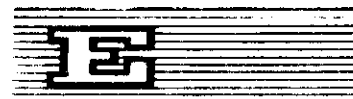




UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL



Distr.
GENERAL

E/ECA/TPCW.3/7
February 1982

Original: ENGLISH

ECONOMIC COMMISSION FOR AFRICA

Third meeting of the Technical
Preparatory Committee of the Whole

Tripoli, Libyan Arab Jamahiriya
19-23 April 1982

REPORT OF THE CONFERENCE OF VICE-CHANCELLORS/PRESIDENTS/
RECTORS OF INSTITUTIONS OF HIGHER LEARNING IN AFRICA
(Jointly sponsored by ECA, AAU
in collaboration with OAU and UNESCO)
Addis Ababa, 25-29 January 1982

A. ATTENDANCE AND ORGANIZATION OF WORK

1. The first Conference of Vice-Chancellors, Presidents and Rectors of Institutions of Higher Learning in Africa was held from 25 to 29 January 1982 at Africa Hall in Addis Ababa (Ethiopia). It was jointly organized by the United Nations Economic Commission for Africa (ECA) and the Association of African Universities (AAU) in collaboration with the Organization of African Unity (OAU) and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

2. The main theme of the Conference was: "Orientation of higher Education institutions in the development of human resources to meet the changing socio-economic needs of African States". A key reference point in this regard was the Lagos Plan of Action which had emerged from a realistic appraisal by Heads of African States of the underdevelopment and economic situation of the African continent since independence.

3. The primary objectives of the Conference were:

- (a) Review of the role of institutions of higher learning in Africa in the implementation of the Lagos Plan of Action and subsequent development of strategies for:
 - (i) Adaptation of the curricula to the requirements of national development;
 - (ii) Harmonization of the course offerings of higher institutions with the socio-economic development needs of African States;
 - (iii) Contributions by institutions of higher learning to the economic development of African States by producing the quality and quantity of trained manpower needed by nations in their drive for economic self-sufficiency;
 - (iv) Contribution by institutions of higher learning in the production of goods and services such as spare parts, instructional materials, laboratory equipment, textbooks, etc. needed by the nation, and providing consultancy and advisory services;
 - (v) Establishment of suitable links between education, training and employment activities and very close liaison with industry;
 - (vi) Devising effective methods for evaluating research results and disseminating information to those in authority and to the private sector;
 - (vii) Training educators with a view to encouraging educational innovation and educators' participation in preparing and using educational reform and innovations, and training research workers in educational problems solving;

(b) Examination of strategies for maximizing the use of staff, instructional and residential facilities and capabilities of African institutions of higher learning;

(c) Assistance in defining priorities for regional and international co-operation in educational research, staff development, production of instructional material, promotion of scientific research in lower and higher-level institutions, exchange of information and the development of science and technology.

(d) Formulation of a strategy for the development of high-level manpower for the exploration, exploitation and processing of Africa's untapped mineral resources, for the transfer, adaptation and indigenization of technology, and for community work and rural development.

4. A secondary objective was to share ideas on how to raise the intellectual level of the African region for the benefit of African societies and how best higher institutions might help to develop science and technology and be involved in development work at the national and regional levels.

5. The Conference was attended by 150 representatives comprising Vice-Chancellors, Presidents, Rectors, professors, scholars and high-level officials from the following 63 institutions of higher learning in 26 African States: Universidade de Angola (Angola); Université de Burundi (Burundi); Université Marien Ngouabi (The Congo); Menafia University, Minya University, Cairo University, Mansoura University, Tanta University, Suez Canal University, Helwan University and Ain Shams University (Egypt); Addis Ababa University, Commission for Higher Education of Socialist Ethiopia, Debre Zeit Agricultural College, Awasa College of Agriculture, Dire Dawa College of Agriculture, and Asmara University (Ethiopia); Ministry of Education - Département des Etudes (Equatorial Guinea); The Polytechnique, Conakry, and Directeur de l'enseignement supérieur, Conakry (Guinea); Université d'Abidjan (The Ivory Coast); Kenyatta University College and University of Nairobi (Kenya); University of Liberia (Liberia); Garyounis University (Libya); Arab Jamahiriya; Institut agronomique et Veterinaire Hassan II, Rabat (Morocco); Federal Polytechnic, Bida, the Polytechnic, Ibadan, the Polytechnic, Owo, University of Port Harcourt, University of Ife, University of Ibadan, Federal Polytechnic, Idah, University of Lagos, University of Sokoto, University of Nigeria, Nsukka, Yaba College of Technology, Federal Polytechnic, Akure, Murtala College of Arts, Science and Technology, Benue State, Ogun State Polytechnic, Bayero University, Kano, Benue Polytechnic, Makurdi, Rivers State University of Science and Technology, Port Harcourt and the Polytechnic of Sokoto State (Nigeria); Université de Rwanda, Bukare, Directorate of Commerce, Kigali, and Ministère de l'enseignement supérieur, Kigali (Rwanda); Université des Mutants, Gorée (Senegal); Juba University, University of Khartoum, Gezira University and Islamic University, Omdurman (The Sudan); Université de Benin (Togo); Makerere University and Inter-University Council for East Africa, Kampala (Uganda); University of Yaounde (United Republic of Cameroon); Université de Lubumbashi, Université de Kisangani, Université de Kinshasa (Zaire); University of Zambia and University of Zimbabwe.

6. The Conference was also attended by representatives of the African Adult Education Association (AAEA); African Association for Public Administration and Management (AAPAM); African Institute for Higher Technical Training and Research (AIHTTR); The International Institute and Tropical Agriculture (IITA) and the Regional Institute for Population Studies (RIPS).

7. The following United Nations agencies and bodies were represented: United Nations Industrial Development Organization (UNIDO), United Nations Development Programme (UNDP), International Labour Organization (ILO), Food and Agriculture Organization of the United Nations (FAO), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Health Organization (WHO), and the International Trade Centre (ITC).

8. The Association of Commonwealth Universities (ACU), the Canadian International Development Agency (CIDA) and the Commonwealth Secretariat were represented by observers.

9. Observers were also present from the following diplomatic missions in Ethiopia: Burundi, the Congo, Egypt, Equatorial Guinea, France, Gabon, Ghana, Guinea, the Ivory Coast, the Libyan Arab Jamahiriya, the Niger, Rwanda and the United Republic of Cameroon.

10. The United Nations Economic Commission for Africa (ECA), the Association of African Universities (AAU) and the Organization of African Unity (OAU) served as the secretariat for the Conference.

11. The President of Addis Ababa University, Prof. Duri Mohamed, was elected chairman with the Vice-chancellors of the Universities of Ife, Prof. C. A. Onwuechili and Juba, Prof. A. Abuzayd, and the Rector of the University of Brazzaville, Prof. Daniel Abibi as Vice-chairmen. The Rector of the Federal Polytechnic, Bida (Nigeria), Dr. George A. Adebiyi was elected Rapporteur General.

B. AGENDA

12. The following agenda was adopted:

1. Opening addresses:
2. Election of officers
3. Adoption of agenda and programme of work
4. Keynote papers:
 - (a) The role of higher education in meeting the manpower requirements for the implementation of the Lagos Plan of Action in the 1980s
 - (b) The preparation of manpower for industrial development
 - (c) Changing development objectives, strategies and education for self-reliant economies in Africa: Education for innovation and economic development

- (d) On maximizing the contribution of African universities to national development
 - (e) Policies and strategies for the optimal utilization of resources for educational development
 - (f) The development of university delivery capabilities and capacities
 - (g) The role of second level education and its relation to third level education in conditions of dynamic socio-economic change in Africa
5. Group discussions:
- (a) Re-orienting the role of higher education institutions for the implementation of the Lagos Plan of Action
 - (b) Education for innovation and economic independence
 - (c) Maximizing resource utilization in institutions of higher learning in Africa
 - (d) Co-operation in the development of education, research, instructional materials/text books and specialized training
6. Follow-up activities and line of action
7. Any other business
8. Adoption of the report
9. Closure of the Conference

C. ACCOUNT OF PROCEEDINGS

Opening addresses (item 1)

13. The Conference was formally opened by Comrade Goshu Wolde, Minister of Education of Ethiopia. The Minister welcomed all participants to Ethiopia and expressed his Government's appreciation that Addis Ababa had been chosen as the venue for the Conference.

14. The key points in his opening address on the theme of "The Lagos targets for the year 2000 and the responsibilities of African institutions of higher learning" were:

- (a) The importance of marrying higher education with the economic development of Africa within the framework of the obligations placed on the region in the light of the Lagos Plan of Action;

(b) The responsibility of institutions of higher learning in translating the clear and demanding targets set for Africa for the year 2000 into detailed programmes of action whose scope would include accelerated manpower training as well as research and development activities aimed at the rapid development of the continent. Thus, whereas the Lagos Plan of Action had identified what needed to be done, the concern of the Conference was on how third-level institutions could most effectively participate in the implementation phase:

(c) The Conference was expected to provide an input to a meeting of African Ministers of Education scheduled for July in Salisbury on the distinctive contribution to be made by third-level education in order to achieve an integrated view on how education could enhance the realization of the Lagos Plan of Action;

(d) The task facing third-level institutions in Africa imposed very stringent demands on them:

- (i) How they could produce the required manpower in the shortest possible time, and ensure appropriate quality;
- (ii) Subordination of personal interests in educational objectives to the more important social obligations;
- (iii) Resolving the widespread problem of inverted priorities;
- (iv) Developing new attitudes conducive to producing the desirable socio-economic changes;
- (v) Operating more efficiently with the scarce resources available;
- (vi) Making programmes more relevant to the real development needs in Africa and integrating them better in society etc.

