



UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL



50084
Distr.: GENERAL
E/ECA/CM.10/25/Summary
5 April 1984
Original: ENGLISH

ECONOMIC COMMISSION FOR AFRICA

Fifth Meeting of the Technical
Preparatory Committee of the
Whole

Conakry, Guinea, 16-23 April 1984

Item 6(c) of the provisional agenda

ECONOMIC COMMISSION FOR AFRICA

Nineteenth Session of the Commission
and Tenth Meeting of the Conference
of Ministers of the Commission

Conakry, Guinea, 26-30 April 1984

Item 8 IV of the provisional agenda

REGIONAL REVIEW AND APPRAISAL OF PROGRESS ACHIEVED
IN THE IMPLEMENTATION OF THE VIENNA PROGRAMME OF ACTION
ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT IN AFRICA
EXECUTIVE SUMMARY

(This document has been issued without formal editing)

EXECUTIVE SUMMARY

Regional review and appraisal of the progress achieved in the implementation of the Vienna Programme of Action on Science and Technology for Development in Africa

Introduction

1. The Vienna Programme of Action on Science and Technology for Development evolved out of the United Nations Conference on Science and Technology for Development which was held in Vienna, Austria in August 1979. The conference could be described as the turning point for science and technology since it was held at the height of discussions and global concerns on the need for a New International Economic Order and a new orientation on the North-South dialogue. The conference was supposed to show that one part of the world cannot expect to develop without the other and that science and technology is an important tool in the development process. Although some issues were not resolved at Vienna, the General Assembly endorsed the Vienna Programme of Action at its thirty-fourth session in December 1979, and also created a machinery for its implementation.
2. The machinery included the following:
 - (a) the Intergovernmental Committee on Science and Technology for Development hereinafter referred to as the Intergovernmental Committee which was charged among others with the task of evolving an operational plan for the implementation of the Vienna Programme of Action.
 - (b) the United Nations Centre for Science and Technology for Development (UNCSTD).
 - (c) the United Nations Financing System for Science and Technology for Development (UNFSSTD) which was expected to finance activities for strengthening the indigenous scientific and technological capacities of developing countries particularly and to assist in the implementation of the measures envisaged in the Vienna Programme of Action.
3. In compliance with the decision of the thirty-fourth session of the General Assembly, the Intergovernmental Committee approved the Operational Plan for the implementation of the Vienna Programme of Action which specified eight programme areas on which to concentrate efforts. These are:
 - I. Science and Technology policies and plans for development.
 - II. Creation and strengthening of scientific and technological infrastructures.
 - III. Choice, acquisition and transfer of technology.
 - IV. Development of human resources for science and technology.
 - V. Financing of science and technology for development.
 - VI. Scientific and technological information.
 - VII. Strengthening of research and development in and for developing countries and their linkage to the production system.

VIII. Strengthening of co-operation in the field of science and technology among developing countries and between developing and developed countries.

4. In reviewing the implementation of the Vienna Programme of Action it should be stressed that some of the activities are a continuation from the pre-Vienna era. Furthermore, it is worth mentioning here that the world economic crisis at the time of the Vienna Conference has continued to worsen thus upsetting some of the hopes which were entertained at the conference.

Objectives of the review

5. The review and appraisal of the progress achieved in the implementation of the Vienna Programme of Action and its Operational Plan was foreseen in the approved Medium Term Plan for the period 1984-1989 as well as in the ECA Programme of Work for 1984-1985. This review is meant to place at the disposal of the governments of African Governments, information and conclusions obtained so far in the process of the evaluation of the implementation of the Vienna Programme of Action on Science and Technology for Development and its operational plan, the former having been adopted by the General Assembly in December 1979 and the latter by the Intergovernmental Committee on Science and Technology for Development in June 1981.

