional science and technology fund through the African Development Bank. Furthermore Governments had to be reminded of the target set by the Lagos Plan of Action for member States to devote 1% of their GDP to science and technology.

33. The meeting felt that it was essential for member States to have a forum involving ministers responsible for technology in member States which could take common positions on important issues such as the financing of science and technology, and the interaction of science and technology in the development process emanating from the deliberations of the Intergovernmental Committee. Such a fora could be convened in conjunction with the biennial meeting of the Intergovernmental Committee and could provide the necessary political impetus to dynamise science and technology in member States.

Implications and potential for African countries of technologies on new materials (Agenda item 8)

34. A representative of the secretariat presented this item and informed the delegates that the advent of new materials technologies in the developed world was already having an impact on the demand for raw materials from the developing countries. The world market price for the conventional raw materials of mineral origin was going down, as substitutes were being developed through new materials technologies. Since Africa is basically an exporter of raw materials, the economy of many countries heavily dependent on the export of single mineral commodities, was being adversely affected. There was need to improve extraction and processing technologies, and to diversity and move to new minerals that were in increased demand.

35. The secretariat had completed a study on the implications and potential for African countries of technologies on new materials of mineral origin, and this study looked into:

(a) Overview of the African minerals, technology and industrial development.

(b) Examination of the potential of minerals, building and construction materials in Africa in the light of new materials and products.

(c) Identification and assessment of the new and emerging technologies in these areas.

(d) Implication of the new emerging materials technologies on the market of African minerals and materials, and

(e) Recommendations and conclusions for policy action.

36. All these issues were elaborated upon. In the area of minerals, while the conventional ones like iron, copper, tin, lead and zinc were experiencing a decline in demand, others like nickel, cobalt, titanium, and the rare earth minerals like silicon, titanium, tungsten, barium and others which are used in photovoltaics, photonics, ceramics and superconductive materials, were experiencing an increase in demand. Hence, it is imperative for countries that have these materials to reorient their strategies in order to capture the market.

37. In the area of building materials, conventional materials like cement, bricks, concrete, plaster, steel and glass which are usually imported at high costs must be gradually replaced by locally developed and improved indigenous materials like burnt-clay bricks, lime, pozzolana cement, and fibre reinforced concrete. Government policies should encourage the production and use of these materials.

38. Recommendations that have to be implemented at national, sub-regional and regional levels were highlighted.

39. Participants paid tribute to ECA secretariat for the work carried out in this very important area of science and technology development which is having substantial impact in many sectors of their economy. In some countries efforts are being made to promote local materials and encourage small scales business. More effort should be made to convince the consumers to switch to products made with local raw materials.

40. It is felt that intra-African trade in materials should be further facilitated in order to reduce dependency from the industrialized countries and increase the use of industrial facilities in this sector.

41. Construction materials, such as stabilized earth, should be encouraged with appropriate fiscal and financial measures, particularly in countries where wood is rapidly disappearing.

42. UNIDO, with the cooperation of ECA, should redouble their efforts in order to create a network of African institutions dealing with materials technologies. Such a network is being put into place in Asia and the experience acquired should be helpful in setting up the African network. Some African countries have shown interest in such a project and more countries should pay greater attention to the importance of materials technologies and cooperate with each other.

Endogenous Capacity Building in Science and Technology in the African Region (Agenda item 9)

43. In presenting this item, a representative of the secretariat said that endogenous capacity implies three elements: policies, institutional infrastructure and manpower. In the African region efforts have been made to build all these, but their impact on socio-economic development has been minimal because certain vital components have been missed out, and science and technology have been interpreted as being mostly research and manpower training. The application of available, off the shelf, science and technology as well as the commercialization of research results have been marginal. The consumers and the private sector, including bankers, entrepreneurs and market specialists have not been involved in R&D programmes, and very often these programmes have not been in line with the country's priority needs.

44. With respect to policies and policy institutions, it was brought out that they have not been effective because of the lack of involvement of the stake-holders, and because of the cross-sectoral nature of science and technology. Resources for the implementation of the policies have not been forthcoming because of the lack of top-level commitment, specially when science and technology are projected as research. It was suggested that the stewardship of science and technology policy institutions should be in the hands of the Prime Minister's or President's office, so that it would cut across all the sectoral ministries. The number of science and technology policy institutions and their evolution were highlighted.