15. He concluded by wishing the Conference a successful outcome which would serve as the prelude to energetic action in full support of the Lagos Plan of Action to achieve the goals of rapid self-reliance and self-sustaining development and economic growth in Africa.

16. The Executive Secretary of ECA, Prof. Adebayo Adedeji, welcomed all participants and observers to Africa Hall where, he said, many decisions on African development had been taken within the last 24 years. He referred to the well-known Addis Ababa targets which had been set nearly 21 years before for the development of education in Africa. The more recent Lagos Plan of Action, he observed, was an essential strategy designed to ensure the very survival and development of the African continent in the face of the past failures.

17. After highlighting the priority objectives of the Lagos Plan of Action, he drew attention to the role which third-level African educational institutions would be required to play in the realization of the targets set within the Plan. Third-level institutions had a vital role to play in the development of manpower of the right quantity, the right quality and with direct relevance to meeting the needs of socio-economic development.

18. He called on third-level educational institutions, individually and collectively, to re-examine their roles in agricultural and rural development and in industrialization and technological innovation. Moreover political and administrative entities should grant proper recognition to third-level institutions, vis-a-vis the role they could play in the development effort, and therefore involve such institutions increasingly in planning the necessary development.

19. He concluded with a set of concrete suggestions for consideration by the Conference.

20. The OAU representative, speaking on behalf of the Secretary-General of that organization, referred to the need for greater efforts to be mobilized to implement the Lagos Plan of Action. Those efforts were needed in all sectors and especially in the development of human resources through education. The latter required re-orientation so as to make its products more integrated in society and more imbued with traditional values. He called on the Conference, among other things, to look into strategies that would help to eradicate at least some of the problems of education facing the continent and to consider innovations on the translation of new technology into local languages so as to aid the process of Africanization and democratization of technical know-how.

21. A statement from the African Association of Universities was delivered by its Secretary-General. He said that third-level institutions had emerged all over the continent in the last 20 years but that the debate still continued as to how they could be made more relevant and functional in satisfying African needs. In spite of the phenomenal growth in the establishment of universities, an African university with a distinctive identity had yet to emerge. The African university should be one which concerned itself with producing manpower relevant to the socio-economic, cultural and political development needs of Africa, and with research and development activities in the engineering and medical sciences, etc. Universities, should now come down from their ivory towers to develop the confidence needed of them to solve Africa's problems of underdevelopment. Such a move could bear greater fruit if carried out within the context of regional co-operation.

22. The conference also heard a message from the UNESCO Director-General, Amadou Moutar Mbow. The message recalled that UNESCO had been preoccupied with the growth and development of higher education in Africa for some time now, and had conducted several activities, including meetings to have that level of education developed in Africa. The deliberations and conclusions of the conference should be a valuable input to the agenda of the forthcoming Conference of African Ministers of Education in Salisbury, Zimbabwe.

23. The UNDP Assistant Administrator and Regional Director for Africa appealed to African universities and third-level educational institutions to be more deeply involved in activities that would enable African countries to face their development challenges. The orientation of teaching and

overall organization of third-level institutions had to reflect the current concerns of African countries, and should aim at producing intellectuals capable of contributing more positively to African development. He noted that the proposed African Institute for Future Studies would, if supported and guided by national institutions handling appropriate national programmes on future studies, go a long way towards helping Africans to prepare the ground for their future progress. He concluded by assuring the conference of the interest of UNDP in, and its continued support of, the work of African universities. He expressed his wish that action programmes would emerge from the Conference which would more positively involve universities in the implementation of the Lagos Plan of Action.

Keynote papers (item 4)

The role of the higher education in meeting the manpower requirements for the implementation of the Lagos Plan of Action (item 4 (a))

24. Two papers were presented in examining the above subject.

25. In introducing the paper entitled "The role of higher education in the implementation of the Lagos Plan of Action" (PAMM/AAU/ED/1/82), the ECA secretariat indicated that an explanation was given of the background to the formulation of the Plan.

26. Serious deficiencies were apparent in Africa's approach to development. The economic systems in Africa had evolved from a colonial pattern in which the countries of the "south" exported raw commodities to some 15 to 20 developed countries comprising what was known as the "north". That pattern had persisted in Africa since the colonial era.

27. Some of the more serious shortcomings of the African approach to economic development were highlighted in the ECA paper:

(a) Price stabilization schemes which had never worked to the advantage of the African countries because of wrong assumptions such as an "unlimited appetite" in the "north";

(b) Dependence on "mono-product" export arrangements for achieving development whereas, in fact, there was an abundance of natural resources for socio-economic development locally;

(c) Terms of trade were invariably loaded against the countries of the south;

(d) Major imports of invisibles such as education, consultancy, banking, and other services tended to amount to a substantial drain on foreign exchange.

28. At a fundamental level, the African approach to development which relied on export trade for development was abnormal. Even Japan, a leading exporter, concentrated its production in the home market. Thus the abnormal approach to development in Africa had also conditioned and determined the factor inputs, including education and research.

29. The Lagos Plan of Action therefore addressed a number of key areas relevant to the achievement of socio-economic development in Africa:

(a) Self-reliance (internal stimulus, rather than external, to growth) to be achieved by:

(i) transformation of the domestic market;

(ii) product substitution;

(iii) factor inputs designed to reduce external dependence;

(b) Development of the physical and material base necessary for achieving economic growth;

(c) Examining the special problems of entrepreneurship;

(d) Producing specialized manpower as required;

(e) Local production of equipment and parts;

(f) Development of appropriate technology (not as "ornaments" but as "instruments");

(g) Appropriate strategy for financing geared to enhancing the speed with which Africa could reproduce what otherwise had to be imported.

30. The paper drew attention to the various dimensions involved in what the third-level institutions could contribute to African developmental objectives as set out in the Lagos Plan of Action. Higher education institutions were accordingly called upon to examine closely a list of critical issues:

- higher education and the service
- higher education and the business world (including indigenous private and public enterprise)
- higher education and the rural sector
- higher education and domestic market dynamics and transformation
- higher education and the development and use of the talents of more than half of the population i.e. women
- higher education and the external brain drain
- higher education and manpower and education planning
- higher education and the problem of mass communication
- higher education and problem-oriented research
- higher education and studies of the future, etc.

31. Higher education institutions were asked to examine their new role with a view to assessing

- (a) The rate of growth of knowledge and its effects on the content and methods of teaching;
- (b) The structure and dynamics of the knowledge industry particularly at the national level;
- (c) Learning and working;
- (d) Learning how to think for innovation and invention;
- (e) The identification and use of acceleration, adaptation and economizer techniques;
- (f) The diploma/degree syndrome;
- (g) Higher education in-breeding;
- (h) The transmission of deleterious cultural values in imported education.

32. The second paper, entitled "A university policy geared towards development in Africa" (PAMM/AAU/ED/17/82) presented by the OAU secretariat, emphasized on the reasons why Africa had to chart its development through the Lagos Plan of Action. There was urgent need for the African continent to co-operate and collaborate in matters of development. Among the basic problems which higher level institutions should help to resolve were the facts that:

- (a) Life expectancy was still low (45 years);
- (b) Illiteracy remained very high (over 75 per cent in many countries)
- (c) Food production was declining and many of the countries were not able to feed themselves;
- (d) There was a serious shortage of middle- and high-level manpower;
- (e) There was too much dependence on the developed countries for the development of human and material resources.

33. Against that background, the Lagos Plan of Action emphasized the importance of human resources development in the realization of the socio-economic objectives of the continent. Institutions of higher learning, in particular, had a vital role to play, for example, by

- (a) Abandoning the concept of the transfer of technology and replacing it with that of scientific and technological cooperation;
- (b) Integrating modern and traditional technologies by adopting and developing the latter and inventing new ones;
- (c) Associating and awakening the masses to technological progress through scientific and technological information campaigns, etc.;
- (d) Strengthening the place of science and technology in educational policies;

(e) Breaking away from:

- (i) certain concepts and habits such as the excessive mimicry observed in curricula and syllabuses;
- (ii) the unbridled race for degrees/diplomas at the expense of training and experience, and productive knowledge;

(f) Encouraging co-operation among African States, thereby strengthening African unity in all aspects of development.

34. Attention was further drawn to the need for:

(a) The establishment of educational systems which integrated the values of African civilization and solidarity;

(b) The promotion of African languages as backbones of cultural heritage and as instruments of development;

(c) The development of appropriate technology in institutions of higher learning;

(d) The involvement of institutions of higher education in community work and rural development.

35. Following the presentation of key papers by representatives of the ECA and OAU secretariats, the Conference made the following proposals:

36. African institutions of higher learning should perform more than the traditional functions of teaching training and research by:

(a) Diversifying their services to the community;

(b) Supplying more expertise and consultancy and advisory services to the public and private sectors;

(c) Participating in development programmes;

(d) Co-operating in development planning rather than letting Governments import expertise from the developed countries.

37. African Governments should give priority to national universities to provide expertise before rushing to developed countries to hire such expertise.

38. Universities should apply modern science to improve and adopt African technology through the application of a meaningful technology policy.

39. Compulsory sandwich courses in science and technology should be introduced in institutions of higher learning.

40. Since more than 80 per cent of the people lived in rural areas and the majority of them were illiterate, a central role of institutions of higher learning should be as agents of development in rural areas.

41. Research should be based on real problems facing countries such as catering for training of staff for higher institutions. Further, rural development problems should constitute a major element of research in higher institutions and should be included in the curricula of those higher institutions.

42. To avoid the problem of cleavages between universities, the Government and the business world, higher education institutions should make every effort to bridge the gap by a genuine offer to help and participate in the development effort. The problem was not always with the "other" side. Higher institutions had to see their own side too.