6. In preparing this review certain basic problems were encountered, the major one being the lack of data and statistics to enable an accurate framework of the trends prior to and post-Vienna to be undertaken. Of the 50 questionnaires circulated to all ECA member States by the United Nations Centre for Science and Technology for Development, only 15 had been received at the time of undertaking the review. It was therefore necessary to enlarge on the information base through missions to a limited number of countries, as well extensive literature review. It would be in the interests of all concerned if officials in government took seriously the question of reacting to questionnaires from United Nations agencies since such reactions will help build the badly lacking data base on manpower, financing and several other issues relating to science and technology capability building in Africa.

The science and technology situation before Vienna

7. By the time of the Vienna Conference, 9 countries in the region had ministries of science and technology or a ministerial science policy committee, 15 countries had set up a science planning body, 6 countries had bodies for co-ordination of research and 20 countries did not have any science and technology policy organ of any type. These bodies were mostly in their formative stages and could not have been very effective in integrating science and technology into the planning mechanism. The infrastructure for science and technology bore various weaknesses structurally and functionally, lacked appropriate staff and finance and its linkages with the productive sector was weak. In the acquisition and transfer of technology special weaknesses existed in the lack of capacity at national level to safeguard national interests in this regard. With regard to manpower for science and technology most countries faced critical needs both in terms of numbers and skill formation. Misdeployment and the brain drain compounded the problem further. In spite of repeated calls for increased resources for science and technology activities the targets were largely not realised. And the under-investment in science and technology development limited the growth in the these critical fields. The area of scientific and technological information

was poorly developed both in terms of trained documentalists and documentation centres. Limited but determined attempts were underway to establish and strengthen information systems at subregional and regional levels. With regard to R & D activities significant achievements had been made particularly in the agricultural, health and biological sectors. Linkages with the productive sectors were rather weak and the impact of R & D remained limited as a result.

The Lagos Plan of Action

8. In spite of these and other achievements in the area of science and technology, the lack of impact of science and technology on the development was forcefully underlined at a regional preparatory meeting prior to the Vienna Conference so were the various problems which brought this about. The unsatisfactory outcome of the Vienna Conference further spurred the region in evolving a fresh framework for the development of science and technology. This framework eventually constituted the Science and Technology Chapter of the Lagos plan of Action for the Implementation of the Monrovia Strategy for the Economic Development of Africa adopted by the Second Extraordinary Assembly of the OAU Heads of State and Government in Lagos, Nigeria in April 1980.

9. The Science and Technology Chapter of the Lagos Plan of Action clearly spells out the role of science and technology. The chapter has also eight programme areas which are complementary to the eight programme areas of the Vienna Programme of Action. In fact the complementarity of these plans led the General Assembly to recommend that the regional plans be taken into account in accelerating development in various regions. The General Assembly further recognised that the Lagos Plan of Action had gone into more finite sectoral details of concern to Africa and suggested that priorities in the Lagos Plan of Action should be taken into account in the implementation of the Vienna Programme of Action. Several studies coming out after the adoption of the Lagos Plan of Action recognise its importance, and it would be important if the implementation of this plan was more rigorous than it is.

Post Vienna Trends

10. From the limited data and information considered during the review, the implementation of the Vienna Programme of Action could be said to have recorded positive trends in two programme areas. The programme area on Science and Technology Policies and Plans has definitely recorded positive results with the number of ministries for science and technology doubling within four years and the number of countries with no science and technology planning bodies falling from 20 to 12 in the region. The operations of these bodies still remains a problem to be reviewed later. In the evolution of science and technology plans, only 5 countries have reported positively as having a policy although the implementation of the same has been difficult and their integration into the development plans has been problematic. The second programme area that has recorded progress is the strengthening of co-operation in the field of science and technology among developing countries and between developing and developed countries. Active subregional co-operation including co-operation in science and technology is now a very strong feature and co-operation among developing countries is getting stronger especially between Africa, Asia and Latin America. This is indeed a very positive trend since this co-operation is needed to further Africa's developmental goals.