45. As regard to manpower, it was stated that those trained were not given adequate incentives and suitable occupations to retain them, and this had led to brain drain. There was a pressing need to increase the number of middle-level technicians, reorganize the curriculum to include technology as a crucial subject, improve the school laboratories through provision of adequate science equipment, and set up small and medium scale industries where the people trained could have a gainful employment. The need for production-cum-training centres, where qualified engineers could acquire practical industrial on-the-job experience, was highlighted.

46. The infrastructures, including the schools, laboratories, universities and research institutes, have to be improved, and the resources required for these could come with suitable government legislation that can encourage the private sector and the multi-national companies to contribute to their proper functioning. Legislation that can promote research and development, were highlighted. The need for National Research and Development Corporations and Science and Technology Parks like the Technopole being set up in Senegal, was brought out as measures that can accelerate the development and application of science and technology in member States. Together with these, mechanisms for sub-regional, regional and inter-regional co-operation in order to maximize on the use of scant resources, were highlighted. Finally a series of recommendations resulting from these were mentioned.

47. Following the presentation many participants voiced their appreciation to ECA secretariat's work on endogenous science and technology capacity building in the African region. Each participant was given the opportunity to elaborate on what his country or his international organization is doing to enhance endogenous capacity building. The discussion highlighted the wide diversity of situations between countries.

48. Some countries of West and Southern Africa still do not have science and technology policies so actions to promote endogenous capacity building is limited, mainly to education. Other countries are more advanced and are examining the possibility of setting up technopole (Senegal) or science park (Tanzania, Zimbabwe) or technological business incubators. In Rwanda a stock-taking programme is under way, and will be followed by impact assessment and a science and technology policy, taking fully into account the science and technology potential and the needs of the industrialists. This approach could serve as a model for other countries. The Ghana Regional Appropriate Technology Industrial Services (GRATIS) was a successful network of technology transfer workshops set up nation-wide to promote the development of small-scale industries in the informal sector.

49. Some countries expressed concern about higher education institutions which are experiencing various problems (closure, strike, lack of incentives for the lecturers, lack of jobs for the graduates, etc.). Concern was also voiced about the erosion of the scientific community's working conditions and brain-drain. In this respect some countries were in the process of drafting legislation to enhance the status of the researchers (Senegal) or have already done so (Cameroon).

50. Regarding the weaknesses of the manufacturing sector it was felt that urgent measures were needed to promote entrepreneurship and improve the business environment, support infant industries and facilitate foreign investment, particularly in countries where local saving for investment is low.

Cultural Prerequisites and the Role of Women in the Application and Development of Science and Technology in Africa (Agend item 10)

51. A representative of the secretariat introduced this item on the agenda, which was the report of a training workshop held in March 1990. The objectives of the workshop were to create an awareness on the need to consider cultural factors in the development and application of science and technology, to highlight the cultural role of women in the popularization of science and technology and to promote the utilization of indigenous knowledge systems and cultural media to propagate science and technology.

52. It is a recognized fact that activities in science and technology in the African region over the past three decades have had marginal impact on the socio-economic development of the member States. One important reason is the neglect of the consideration of cultural factors and the role of women in the development and application of science and technology. Local

traditions and cultural conditions need to be incorporated in programmes hoping to improve the life of the people through science and technology. The use of local languages as the medium for the transfer of know-how, the use of radio, television, folk songs, folklore, plays and dramas can be of immense value in this process. Otherwise science and technology are considered as foreign, and their acceptance and assimilation are difficult. There is a sense of myth created around science and technology which supposedly comes from outside, while the inherent science and technology in the cultural practices, whether at home or in farming or craftsmanship are not brought out. There is a good deal of indigenous science and technology that forms the basis of African traditional medicine, agriculture, food processing, and other cultural practices. This needs to be exposed so that the people develop a sense of self-confidence through an awareness of the fact that their ancestors have evolved intelligently by developing their own science and technology. Once this self-confidence is established the myths surrounding exogenous science and technology will be removed, and there will be better acceptance, understanding and application of science and technology.