43. Suitable follow-up mechanisms were also necessary for monitoring purposes.

The preparation of manpower for industrial development: A challenge to African third-level educational institutions (PAMM/AAU/ED/10/82)
(item 4 (b))

44. Taking three key industries - iron and steel, chemical (fertilizer) and food and agro-industry - as examples, the ECA paper highlighted the critical shortfalls in numbers and quality in professional and technical manpower required by the year 2000. Frantic efforts being made by African Governments to train nationals in Europe and the Americas involved a vast amount of resources that could be used to set up several first rate, third-level educational programmes within the continent. Besides, many of the nationals who travelled out for further studies never returned home.

45. The three industries examined in the ECA paper were critical to any attempts to change the course of Africa's development. The iron and steel industry was the bedrock of genuine industrialization anywhere in the world. For industrialization to grow rapidly and significantly over the years, Africa's iron and steel production should of necessity increase considerably. Apart from the need for huge capital investments, to make the establishment and growth of iron and steel industries possible, a major constraint on the development of the industry would be the shortage of relevant manpower. The case of the East and Southern African iron and steel projects showed that a projected direct shortfall of engineers and technicians in the order of 6,000 professionals would be recorded by the year 2000.

46. Similarly, the study of the West African fertilizer industry showed projected shortfalls of professional, technical, engineering and scientific personnel. That was an industry whose development could reverse the decline of African agricultural production and save the continent billions of dollars and countless lives. Its establishment and growth were seriously threatened by inadequate manpower resources.

47. The third case study looked into the situation in the food and agro-industrial sector. With increased modernization and productivity in agriculture, it was logical that agro-industrial efforts should be intensified to increase value added in agriculture and to avoid wastage. Once again, in that industry the 2000 scenario in respect of critical professional and technical skills, showed serious shortfalls.

48. The argument right through was that third-level educational institutions in Africa held primary responsibility for providing the economy with the trained manpower necessary to enhance socio-economic development and industrial and technological progress. Yet they were, today, structured in such a way as to make it almost impossible for them to meet the human resource needs of African development. Whereas the need to-day and in the years ahead, was for innovative, inventive, technological, problem-solving oriented technical, professional and managerial personnel, third-level education had been heavily biased towards liberal arts, law, the humanities, and theology which by and large represented those skills and knowledge that were not indispensable to industrial and technological development activities. The paper showed that although growth in enrolment on third-level educational institutions in Africa had been impressive over the years, in terms of the distribution among the various disciplines, however, the situation had not reflected the priorities of economic, industrial and technological development. The critical engineering specializations such as metallurgy, chemical engineering, mechanical engineering electrical engineering and electronics had, relative to other engineering areas (civil, example), received low priority.

49. The paper ended with recommendations touching on the need:

(a) For national manpower plans to be used as guide lines for setting priorities in third-level educational disciplines;

(b) For curricula reform within third-level educational institutions tailored to African needs in place of mere imports of skills, knowledge and attitudes that would be irrelevant to real African development;

(c) For university research and development activities to be intensified so that expertise within third-level educational institutions would be used more effectively to assist industrial development;

(d) For innovative educational and training methods to be researched into and utilized for more rapid skill acquisition;

(e) For African third-level educational institutions to promote the localization/Africanization of professional qualifications, including the promotion of African professional bodies, to ensure that expertise and outlook were relevant to the solution of African problems;

(f) To develop specialized institutions so that the burden of preparing manpower for the region could be shared among existing third-level institutions;

(g) To intensify efforts aimed at producing locally staff and other teaching resources in view of the heavy financial strain imposed on institutions by the need to import them, and the certainty of an increased demand for such resources in the future;

(h) To develop collaborative relationships between third-level institution and specialized regional institutions such as AIHTTR, ARCEDEM and ARCT so that work of those institutions would make the desired impact on the programmes of third-level education.

(i) To have part of the funds provided for training abroad, to be transferred to third-level institutions to develop their institutions and provide the training locally;

(j) To establish a dialogue with Governments and solicit and obtain Government support of the efforts by third-level institutions to develop middle and high-level manpower.

Changing development objectives, strategies and education for self-reliant economies in Africa: Education for innovation and economic development (item 4 (c))

50. Two papers were introduced under item 4(c). The first, entitled "University education for the economic independence of Africa" explained that only a fraction of the citizens of any country were or could be provided with university education. To that extent university education catered for an elite in any society, either the best talented, the luckiest or the most needed skilled personnel. The goals of a university, therefore, should include how to ensure that the output of the universities constituted the vanguard in the development of the society. In that respect the four-fold purpose of a university to propound and promote society ideals, fundamental research, applied research and anticipate future needs and problems should be re-emphasized. The university, therefore must analyse, relate and help to solve the problems and prospects of the worker, the consumer, the political system and the cultural and scientific milieu not only of the society in which it was situated but also in Africa as a whole.

51. Prof. Aluko drew attention to at least two ways in which the relationship of university education to society ought be viewed - the 'idealistic' and the 'utilitarian' standpoints. In the idealistic posture, universities aimed at "knowledge for its own sake" and at setting ideals for the society. As a "utilitarian" institution, the university education was geared towards vocational manpower training and a high degree of direct involvement in solving the socio-economic problems of society.

52. The university should provide new ideas, new techniques and new processes both for the present and the future. It should also attempt to contribute to the stock of existing world knowledge in science and technology. It could do that only if the whole system of primary, secondary and post-secondary educational institutions were specially assisted to modernize their curricula to give adequate emphasis to scientific and mathematical education. The university should not be reduced solely to a utilitarian institution. Rather, it should combine utilitarianism with idealism. On the other hand, it would be presumptuous of the universities to claim a monopoly to innovation. Innovation derived from talented minds might exist in other spheres of society. The African environment today tended to inhibit innovation and independent thought and action. It was the role of education, generally, and, of higher education, in particular, to spread ideas that could change the environment and prepare it for desirable fruitful innovation and independence.

53. He further suggested that "schools for innovators" and "mass education institutions" could be allowed to exist side by side. Such co-existence would aid the achievement of both idealism and utilitarianism. He also drew attention to the situation in the developed countries, such as the United States where specialized universities had been established in order to foster the production of the relevant mix of manpower for the countries' economic development. By contrast, African universities had continued as comprehensive institutions and had therefore been unable to produce the required manpower for a number of vital industrial sectors.

54. He concluded by putting forward a viable alternative strategy for African universities:

(a) Closer identification of the various disciplines with the practical needs of the society that maintained and sustained the university;

(b) Increased integration of the university with the economy in terms of joint research, free mobility between the university and industry, commerce, agriculture and even the Government;

(c) More admission of part-time, evening and correspondence students into the universities so that there was greater relevance between what the student was doing and what he was learning;

(d) The expansion of university facilities to more and more beneficiaries on a scale hitherto unknown in Africa;

(e) The inculcation in the output from the universities of a new value system which regarded the acquisition of education in terms of its use for uplifting society morally and intellectually rather than in terms of its economic pay-off;

(f) The encouragement of the universities to give incentive to invention, research, scholarship and dedication; and

(g) The determination to assist in the formulation of national ethics that united rather than divided.

55. The second paper, entitled "Changing development objectives, strategies and education for self-reliant economies in Africa: Education for innovation and economic development" (PAM/AAU/ED/5/82) (item 4 (c)) began by demonstrating the strong correlation which existed between educational attainment in a society and the economic development of the country. The position of Africa, with its generally low level of education, was also one of gross economic underdevelopment.

56. Dr. Woldemikael identified some of the basic obstacles to socio-economic development in Africa as:

(a) Over-fragmentation of the continent into many States with individual economies that were not viable and inadequate absorptive capacities;

(b) Uneven relationship with the developed economies by virtue of the relatively low level of technological base in Africa;

(c) Internal and external instability as evidenced by frequent changes of Government and related social upheavals as well as boundary disputes and conflicts with neighbouring countries.

57. He went on to review the status of technology in Africa and to suggest steps that might facilitate the solution of the social, political and economic problems facing African States. The key elements of his proposals included:

(a) Promotion of the integration of socio-economic institutions on a regional basis through the formation of regional association of African States;

(b) Restructuring educational development so as to eliminate illiteracy rapidly and thus pave the way for more relevant education within formal and informal settings;

(c) Development of a regional language which would further aid socio-economic and cultural integration at the regional-level.

58. The paper concluded with a brief sketch on the likely outcome in Africa if overall regional unity were to be achieved:

(a) Internal and inter-State conflicts would be easier to revolve and contain;

(b) The development of internal markets for African raw materials and industrial goods would be encouraged;

(c) The possibility of cutting back on defence expenditures and allocating more resources for development purpose would become more real;

(d) Research and development in technology would have greater chances of success as sufficient technical manpower and finance became available;

(e) Restrictions imposed by national boundaries should be lifted, thus fostering the development of Africa's resources through collective efforts;

(f) Needless competition and waste could be eliminated via co-ordinated plans and action on a regional basis;

(g) Peace and prosperity would result;

(h) Increased technological capacity and improved social and political conditions would tend to arrest the present flow of highly educated African manpower to developed societies.

59. With reference to the links between the second and third levels of education, a number of useful contributions were made in the discussions which ensued:

60. The second level of education was the determinant base from which third level institutions (whether universities or polytechnics) derived their intakes. There was, however, usually a sharp discrepancy between policy objectives and what actually obtained in the third level institutions because

of critical deficiencies in the output of the second level institutions. For example, in Nigeria, whereas the target in the admission policy of universities had been 60 per cent in the sciences and applied sciences and 40 per cent in the humanities, actual admissions had been over-whelmingly in the humanities. The output of the secondary schools had been much more in the arts and humanities than in the sciences.