11. Overall the other six areas have registered little progress, though certain positive trends were observed. Policy-making and planning in science and technology received increased attention, though its integration in overall socio-economic planning is yet to be achieved. Institutions have been strengthened and new ones established; however the problem of procuring equipment and their subsequent maintenance is exacerbated by the foreign exchange constraints. With regard to the choice, acquisition and transfer of technology, a few countries have taken steps towards the establishment of new mechanisms, or to strengthening of existing national mechanisms including legal instruments for the regulation of technology inflow. Human resources development for science and technology has been an area on which a lot has been said in the face of increasing deficits and increased reliance on external supplies in certain critical areas. Enrolments in the various levels have increased, impressive developments at the post-graduate level intakes recorded in few African countries, and regional training and network programmes have been strengthened. However the questions of the relevance and quality of education in the scientific and technical fields calls for further attention. New avenues for the internal generation of additional resources for science and technology activities have been explored but the overall allocations to this sector remain inadequate. In the area of scientific and technological information, countries need to establish systems that are relevant to the needs and the literacy levels in their respective areas. Regional networks for collection and dissemination of information have been started but it is rather too early to assess their impact so far. Research and development and its poor linkages to the production system still remains problematic.

Proposed solutions

12. In spite of the positive trends alluded to above, there is still room for more concerted action in building up the necessary capabilities in science and technology. It is to be hoped that member States would focus attention on this problem in their endeavour to speed up the implementation of the Vienna Programme of Action. In a summary of this nature it is not easy to bring out explicitly aspects of the problems facing the Implementation of the Vienna Programme of Action on Science and Technology Development in Africa and propose adequate solutions. However an attempt in this direction has been made in the following sections.

(a) The planning system

13. The socio-economic situation prevailing in a country largely determines the philosophy and objectives of planning. A sound planning system must consequently be positively anticipatory and far-sighted. It must align itself in such a way that development is viewed as a socio-economic process with goods and services provision to the majority being the paramount aim. This approach calls for a holistic approach to planning and as such rendering the traditional view that only economists can be planners obsolete. Planning should now be viewed as a collective exercise where scientists, technologists, economists and the people themselves are all active participants in the process. This calls for a completely new approach to planning with perspective planning playing a major role in the whole exercise. Science and technology can most meaningfully contribute to development if longer term goals are aimed at but shorter-term goals extracted from the former.

(b) Priority setting:

14. A system of priority setting must be the basis of a sound planning system. Priorities can be divided into those that are income generating and those that are income consuming in order to provide basic needs and services. In the first category can be several activities but, in Africa, a few cut across the board. Those include: increased agricultural production, development of capabilities to exploit the natural resource base, establishment of a sound industrial base and increasing intra-African trade.

15. On the side of basic needs provision, several cut across borders. These are self-sufficiency in food, better health, energy provision and transport and communications. In viewing these needs it must be stressed that now the thrust must be in more efficient delivery systems to ensure that basic needs and services reach where they are most needed at the right time. Inefficient provision of basic needs and services is a drain on resources that Africa can ill afford.

(c) Difficulties of institutional and organisational nature:

16. As has been mentioned earlier, although most countries have now a body of sorts to look after science and technology matters, the situation is far from satisfactory. This is particularly so as regards location and operation of these bodies. Each member State will have to evaluate its own system but it is apparent that a few conclusions are pertinent here.

- (i) among the 12 countries with no science and technology planning and policy-making machinery, options should be examined with a view to setting up such a body;
- (ii) where it is economically feasible, a separate ministry of science and technology should be formed and charged with all science and technology matters in the country.
- (iii) where a ministry is not feasible, a council or such level body should be charged with all science and technology matters and be the main umbrella for all research institutions in the country;
- (iv) member States of the region should as a matter of urgency try to evolve science and technology policies and plans, budget the programmes and use these as priorities for proposing options for economic development. Such policies and plans should be integrated into the national development plans of each country and implemented.

(d) Science and technology data and statistics:

17. The difficulties of obtaining accurate data and statistics on development in Africa are so widespread that this particular shortcoming needs to be looked at seriously and overcome in the region. Efforts by United Nations bodies and other organisations are usually frustrated by officials in government who claim to be too busy. However, this problem could be overcome if junior officers in the civil service and university students could be used to compile basic sets of data under very close supervision of senior officers. The United Nations bodies and others could also help by sending in teams of experts to work with such officials. This should, however, be done in a co-ordinated manner to avoid spending time on data collection only.