53. The school programme should have greater emphasis on the study of science and technology. University research programmes should seek to demystify African cultural practices, upgrade the basic science and technology inherent therein, and build on what already exists, rather than parachuting foreign concepts and practices that require time to take root. Such programmes would have a greater involvement of the grassroots, and will thereby ensure their success.

54. It was brought out that women play a very important role in the production, processing and marketing of food products in Africa. Any science and technology that is brought in should consider how they can affect the women. Very often the moment a new technology is adopted, the women are disadvantaged vis-as-vis the men who take away the benefits that the women enjoyed. Research and development should intervene so that women are provided with improved technologies which they can use at their own level. A few case-studies were mentioned highlighting the above. Eventually a series of recommendations were made to make science and technology more effective by incorporating cultural dimensions in the programmes.

55. Following the presentation by ECA secretariat participants expressed their appreciation of ECA work in this area and the report presented which deals with very important dimensions of science and technology development. The discussion on the cultural aspects of science and technology revolved around traditional knowledge and the role of women. Traditional medicine should be improved further by greater interactions between medicine men and the medical practitioners. A cross-fertilization of these two approaches would help reduce the shortcomings associated with each of them, such as the lack of precise dosage in the first approach and the low availability of modern practitioners in some areas in addition to the lack of foreign currency to buy imported medicine in the second approach. Traditional medicine should also be enhanced by greater industrialization of production, including quality control and packaging. In this respect success stories are few.

56. As regard to the role of women many countries have created a ministry or a service dealing with women's affairs and programmes and activities are carried out to promote the interests of women. It has been reported that in rural areas the benefit of improved technologies are often seized by men to the detriment of women. So special attention should be paid to make sure that women are also benefiting from technological change and that their status is not adversely affected in the process of technological modernization.

Environment and Development (Agenda item 11)

57. A representative of the secretariat briefed the meeting on the questions relating to the environmentally sound technologies which were considered by the eleventh session of the UN Intergovernmental Committee in April 1991. These questions were likely to feature in the United Nations Conference on Environment and Development (UNCED) scheduled for June 1992 in Brazil and it was important for Governments to prepare themselves to deal with them. Another representative of the secretariat outlined the key preparatory activities for the UNCED which so far culminated into the Cairo Common Position on African Environment and Development Agenda adopted by the African UNCED Preparatory Conference held on Cairo from 11-16 July 1991. He added that a ministerial conference is scheduled in Abidjan from 14 to 15 November 1991 at which the common position adopted in Cairo will be consolidated into an African Position in preparation for Prep. Comm. IV.

Issues for the 8th Meeting of the Intergovernmental Committee of Experts for Science and Technology Development (Agenda item 12)

58. A representative of the secretariat introduced document S&T/IGCESTD/7/11 containing proposals on the agenda items for the eighth meeting of the Intergovernmental Committee. He also drew attention of the meeting to the operative paragraphs of Commission Resolution 385(XV) which sets out the terms of reference of the Committee. Following this introduction a lively debate ensued on the secretariat's proposals and on new items which the participants proposed. The following list of issues was finally agreed.

1. Effectiveness of national institutions for science and technology policy.

2. Role of non-governmental technological associations and professional service institutions in strengthening regional and sub-regional cooperation.

3. Management of science and technology.

4. Technology assessment with emphasis on environmentally sound technologies and new and emerging technologies.

5. The impact of science and technology implementation strategies on economic development and its implications for national planning

6. Identification of traditional technologies in the fields of food production, industry and medicine.

Adoption of the Report and Closure of the Meeting (Agenda item 13)

59. The Committee examined the draft report presented by the rapporteur as well as the recommendations and the draft resolution. The Committee adopted them after affecting the necessary modifications. The recommendations and the draft resolution are annexed to the report.

60. The Chairman expressed his gratitude to the participants and to the secretariat and the technical staff for their valuable contributions to the smooth conduct of the meeting, after which he declared the meeting closed.

RECOMMENDATIONS

The seventh meeting of the Intergovernmental Committee of Experts for Science and Technology Development made the following recommendations.

To member States

1. To make an effort to subscribe to the financing of projects approved by the Subregional Working Groups while soliciting funds outside as complement.