61. A number of factors were identified as being responsible for the failure of the secondary schools to produce the desired input for the third-level educational institutions. They included lack of properly trained teachers, insufficient numbers of teachers in the key disciplines for technological development, poor facilities (laboratories, textbooks), deficiencies of the input from primary-education level to secondary schools, lack of incentive to study science and technology, etc.

62. Proposals were made which generally required the higher education sector taking the initiative in remedying the deficiencies in the second and other levels of education:

(a) Sufficient numbers of well trained teachers must be produced particularly for the science and technology disciplines;

(b) The course content of secondary school curricula should be influenced towards the direction of socio-economic development desired in the society;

(c) Incentives to students to study science and technology, such as scholarships, could be considered;

(d) Science clubs and part-time teaching in secondary schools by students of higher institutions should be considered;

(e) Subregional co-operation involving the second and third-level educational institutions should be established on matters pertaining to programmes, textbooks, equipment, etc. for instructional purposes.

63. In conclusion, it was generally agreed that an integrated approach was necessary to the planning of education and that a closer link should be forged between the second and third-level education sectors in particular.

64. In relation to the implementation of the Lagos Plan of Action, it was also noted that:

(a) It should be recognized that technical/technological manpower development required more substantial expenditure than liberal studies, and in consequence, grants should be adequately allocated for meeting development objectives in priority areas of need;

(b) A realistic approach to manpower development and utilization at the higher and middle-level cadres was desirable. The manpower ratios often mentioned for engineering industries, for example, represented what was desirable but not necessarily what was essential. Deliberate efforts should be made to make engineering and technician training programmes converge so as to permit flexibility in the use of available manpower;

(c) The wrong emphasis on certificates rather than acquisition of knowledge and skills should be challenged and eliminated;

(d) Third-level institutions should be intimately concerned with the development needs of the society and should also be concerned with all the levels of formal education as well as non-formal education such as organizing programmes aimed at eliminating illiteracy in African societies;

(e) Educational institutions at all levels in Africa were not cost-effective. They were expensive to maintain and further expansion was usually very difficult. It was therefore recommended that urgent attention be paid to setting up teams from the higher education institutions and the Government to consider the kind of reforms that were necessary to make education institutions more cost-effective.

On maximizing the contribution of African universities to national development (PAMM/AAU/ED/7/82) (item 4 (d))

65. Introducing his paper Prof. C. Okonjo said that critics of African Universities today pointed to too many faults which included elitism and remoteness from the people; a lack of innovativeness; irrelevance of curricula to African needs and a singular lack of economy in the use of scarce resources. The challenges posed by the Lagos Plan of Action required drastic changes in the whole of the African educational system and particularly at the university level. In that regard he proposed a number of measures which included a system of a double annual intake at university; a two-year national service after high-school; adoption of a work-study method for student training, a tax on all business firms based on their turnover to assist in financing education; and establishment of consultancy, planning and advisory services in universities.

66. The proposal for a double annual intake at the university was based on the conviction that the present system of a single annual intake was wasteful of resources. It was observed that out of an academic year of 32 weeks only about 27 weeks were actually spent on course work. The proposed system was for a 24-week academic session, followed by another 24 weeks of work, thus permitting a double intake. The system would require no additional physical facilities, thus leading to substantial savings in capital expenditure and would, in recurrent costs, add no more than 24 per cent while the enrolment would be doubled. Although staffing was recognized as a possible major constraint the requirement in numerical terms was to increase staff numbers by 50 per cent. It was further suggested that adequate staffing of a suitable quality could be ensured by the introduction of a flexible system whereby after every three years a lecturer would be given one year sabbatical to be spent within the country on research. Such an arrangement would require the establishment of centres of advanced studies, i.e., the fourth level of education, which were non-existent today. They would directly enhance the research output of university teachers. A work-study programme for undergraduates would also help solve the manpower shortage problems in a number of key sectors of the economy and, at the same time, improve the quality of the students' training particularly with regard to relevance.

67. He highlighted some of the critical issues in education which needed to be dealt with before education systems could be considered relevant to African needs. One of the factors which militated against accelerated expansion of educational opportunities however was the insistence on sophisticated physical facilities in the face of severe budgetary constraints. At university level it was suggested that increased opportunities could be created by the introduction of external degree programmes. He further urged the forging of links with the national community by involving graduate students in community-centred activities, increased co-operation between universities on the one hand, and, government and industry, on the other, via consultancy, testing, research, development, planning and the provision of advisory services.

Policies and strategies for the optimal utilization of resources for educational development (PAM/AAU/ED/3/82) (item 4(e))

68. The presentation by the ECA secretariat included references to two other documents: Document ST/ECA/PAM/HRP/7/81 on "The Challenge of Education in the Socio-Economic Development of the African Region"; and a project document on the reorientation of education for development and effective exploitation of African natural resource endowment.

69. The representative of the ECA Secretariat pointed out that educational systems in Africa were being attacked because of:

- (a) The emergence of the problem of turning out school leavers without a vocational orientation and therefore unable to find their place in productive socio-economic activities;
- (b) The continuing rise in the number of unemployable university graduates and the rising tendency for them to pick jobs unrelated to their field of training and requiring lower qualifications;
- (c) The alienation of higher education products from communities and societies and the perpetuation of an elitist class;
- (d) The increasing exodus of school leavers to cities and towns in search of white-collar employment and dislike for blue-collar or manual work;
- (e) The lack of opportunities for gifted students; and the mentally and physically handicapped as the systems were ill-equipped and ill-suited to nurture and develop them, and the general failure of education in achieving individual competence necessary to lead a successful and creative life and for economic growth, with the consequence that Africa continued to import expertise.

70. Such features affecting and influencing educational policy were likely to continue existing because of:

- (a) The unsuitability of the curriculum to the socio-economic development of the region;
- (b) The serious neglect of vocational and technical education relative to the needs of the economy;

(c) The inappropriate teaching methods used by inadequately qualified and untrained teachers;

(d) The emphasis attached to formal education which led to the serious quest for paper qualifications and certificates irrespective of the marginal value of such certificates;

(e) The terminal and dead-end nature of education at each of the three levels which failed to open avenues for exploring other aspects of the learner's potential;

(f) Despite a "publish or perish" attitude to research much of what was being published in learned journals in developed countries had not helped to solve Africa's many problems.

71. In many African countries, there was an urgent need to review educational policies to make education more relevant to African needs while at the same time creating increased opportunities. The adoption of policy whereby education was no longer seen as a segregated activity conducted for a certain time of life, but as a matter involving all, at all times, for all society irrespective of political or social status called for considerable increases in resource allocation for the education sector. To that end, therefore, the ECA secretariat stressed that there was need for internal reforms and the continued improvement of educational systems; and a search for innovative forms of educational development and alternatives in resources utilization.

72. In that regard most of the demands in the ECA paper were in line with Professor Okonjo's paper. The ECA secretariat, however, emphasized that the need for double intake should be limited to the critical areas of manpower requirements in the economy in order to avoid arising level of graduate unemployment. It also urged that particular attention be given to the widespread problem of "throughputs" in the African educational system that is, those going through educational institutions without actually acquiring the knowledge and skills for self-fulfilment and productive work.

The development of university delivery capabilities and capacities
(PAMM/AAU/ED/8/82) (item 4 (f))

73. When introducing his paper, Prof. Ngu said that the Lagos Plan of Action had essentially two aspects: the socio-economic development of Africa and regional integration. He noted that the changes which had occurred in Africa over the last 20 years required that the universities should review their roles with regard to the realization of the development objectives of African States.

74. He suggested, with reference to the responsibility of universities in manpower training, a number of critical dimensions that should be re-examined:

(a) Areas of concentration should be those that were pertinent and relevant to the development needs of the society. The inadequacies of the inherited system must be recognized and, in trying to shift to the more important areas of need, the inhibiting element posed by lack of adequate infrastructure must be overcome;

(b) Serious attention should, be given to the ideas of "double intakes" particularly in the critical areas of need;

(c) Extension programmes and use of long-distance learning techniques, particularly radio, should be positively encouraged and expanded.

75. On research, he agreed that much of what universities had concentrated on thus far was basic research which, by and large, had been of little or no relevance to solving the socio-economic development needs of African countries. There should therefore be a shift to applied and problem-centred research.

76. Finally, he called on universities in Africa to address themselves to the challenge of service to the community. Since the majority of the African population resided in the rural area, services aimed at rural development should be accorded high priority. Such services could include eliminating illiteracy, ensuring better health care and making available appropriate energy utilization techniques for such activities as farming, food processing, etc.

77. A number of points were made in the discussion that followed on items 4 (d), (e) and (f). It was observed that most African countries were passing through a very critical period. Political and social strains had been aggravated by mismanagement of the economies on a colossal scale. Cases were recounted where enterprises were operating at no more than 25 per cent of capacity. In that regard, it was emphasized that universities could no longer remain comfortably in their ivory towers. They should vigorously pursue research programmes deliberately designed to contribute to the solution of national problems, particularly economic ones. Universities should also work in close partnership with the Government and industry.

78. Priorities for African development had been adopted and spelled out in the Lagos Plan of Action. What was urgently required was for resources to be allocated in accordance with those priorities. In that regard the view was expressed that universities should be consciously used by Governments to spearhead efforts to find solutions to African development problems. The case was cited of the role that universities in the United States had played in the development of arms and armaments in the late 1930s and through the 1940s.

79. Relations between Governments and universities were highlighted as a major factor in the effectiveness of the role the university could play in national development. Those relations should be improved and the universities were urged not to remain passive.