(e) Inadequacy of financial resources for science and technology:

18. Several conferences have recommended that all African countries should endeavour to achieve a level of expenditure of 1% GNP on science and technology activities. Close scrutiny of most national budgets show that the majority of countries have not even achieved 0.5% of their GNP for science and technology expenditure. Development is an expensive exercise which calls for enormous resources. Another problem in the budgets of most African countries is that a large proportion of the funds allocated to science and technology are voted for personnel emoluments and administrative overheads. There is very little money spent on operational activities which would generate results. Several solutions are made to help alleviate this problem. These include:

- (i) each country in the region should attempt to attain the target of 1% GNP to be spent on science and technology activities - particularly research and experimental development. A new target of 1.5% GNP should be aimed at by the year 1990 by each country.
- (ii) all science and technology institutions in Africa should take programme budgeting very seriously and such budgets should include costed projects with clear cut objectives and targets. Such operational funds should be separated from recurrent expenditures for personnel emoluments and overheads;
- (iii) a science and technology levy of 1% gross earnings should be introduced and levied to all industrial concerns operating in each country so as to augment funds from the public sector;
- (iv) donor agencies should be encouraged to donate funds for operational purposes and also for acquisition of equipments and instruments for research institutions in Africa.

(f) Shortage and misdeployment of science and technology manpower at all levels:

19. In 1974 CASTAFRICA recommended that countries with a GNP per capita of \$200 and above should set a target of 2000 scientists per million inhabitants by 1980 of which 200 should be in research and development. This target has not been met and it is unlikely to be met at the present pace of events. The most deplorable aspect of this manpower development is the rampant misdeployment of the few available people. The remuneration is normally poor and the working atmosphere not conducive to the scientific and technological activities. This area needs corrective measures at national levels beginning with proper curricula, at all levels of education, which are closely linked to the natural resource base of the country. Bold steps should be taken to recruit and retain the right calibre of manpower for science and technology activities and higher educational institutions expanded. Incentives for inventions and originality should be introduced.

(g) Lack of appropriate structures for dissemination of research results and weak linkages to the productive sector:

20. The furtherance of research in Africa has been stifled for long by this short-coming. There are hardly any scientific journals in Africa that are self-supporting and even if there were, the high illiteracy rates would restrict the utilisation of such journals by a large portion of the community. The linkages between research and

the users is so weak that most research results generated end up on the shelves of libraries and laboratories. Very often this is so because most countries hardly provide any funds for experimental development to the pilot stage and eventually for commercialisation of such enterprises. This problem could be alleviated if more funds were provided for experimental development and if each research establishment established a strong research liaison linkage department to the users.

(h) Co-operation:

21. There is no doubt that co-operation at all levels needs to be looked at seriously so that the developing countries may gain more from each other's experiences. The type of North South co-operation obtaining in the 60's and 70's seem inappropriate for the future since the philosophy and tactics of development seem to have changed drastically nowadays. Closer co-operation between African countries and between developing countries must be strengthened in order to enable these countries learn from one another.

Conclusion:

22. In conclusion, it would appear that the spirit of Vienna Programme of Action on Science and Technology for Development seems to have been greatly dampened by the events that have taken place since then especially at international level. The targets set for funding of activities leading to the implementation of the Vienna Programme of Action were overly optimistic and seem not likely to be met if the present trend of such events persists. African countries must stress on self-reliance in implementing the Vienna Programme of Action and the Lagos Plan of Action in order for them to meet the goals set by these two plans. This will call for a reorientation of their strategies with more reliance on local financing since the viability of the United Nations Financing System for Science and Technology for Development seems to be in question. A collective stand on this matter is absolutely necessary if the region is going to forge ahead in development in the next decades.

23. There is urgent need to devote more of the national financial resources to science and technology, and to strengthen the infrastructure that is required to make science and technology play a more effective role in the socio-economic development of the countries.