2. To apply the recommendations of the study on the performance of science and technology policy institutions in selected African countries

3. To put into place structures which will enable the users to benefit from research results and to put an emphasis on the education system oriented towards science and technology.

4. To encourage the private sector participate to the efforts of governments through legislation granting tax advantages to those that invest in the development of science and technology.

5. To indicate clearly the economic consequences of scientific activities and to operationalize the link between science and technology and development; to this effect each technical department should have a focal point for science and technology which can be an intersectoral link with the national institution coordinating science and technology policy.

6. Countries which have not already done so, to send to the secretariat of the UNECA information concerning special funds to promote science and technology.

7. To diversity sources of financing of scientific activities and to highlight the economic resources really allocated to the development of science and technology.

8. To put into place research and application programmes on local materials and encourage researchers to work on the development of appropriate technologies. and to put into place incentives to encourage small and medium businesses to use local materials.

9. To take incentive measures to retain African scientists and researchers on the continent, as well as for their effort to find solutions to local problems.

10. To develop industrial capacity and to associate all interested parties (industrialists, economists, traders, scientists) to the definition of science and technology priorities for development.

11. To put into place small and medium scale industries to manufacture various types of equipment including school equipments.

12. To pay their contributions to the regional science and technology organizations and intergovernmental institutions which should address themselves to problems confronting member States.

To the ECA/UNIDO secretariats

13. To collaborate in the organization of a workshop on new materials and to put into place an African network of valorization of these materials, taking due account of the implication of these.

To the ECA/FAO/UNIDO/WHO

14. To undertake a study of identification of traditional technologies in the main fields of production of food, industry and medicine. The progress report of this study should be presented to the 8th meeting of the committee.

To the ECA/UNESCO/OAU secretariats.

15. To carry out, in collaboration with national and international organizations, specific programmes to promote and propagate a scientific culture in Africa, highlighting the role of women in this field and paying more attention to the use of local languages where possible, in the popularization of science and technology.

RESOLUTION

Establishment of a Conference of African Ministers of Science and Technology for Development

The Conference of Ministers,

Recalling Commission Resolution 248 (X1) of 22 February 1973 by which it established the Intergovernmental Committee of Experts for Science and Technology Development,

Recalling also its resolution 385 (XV) which opened the membership of the Intergovernmental Committee of Experts for Science and Technology Development to all African member States,

Noting the special appeal in operative paragraph 4 which called on member States to designate focal points for the work of the Intergovernmental Committee and to ensure continuity in their representation on the Committee,

Recognising that since the establishment of the Committee in 1973, the issues of science and technology in the region have grown rapidly in importance and complexity, and that there is a desire for a coordinated approach in tackling these issues among the member States,

Recognising that in view of the priority being given to science and technology as an essential tool for the proper exploitation of Africa's natural resources, many member States have set up Ministries of Science and Technology and the number of such ministries has increased,

Recalling that the Treaty establishing the African Economic Community which was signed by the African leaders at the OAU Summit in Abuja, in June 1991, places considerable emphasis on the role of science and technology in the future development of the African continent, and calls for specific actions to strengthen the technological capacities of the member States and to promote technological self reliance,

Convinced that the attainment of the objectives of the science and technology component of the African Economic Community will require concerted effort between OAU, ECA and ADB and contributions from the African intergovernmental science and technology institutions, and relevant international organizations in the development and consolidation of common strategies and policies,

1. **Urges** the Governments of African countries to take explicit measures, individually and collectively, to build up their endogenous capacities in science and technology,

2. **Urges also** the Governments of African countries to participate effectively in the subregional and regional initiatives with a view to achieve the science and technology targets in the Treaty establishing the African Economic Community,

3. **Decides** to establish a Conference of African Ministers responsible for science and technology for development to ensure the required political and financial support to the work of the Intergovernmental Committee of Experts for Science and Technology Development, and to provide the forum for development and appraisal of concerted national and regional strategies and programmes for promoting science and technology in the socio-economic development of member States, and calls upon the OAU General Secretariat to cooperate in the implementation of this resolution,

4. **Decides** that the Conference of Ministers of Science and Technology for Development should meet every two years in conjunction with the meetings of the Intergovernmental Committee of Experts.

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