80. The proposal for a double annual intake at the university attracted some comment. While it was considered conceptually good, implementation problems could be formidable. Some of the problems included shortage of teachers, particularly in science subjects, shortage of science students and supervision of students on working vacation. It was also thought that the teaching load would seriously jeopardize research which was already a weak area in African academic life.

81. As one of the ways of contributing to the solution of African problems, the proposed African Institute for Advanced Public Policy Analysis and Future Studies was welcomed. It was strongly suggested that the conference should adopt a resolution indicating the interest of universities in playing an active role in its establishment and operations.

The Role of Second-level education and its relation to the third-level education in conditions of dynamic socio-economic change in Africa (PAIM/AAU/ED/2/82)

82. In his presentation, Prof. Awokoya gave a brief historical sketch on how secondary education had started in Africa a little over 100 years ago with an essentially grammar-school orientation.

83. He surveyed a number of socio-economic changes which had taken place in Africa with dramatic implications for all levels of education. The rapid growth in population had resulted in increasing demands for food, shelter and numerous services which could be provided only with the aid of science and technology. The many changes in the economic situation had, likewise, exposed the irrelevance and inadequacy of the traditional literacy emphasis in the education being offered at all levels of the educational systems.

84. With the significant changes in the socio-economic and cultural situation in Africa, there had come about strong pressures for change in the education sector. Third-level institutions were expected to provide the necessary manpower in sufficient numbers and quality and in the relevant areas of need. That, in turn imposed a direction for development in secondary schools which fed higher institutions of learning.

85. Various factors were bound to affect the development of secondary education in the long run. Universal education at the primary level required a major expansion of secondary education. That automatically increased the number of candidates seeking admission into third-level institutions.

86. The content of secondary education was also subject to change to make it better integrated with the African cultural environment. Relevance to meeting the manpower needs in agriculture, industrial production and the world of work generally needed to be reflected in what was being taught in secondary schools.

87. In analysing the current trends in secondary education development, he emphasized the challenge of quality which included providing suitability trained teachers and adequate physical facilities for the new curricula.

88. The paper concluded by calling for a simultaneous restructuring of the second and third levels of education so that they could contribute adequately to the manpower needs of economic development. At the secondary level, a number of core subjects were proposed which would lead to specializations at the university and thereafter to gainful employment. Those subjects were: technology; agriculture; integrated science and technology and the basic sciences, mathematics and computer science, modern languages (African/European); social sciences; business and commercial studies; physical and health education; art, music and drama and finally teacher training. Exposure to all those areas should be obligatory in senior secondary education (with a view to having a broadly based education and preparing students for employment and higher studies).

89. A number of desirable developmental thrusts were also suggested for secondary education such as offering integrated science and technology, rural and community orientation of the subjects offered, the promotion of work ethics and the cultivation of national, regional and international solidarity. Those thrusts had an important bearing on what further contribution the university could make to human resource development. It was therefore the duty of universities to strengthen secondary education, and primary education so as to have an integrated approach to educational development. That integrated approach could achieve results since a stronger base at primary and secondary levels ensured better results at the tertiary level.

90. After all the keynote papers had been delivered in plenary sessions, the Conference divided into four discussion groups in order to deliberate in detail on specific topics. The four groups considered the following subjects:

Group A: Re-orienting the role of higher education institutions to the implementation of the Lagos Plan of Action

Group B: Education for innovation and economic independence

Group C: Maximizing resource utilization in institutions of higher learning in Africa

Group D: Co-operation in the development of education, research, instructional materials/textbooks and specialized training

91. Each discussion group later reported to a plenary session of the Conference its main conclusions and specific recommendations. After comment, they were adopted by the Conference. The integral records of the discussion groups, as adopted by the Conference are contained in Annex I.

92. Using guidelines provided by the secretariat, the Conference deliberated on possible follow-up activities and lines of action for the implementation of the conclusions of the Conference. After thorough discussions, the Conference agreed on the following recommendations and line of action:

GENERAL RECOMMENDATIONS FOR ACTION BASED ON THE CONCLUSIONS OF PLENARY DISCUSSIONS

(a) Popularizing the objectives and strategy of the Lagos Plan of Action

93. Heads of African higher educational institutions, in particular those who attended the present Conference, should endeavour to educate their staff as well as other educationists at the national level on the implications of the Lagos Plan of Action for education for development, innovation and change, particularly for the development of manpower, skills and attitudes. Accordingly, lectures, workshops and radio and television programmes should be organized on the subject at institutional and national levels.

(b) Production of textbooks and instructional materials

94. Priority should be given to the writing and publishing of Africa-based textbooks in development economics and related issues in order to make third-level education more relevant to the socio-economic situations of African States and to reduce costs. To that end advantage should be taken of the accumulated research materials available in ECA, UNESCO, ADB, IDEP and other regional and subregional development institutions. Both higher education staff and post-graduate teachers could seek attachment research programmes with African regional institutions. AAU should accordingly develop appropriate projects in different sectors of textbook requirements and should seek the collaboration of UNESCO ECA and OAU in mobilizing financial resources for the implementation of textbook projects.

(c) Production of educational equipment and tools

95. International technical cooperation organizations were requested to give positive support to African national, multinational and subregional efforts for the design, development and production of appropriate equipment and tools needed for teaching and research in higher educational institutions, particularly for laboratory, demonstration and production equipment. It was also recommended that education-based manufacture using local raw materials should be given priority in intra-African bilateral and multinational economic cooperation negotiations. ECA, UNESCO and UNIDO should collaborate with AAU and interested member States in taking the heeded action.

(d) Maximizing the use of educational resources

96. African Governments and higher educational institutions should undertake indepth studies on ways and means of maximizing the use of existing educational resources (staff, infrastructure and funds) through "double intakes"

and other arrangements in order to achieve a greater measure of cost-effectiveness in higher educational institutions and to give a larger segment of the society an opportunity to acquire the skills, knowledge and attitudes that fostered socio-economic development..

(e) Curricula and course development

97. More resources should be provided by African Governments for curricula development aimed at making education more relevant to development needs. In that regard ECA and AAU should foster institutional co-operation at the subregional and regional levels in a concerted effort to develop curricula and courses that were appropriately oriented to development needs, especially in disciplines and skill areas required for the exploitation of Africa's natural resources for the African Industrial Development Decade, the African Food Plan and rural development and for the modernization of Africa's economies and the improvement of standards of life.

(f) Rural development programmes

98. African higher educational institutions should intensify their participation in the national effort to improve living conditions in rural areas where 75 to 80 per cent of African peoples lived. In that regard urgent consideration should be given to initiating and developing multidisciplinary training, research and extension programmes for rural development with a principal concern for the resolution of identified rural development problems and the improvement of rural technologies.

(g) Consultancy services

99. African higher educational institutions should mobilize local talent, data and information bases in developing effective and multidisciplinary consultancy services in order to meet the technical advice requirements of African Governments, parastatal enterprises and the private sector since these services were critical to entrepreneurial ventures and development management and as consultancy services constituted a major drain in Africa's scarce foreign exchange resources.

(h) Action mechanisms

100. To follow up and monitor the implementation of the recommendations of the Conference of other related conferences the following action mechanisms should be considered:

- (a) A follow-up meeting to the present conference should be organized by AAU to review and assess the implementation of the recommendations adopted. Periodic meetings should be held by the Vice-Chancellors, Presidents and Rectors of African higher educational institutions and interim meetings should be organized on a subregional basis similar to those of the Eastern and Southern African States and the Central African States, for the purpose of monitoring the implementation of recommendations, reviewing current

problems and issues, sharing experience and intensifying co-operation arrangements. Such subregional meetings should be organized in collaboration with ECA MULPOCs in order to relate closely with the development problems and aspirations of given economic groupings such as ECOWAS, UDEAC and the Preferential Trade Area for Eastern and Southern Africa.

- (b) ECA and AAU, in collaboration with OAU and UNESCO, should arrange for conferences of heads of African higher educational institutions once every three years to consider development problems, assess their performance in helping to resolve those problems and review guidelines for future action. The object of that arrangement was to ensure that African higher educational institutions sustained their efforts in the orientation of education for development and innovation.

Any other business (item 7)

101 In a statement to the Conference the representative of UNIDO drew attention to conclusions of the recent conference of African Ministers of Industry on the Industrial Development Decade for Africa. Calling on participants to study the documents on the Decade, he stressed the fundamental importance of development industrial manpower for the implementation of Decade's programme. He also stressed the need to sensitise the various target groups in the economy concerned with industrialization and the development of technical manpower e.g. the universities and other higher educational institutions on which UNIDO intended to rely for the development of the required manpower for the implementation of the Decade's programme. He informed the Conference of the various scientific and technological documents produced by UNIDO, ECA, ILO, UNESCO, UNCTAD and other agencies which could be supplied upon request for use in the libraries of higher institutions as reading materials for courses, thesis and research in the fields of science and technology. Other services which UNIDO and other agencies could provide to the institutions included the provision of staff at headquarters or in field projects to give lectures on specialized technical subjects and the organization of visits for selected students to their organizations and projects.

102. In response to the UNIDO statement, the Conference recommended that:

- (a) All African universities and institutions of higher learning should adopt and adapt relevant technical publications produced by international organizations and agencies as reading materials for courses and as background materials for research. Those organizations and agencies should also make available to libraries of all African institutions of higher learning their relevant technical publications and should establish technical co-operation programmes with African institutions of higher learning;

(b) The Secretary-General of the Association of African Universities, the Executive Director of UNIDO, the Executive Secretary of ECA, the Director-General of UNESCO and the Secretary-General of OAU should take necessary follow-up action for the implementation of that recommendation

Adoption of the Conference Report (item 8)

103. The Conference considered its draft report and adopted it as amended

Closure of the Conference

104. On the proposal of the Administrator-General, Institute Polytechnique, Conakry, the Conference adopted a formal vote of thanks which is contained in Annex II.

105. The ECA secretariat assured all participants that action would be taken on conference decisions and recommendations. It hoped that institutions of higher learning would also initiate the action required of them in the Conference recommendations and that specialized agencies of the United Nations, OAU, AAU and other organizations would co-operate fully.

106. In his closing remarks, the Secretary-General of the Association of African Universities paid particular tribute to ECA, OAU and Addis Ababa University for their contributions to making the Conference such a success.

107. The Chairman of the Conference said he was optimistic that the recommendations of the Conference would be implemented and hoped that it would not take a decade before another conference of its kind were held to review progress made in the implementation of the Lagos Plan of Action. After the customary exchange of courtesies he declared the Conference closed.

I. GROUP A: REORIENTING THE ROLE OF HIGHER EDUCATION INSTITUTIONS
TO THE LAGOS PLAN OF ACTION

1. The Group focused on how to intensify action and expand the role of higher education institutions so that they could produce the quantity, quality and types of skills, knowledge and attitudes required to implement the Lagos Plan of Action. The Group was also preoccupied with the question of how to effect the needed reorientation in curricula, attitudes, resource use, structure, staffing and the development mission of those institutions so as to make them more functional for a technological, industrial and agricultural revolution in Africa.

2. The deliberations in Group A were two-pronged. First, participants considered the need for action and what should be done to reorient higher education to the implementation of the Lagos Plan of Action and then proceeded to recommend how it should be done.

Areas requiring action

1. Curriculum orientation

3. It was agreed that essentially what was at stake was the reorientation of the curriculum of third-level institutions so that their products become more relevant to objective needs for the development of African economies. Since a great obstacle to curriculum reform at the third level would seem to be the present conservative attitudes of third-level teaching personnel, as a first step in bringing about the required curricula changes, there was need for attitudes to be changed through training and retraining programmes. Such programmes could take the form of workshops, seminars and short courses.

4. The type of curricula changes required suggested that present teaching methodologies would also have to change. It was agreed that third-level instruction was often not clear as to the objectives of teaching and learning or the use to which the knowledge being acquired would be put. Consequently, the type of knowledge to be acquired and the source of that knowledge was often unclear. In addition because existing curricula did not reflect clarity of purpose, third-level education was often not conducive to the use of skills for African social and economic progress.

5. It was felt necessary for teaching and learning to be oriented to utilizing more effectively graduates of third-level educational institutions to serve the development needs of the majority - in the present case, the rural society - by being more specifically relevant to the needs of rural development, by being more broad based and less specialized, and by being more integrated in content.

6. Curriculum reform would also bring about a desired reform in the organization of learning. It was strongly felt that it was imperative for present learning to be more oriented towards the world of work; for learning and doing to be more closely intertwined and for the acquisition of practical knowledge to be organized so that in the process it contributed to solving development problems of society. Extension work in medicine, pharmacy, engineering and agriculture would both provide a service and at the same time reinforce the relevance of learning.

7. Curriculum reform would also require the introduction of new subjects in third-level institutions. They would include subjects hitherto ignored or down-played such as industrial management, the development of appropriate technology, technology policy, commercial education, etc.

8. It was felt that curriculum reform should aim at making a graduate of a third-level institution a more productive member of society, as well as go a long way towards minimizing his chances of staying unemployed for long periods, especially if it succeeded in infusing an entrepreneurial spirit in him.

9. With regard to the scientific, engineering and technical disciplines, the curriculum should now be oriented so that the present knowledge and skills gap between professionals and technicians was narrowed, bearing in mind that the work of the two categories was complementary. Technicians and scientists would benefit from increased knowledge of the basic technical skills through more practical learning-by-doing, whereas the technician would be a better worker if his theoretical base were broadened.

10. Consultation on curriculum development at the third level of education was necessary between university and non-university degree granting institutions. Their work converged at some point and therefore the objectives of their activities must also establish common ground.

Recommendations

(a) National level

- (i) There is need for curricula orientation in all fields, but particularly orientation to the needs of rural communities which constitute the vast majority of African societies and the pillars of African economies;
- (ii) Courses in appropriate and pertinent technologies such as food technology, preservation, storage, rural technology, solar energy, nuclear energy, and other areas of skills and knowledge should be initiated so as to prepare products more readily to cope with current problems of development among the majority of the African people;
- (iii) Learning approaches which would allow the use of local environments as a basis for the development of new technology should be incorporated into curricula;

- (iv) Courses should be incorporated into curricula that would aim at making students better perceive and understand their past;
 - (v) The curricula should include communications skills training so that graduates are able to relate to the people with whom they work;
 - (vi) The curricula in all disciplines should include skills that would render graduates more able to relate to rural communities and assist in their development;
 - (vii) The curricula should contain programmes designed to intensify the training of medical and health-related personnel;
- (b) Regional level
- (i) Curriculum panels should be set up to advise African institutions on curricula reform;
 - (ii) Within the context of regional co-operation, institutions should be set up for textbook production and the production of instructional materials.

2. Research and dissemination of information

11. That university research capabilities needed to be strengthened was beyond question, because of the low research capabilities existing within the continent. It was agreed that concerted action would need to be taken to improve the situation. That was seen as a most obvious area for intraregional co-operation. Apart from the necessity for quantitative expansion of research facilities, it was also imperative to achieve a much greater degree of relevance of research to the need for agricultural, industrial and general socio-economic development. Regional centres of specialization in the various disciplines might well fulfil the need. Even the little information currently generated through research failed to be widely disseminated among African institutions, let alone Government and policy-makers. It was agreed that in future research results should be diffused as widely as possible not only among Governments and other institutions but also in such a way as to make them reach the potential users. That was thought even more imperative if the research results in question would have an impact on the development of agriculture, science and technology and industry.

Recommendations

(a) National level

- (i) There is need for an intensification of socio-economic research into effective development intervention, such as social and cultural challenges posed by agricultural production practices

and resistance to the acceptance of technology or new and innovative production methods. There is also need to promote the use of research results to guide further development action;

- (ii) There is need for more resources to be allocated to research in national institutions;

(b) Regional level

- (i) There is an urgent need for the creation of a data bank for research and for the dissemination of research results, as well as for the development of African scholarly journals and publications for easy dissemination;
- (ii) Co-operation in research effort should be intensified so that the use of research facilities and availability and utilization of research results are optimized.

3. Post-graduate study and third-level education

12. Post-graduate enrolment in Africa was thought to be too low to generate the level of research being advocated. Enrolments should be stepped up by all means possible and using all available short cuts. Simultaneously, post graduate studies abroad in disciplines where facilities are available in Africa, should be discouraged as much as possible because of the high costs such practice imposed on the meagre African budgets.

Recommendations

There is a need to intensify post-graduate programmes, especially in the critical disciplines of science and technology, industry and agriculture. The advantage would be an increase on the quality of manpower available to educational institutions themselves for teaching as well as to the economy at large.

4. Staff development

13. Since university and non-university staff resources were drawn largely from the available stock of post-graduates, the problems of larger staff requirements could be divorced from that of low post-graduate enrolments. Something must be done to increase the former and that would increase the chances of meeting the needs in the latter. At present a large number of third-level staff were recruited from outside the region. At times the quality of their expertise was not up to standard. It was thought desirable to have as a first priority at least, the development of staff to replace these expatriates. In that, the intensification of the present sharing of staff within the region should be encouraged.

Recommendations

(a) National level

- (i) There is need to intensify institutional staff training not only through regular university courses but also through workshops, seminars, etc;

(b) Subregional level

- (i) National and international research centres should be used for in-service training, self-development and motivation of staff.

5. Provision of middle-level personnel

14. The task of training middle-level personnel should be shared between non-university and university institutions. The universities should begin possibly by creating faculties or institutes for the diploma level training in all the critical disciplines. Middle-level cadres provided valuable support that increased the efficiency of high-level personnel. Therefore education/training of middle and high-level personnel should be linked so that the complementarity of their work would be understood at the time of training.

Recommendations

(a) National level

- (i) The creation of faculties, or institutes for diploma level training in all the critical disciplines, thus reinforcing the work of existing extra-mural studies departments;
- (ii) The continuation of sub-degree and diploma programmes in the third-level of education.

6. Third-level education and community and rural development

15. Apart from being educated in isolation from the needs of socio-economic development, third-level education students were not encouraged to be involved in the activities and problem of their communities. There were no opportunities for involving students and staff in the work of government; in socio-economic planning; in project formulation and implementation; in feasibility studies, etc. The surrounding social and economic environment was not, at least consciously, being used to sharpen the skills and knowledge being acquired in third-level institutions. There was a great need for universities and

government to encourage a move in that direction. Industry likewise should be brought in to assist in industrial training as well as to contribute financially to the education and training of technicians, scientists and engineers. In that way third-level institutions would benefit from their economic and social surroundings. In turn they should be made to contribute, in the short run, to the development of the economy and the society in the ways mentioned earlier, i.e., as catalysts in the development of rural and industrial technology, in conducting social science research, in extension services, etc.

Recommendations

(a) National level

- (i) Faculties or institutes of agriculture and rural development should be established which offer degrees and diplomas in rural development and agricultural sciences;
- (ii) A conscious effort should be made to extend the services of universities and other institutions to rural areas where the skills, expertise and knowledge could be readily available for rural development efforts;
- (iii) More opportunities should be provided for the training, retraining and skill upgrading of civil servants, engineers, agriculturists, teachers and other professionals already operating within the economy, in order to provide for constant self-development and for greater efficiency;
- (iv) Greater efforts should be made to absorb more women into higher education since they constitute more than half the labour force and therefore half the potential future stock of African middle and high-level manpower.

7. Manpower planning

16. Third-level education recruitment policy, resource allocation policies, course content and subject structure, etc. should now more than ever before be guided by a manpower plan which should be part of a national development plan. Such a plan would indicate the priority skill needs in respect of middle- and high-level manpower for development activities in all sectors of the economy. The implementation of the plan at the government level would ensure a commendable reduction in graduate unemployment, a phenomenon now prevalent on the continent. There would also be the need for career guidance and counselling to support manpower planning and development efforts by directing students towards rational choices in areas of study relevant to development needs.

Recommendations(a) National level

- (i) Manpower plans should be formulated in consultation with third-level institutions and as guidelines for determining enrolment quotas and distribution among disciplines.

8. Relations between third-level institutions and government

17. It was acknowledged that while governments provided resources for educational institutions, the relations between third-level institutions and governments had not, in general, been the most harmonious. The problem, it seemed, stemmed from a lack of communication between the two as well as from mutual distrust and suspicion. It was agreed that institutions should stretch out their hands to establish the type of dialogue with government that would be conducive to greater trust and confidence and increase the chances of a more rapid involvement of institutions in government decision-making, planning and programme implementation.

Recommendations(a) National level

- (i) Governments, universities and industry should foster greater co-operation among them;

(b) Regional level

- (i) ECA, OAU and AAU shall be requested to call together, African governments, institutions and industry so that they could together decide how to contribute more effectively to each others work.

9. Intra-African co-operation

18. It was recognized that third-level educational institutions individually and collectively stood to gain by co-operating with each other in their efforts to render themselves more functional in the implementation of the Lagos Plan of Action. Co-operation, it was felt, was needed in all areas.

Recommendations(a) Regional level

- (i) An ad hoc committee should be set up to look into the possibilities of selecting institutions to specialize in specific areas of education and training for regional use;

- (ii) An ad hoc committee consisting of representatives of institutions and United Nations specialized agencies should be set up to study and advise on the modalities of reorienting third-level education to the needs of the Lagos Plan of Action;
- (iii) A standing committee of the Conference should be set up to monitor and follow up, the implementation of the present recommendations;
- (iv) ECA/OAU/AAU should organize a conference of government ministries/officials to discuss the plight of manpower development in institutions in respect of resource allocations for research, training expansion and collective regional efforts. Something by way of a pledging conference might fulfil the need.

10. Mechanisms

19. In order for the recommendations of the Conference to be implemented, it was decided that, through AAU, the following should be done.

Recommendations

(a) General

- (i) Curriculum panels should be set up to study and advise on curricula reform;
- (ii) An ad-hoc committee should be set up to look into the possibilities of selecting institutions to specialize in specific areas of education and training for regional use;
- (iii) ECA/OAU/AAU should be requested to call together Governments, institutions and industry in order for them to decide how jointly they could facilitate and contribute to each other's work;
- (iv) An ad hoc committee consisting of representatives of the institutions and United Nations specialized agencies should be set up to study and advise on the modalities of reorienting third-level education to the needs of the Lagos Plan of Action;
- (v) A standing committee of the Conference should be established to monitor and follow-up the implementation of the Conference's decisions.

(b) Specific

The following were proposed for immediate action, both within individual institutions and within the framework of regional co-operation:

- (i) Curricula should be oriented towards the needs of rural communities which constitute the vast majority of African societies and to the pillars of African economies;

- (ii) A greater effort should be made to absorb more women into higher education since they constitute more than half the African labour force and, therefore, potentially more than half the future stock of African middle- and high-level manpower;
- (iii) Faculties or institutes of rural development should be set up rather than of agriculture alone and offer degrees and diplomas in rural development;
- (iv) Courses should be introduced in food technology, preservation, storage, rural technology, solar energy, nuclear energy and other areas of skills and knowledge which would more readily prepare graduates to cope with current problems of development among the majority of the African people.
- (v) Universities and other institutions should be decentralized to rural areas where the skills, expertise and knowledge could be readily available for rural development efforts;
- (vi) Sociological research should be intensified into the effects of development intervention in rural areas such as social maladjustments brought about by agricultural production practices, resistance to the acceptance of technology or new and innovative production methods, etc.
- (vii) More opportunities should be provided for the training, retraining and skills upgrading of civil servants engineers, agriculturists, teachers and other professionals already operating within the economy in order to provide for constant self-development and for greater efficiency.

II. GROUP B: EDUCATION FOR INNOVATION AND ECONOMIC INDEPENDENCE

20. The central theme was how to make education at the tertiary level functional, development biased and structured to solve development problems/obstacles, to favour innovation and develop a frame of mind for creativity and self-reliance. The theme called for education to be an effective tool in engineering socio-economic change. The focus was:

- (a) To make education foster innovation, change and self-reliance through:
 - (i) subject offerings and curricula orientation to socio-economic needs;
 - (ii) development and problem-oriented research;
 - (iii) development of textbooks, instructional materials and technological education - methods, teachers, media etc.;
 - (iv) reducing graduate unemployment;

- (v) work-oriented middle-level manpower training;
- (b) To develop capacity and capability in educational institutions for direct participation in engineering socio-economic change:
 - (i) production of spare parts and maintenance services;
 - (ii) consultancy and advisory services;
 - (iii) appropriate technology and problem-solving research;
 - (iv) productive education in getting universities to enter industries and vice-versa;
- (c) To consider a project proposal for the establishment of training and production workshops in engineering disciplines

1. National development plans

21. In the discussions on the subject it was agreed that the activities and areas of emphasis of tertiary institutions should be determined within the context of national economic development plans. The development plans, which should be comprehensive should be formulated, using the most competent indigenous bodies aware of attainable goals, representing all sectors of the economic, educational, social and political institutions with a view to promoting the best possible use of national resources. The plans should also incorporate comprehensive human resource development plans and targets indicating clearly the skills required for the implementation of the national plan, thereby providing a basis for training institutions in their teaching activities.

Recommendations

- (a) African countries should therefore prepare perspective plans of at least 10 to 15 years' duration which should be broken into five-year plans and which should give the institutions at least five years to prepare the needed programmes.
- (b) Within the framework of such national plans, institutions of higher learning in Africa should aim at training highly qualified and competent specialist in all fields of national need and in science and technology so that graduates have practical knowledge of production and distribution, are capable of utilizing modern technology to the utmost and of creating the technology of the future.

2. Course orientation and content

22. Course offerings in tertiary educational institutions should therefore ensure the acquisition of practical knowledge by innovative technical inputs into the means and instruments of production as well as distribution. Also the development of tertiary level courses should take fully into account the prevailing economic activities and the technological basis of society as well as national development plans.

Recommendation

All programmes in tertiary level institutions should include courses that provide adequate knowledge of African society, ideals and goals. Course offerings at this level of education should take fully into account the prevailing background of students with a view to eliminating difficulties arising from lack of exposure to technological culture. They should also provide exposure to industrial practice and experience.

3. Research and development

Recommendation

Research and development in institutions of higher learning should be problem oriented and directed towards solving the current and future problems of industry and society. In addition it should be aimed at improving knowledge to enable Africa to gain from, and contribute to, the world body of knowledge.

4. Development of textbooks and instructional materials

23. Since the ability of tertiary institutions to produce relevant manpower depended on the output from secondary-level institutions, institutions of higher learning should participate actively in the production of textbooks and instructional materials for secondary schools. Special attention should be given to the need to review current curricula and teaching in mathematics and physics in particular.

Recommendations

- (a) AAU, African Governments, academies of sciences and institutions of higher learning should encourage and sponsor the production of textbooks in all fields of higher education, particularly science and technology where very few books by indigenous authors exist;
- (b) Governments should take positive steps to provide special incentives to teachers at all levels of the educational system;

- (c) Governments and institutions of higher learning should invest more in development programmes which should include both higher academic studies and exposure to industry, government and commerce;
- (d) Interchange of staff between government, industry, commerce and institutions of higher learning should be encouraged;
- (e) There is need also to give pedagogic training to teachers in institutions of higher learning, and staff development should be extended to middle-level technical and laboratory staff;
- (f) To ensure the retention of staff, African Governments and institutions of higher training should formulate personnel policies that ensure the retention of excellent minds, provide an atmosphere conducive to creative activities, provide adequate funds for practical and theoretical research and enable staff to participate in the formulation of national policies, particularly those affecting the activities of institutions of higher learning;
- (g) Criteria for remuneration and promotion should take full cognizance not only of research publications but also of development work which results in the production of goods and services that benefit industry and society;
- (h) To increase the number of science teachers in secondary schools more emphasis should be placed on post-secondary teacher training colleges. These institutions should when necessary, provide remedial programmes to enable more students to qualify for admission.

5. Institutional participation in national development

Recommendations

- (a) Institutions of higher learning should use their working capacities to produce components required by industry and society to enhance the relevance of teaching and research as well as improve their financial resources
- (b) Institutions of higher learning should set up consultancy and advisory services to harness and make available to industry and society their reservoir of expertise. Governments as a matter of policy should make use of these services and those of other indigenous consultants in preference to foreign consultancy services. Governments should, by use of fiscal measures, induce industries to make use of indigenous consultancy services.

6. Centres of work experience

Recommendations

Recognizing that industrial facilities and operations in African countries are inadequate to provide fully for the practical industrial content

of training in technological fields, centres of work experience or teaching companies should be established at the regional and subregional levels. ECA in collaboration with African Governments should therefore carry out feasibility studies and provide guidelines for the establishment of these centres.

GROUP C: MAXIMIZING THE USE OF STAFF, RESIDENTIAL AND INSTITUTIONAL FACILITIES AND CAPABILITIES IN HIGHER EDUCATION INSTITUTIONS

25. The central aim of the Group was to determine how to get substantially more products out of educational and training institutions by exploring alternative and more intensive uses of available human, material or financial resources. Institutions in developing countries needed to adopt cheaper ways of extending education and training to the people on a massive scale and not concentrate on only the privileged few. Hence there was need to examine, review and make proposals in respect of:

- (a) Policies and strategies for maximizing the use of staff, residential and instructional facilities and capabilities:
 - (i) type of capability and faculty development needs;
 - (ii) faculty training through African institutions and development programmes;
 - (iii) reversing the African "brain drain" through faculty development;
 - (iv) staff development programmes, teaching loads, sabbaticals and research work;
 - (v) technical and advisory services;
- (b) The case for "double intake"/increased intake of students
- (c) Community-based education, evening classes, work-oriented and extra-mural classes;
- (d) University-based non-formal education and distance teaching programmes/techniques, open universities, external degrees/diplomas, correspondence education, certification and accreditation;
- (e) Subject offerings and curricula orientation.

26. Following the guidelines provided, the Group discussed the various policies and strategies for maximizing the use of staff, residential and instructional facilities and capabilities by institutions of higher learning in a manner conducive to the implementation of the Lagos Plan of Action.

1. Type of capability and faculty development needs

27. Members were informed of current practices in some African universities where already a certain degree of co-operation existed among universities both within the country and in other African countries. The co-operation usually took the form of university staff from older institutions taking up short-term appointments at newer institutions. The Group felt that there was need for older institutions to help with the development of less experienced staff and help with the development of faculties and programmes in the newer institutions lacking the necessary capacity and capability.

Recommendations

- (a) African universities should promote the use of part-time teachers, staff exchange and secondment on a short-term basis to fill gaps in their teaching and research requirements, and appropriate incentives should be provided to make this attractive;
- (b) The Association of African Universities should be used as a clearing house for the implementation of recommendation (a) above, so that the scheme can be executed on a continental basis;
- (c) Arrangements should be made so that African university academic staff find it attractive to spend their sabbatical leave in other African universities;
- (d) The Association of African Universities in collaboration with ECA and OAU and any other interested agency should organize frequent conferences of experts of African universities in specific fields to allow for exchange of ideas on a discipline basis;
- (e) Where appropriate, suitable personnel from outside the universities should be involved in university teaching and research projects.

2. Faculty training through African institutions and development programmes

28. The Group considered that faculty training was another vital area in which the universities could make a significant contribution to the Lagos Plan of Action. It was felt that post-graduate training in Africa on topics which were of relevance to Africa was of the greatest importance.

Recommendations

- (a) African universities should co-operate under the aegis of AAU in post-graduate training and staff development and to this end, the universities should, as a matter of urgency, strengthen their post-graduate training facilities;
- (b) Universities and Governments in Africa should institute inter-university scholarship schemes;

- (c) A scheme of exchange of students between African universities should be instituted and in this regard every country should reserve say 10 per cent of student places for students from other parts of Africa, the fees (tuition, board and lodging) for such students being fully met by the host Government.

3. Reversing the African "brain drain" through faculty development

29. It was noted that the brain drain was a very serious matter already engaging the attention of AAU. The Group examined the problem in two parts - first as it related to those who had already emigrated and secondly as it related to potential emigrants. The Group examined the causes of this African brain drain to other continents and found that they included dissatisfaction with facilities at home, attachment to other continents through marriage, a foreign orientation of research and professional interests, better conditions of service abroad, including better remuneration and greater freedom of action.

Recommendations

- (a) AAU should take a full inventory of aspects of African brain drain to other continents;
- (b) A full conference should be convened by an appropriate body to examine the African brain drain to other continents in all its ramifications and recommend ways of encouraging the return of those who have already emigrated.

4. Staff development programme, teaching loads, sabbaticals and research work

The Group noted that some of the issues involved had already been taken up earlier but emphasized that university teachers should not be overloaded with teaching assignments so that they could have adequate time not only for recuperation and research but also to render service both to other universities and to their communities and Governments.

Recommendations

- (a) Steps should be taken to ensure that university teachers have adequate time to perform duties other than teaching as enumerated above;
- (b) Graduate assistants should be used to relieve university teachers of some of their teaching assignments;
- (c) Priority should be given to staff development through greater funding of graduate studies;
- (d) University curricula should be examined with a view to streamlining teaching;

- (e) Methods of teaching should similarly be reviewed so as to eliminate spoon-feeding, and to this end library facilities should be expanded and improved so that students can learn more on their own;
- (f) The volume of research should be increased and should be related to local and pan-African needs.

5. Technical and advisory services

31. The Group noted that academics were poor salesmen and that it was therefore necessary to find a means of making the existence of their reservoir of expertise, research findings, and capabilities known to the Government and other potential consumers of such services.

Recommendations

Each university should have consultancy, technical and advisory services which are to liaise between the university and the outside world with a view to getting the universities fully involved in the development process.

6. The Case for "double-intake" and/or increased intake of students

32. Professor Okonjo summarized his "double-intake" proposal, which was then discussed.

Recommendations

Serious consideration should be given by all African universities to this important proposal with a view to adopting parts or all of it provided such adoption does not lead to lowering standards of admission or adversely affect the products of such a system.

7. Community based education

33. The Group endorsed the necessity for evening classes and various kinds of extra-mural classes. Although it was observed that most African universities ran either or both categories of classes, the Group felt that they should do more so that more people could benefit from these opportunities.

8. Non-formal education

34. The Group also endorsed the necessity for non-formal education and distance teaching.

Recommendations

- (a) Facilities should be provided for the award of external degrees;
- (b) Universities should organize a lot more refresher courses to meet the various needs of their communities.

9. Subject offerings and curricula orientation

35. It was observed that the issues involved here had already been covered in the earlier stages of the Group's discussions.

10. FinanceRecommendations

- (a) All necessary financial arrangements at the institutional, national and continental levels should be made to ensure the implementation of the foregoing recommendations.
- (b) Expanded Fellowship Programme operating under the auspices of ECA should be reinforced to allow African scholars to pursue problem-oriented research in African universities.

IV. GROUP D: NATIONAL AND REGIONAL CO-OPERATION IN THE DEVELOPMENT OF SPECIALIZED EDUCATION AND TRAINING IN AFRICA

36. The main theme was co-operation and collaboration in the development and utilization of human resources in Africa through:

- (a) Intra-African co-operation in the development of specialized training and education programmes in relation to manpower needs
 - (i) specialized centres and training programmes for critical skills;
 - (ii) training and fellowship programmes in African institutions to reduce dependence on foreign institutions and the excessive cost of overseas education;
- (b) Co-operation among universities and polytechnics in operating multi-disciplinary consultancy programmes in support of development;
- (c) Co-operation between universities, industries and the public sector in linking learning with work to make education more relevant and help to solve development bottlenecks (the case for teaching factories);

(d) Collaboration in publications, textbook production, translation (French or English) or research work, and production of instructional materials;

(e) Collaboration in the development of appropriate technology through experience and research sharing.

37. It was considered necessary to be clear about the purposes which co-operation among institutions of higher learning was intended to serve. A number of these aims were:

(a) Co-operation should have as one of the primary aims to assist national institutions to improve their capacities for teaching, research and extension services for the realization of the objectives outlined in the Lagos Plan of Action;

(b) Co-operation among institutions would enable African nations to maximise the use of available skilled manpower;

(c) Co-operation would help to promote staff development and the training of trainers;

(d) Since development needs in each country exceeded by far national capacities for satisfying them, co-operation became mandatory, especially in advanced graduate studies in the critical skill areas such as engineering, medicine, agricultural sciences, food technology, computer science, management and technical/science teacher training;

(e) Finally, co-operation among institutions of higher learning would enable Africa to develop regional and subregional specialized centres of excellence.

38. After defining the aims and purpose of co-operation the Group decided to determine some of the measures through which co-operation could be effected. In this regard, it was noted that there was in fact already a measure of co-operation amongst the institutions although it was unsystematic and limited in scope.

39. The Group considered that co-operation among institutions of higher learning could most effectively be implemented through the following measures:

(a) exchange of staff;

(b) exchange of students;

(c) exchange of literature; and

(d) formation of professional associations.

Recommendations

(a) Governments should provide resources to enable institutions of higher learning to exchange staff and students;

(b) Post-graduate fellowship programmes should be instituted in as many universities as possible. In this regard the universities should aim at achieving a minimum of 10 per cent total student enrolment as post-graduate and of these post-graduate students 10 per cent should be foreign;

- (c) The ECA fellowship programme needs to be made more widely known among institutions of higher learning;
- (d) Governments, regional and international organizations and donor agencies should support professional associations as a way of facilitating training and exchange of information about curricula, expertise and research. These associations constitute effective tools for implementing the objectives of the Lagos Plan of Action
- (e) Collaboration and co-operation were needed in the production of science books to local culture and therefore less abstract and esoteric. Interest in science could be fostered by such an approach to science teaching materials;
- (f) A co-ordinating body should be established at the national level for purposes of co-operation among universities, polytechnics and research centres. Such a body should enunciate and institute policy on science and technology at the national level and would also co-ordinate multidisciplinary consultancy programmes in support of development among universities, polytechnics and research centres. Such a body would also be charged with the responsibility for administering the fund proposed in paragraph 181 of the Lagos Plan of Action (A/S-11/14, annex I).
- (g) All Governments should support specialized regional and subregional centres of excellence. Regional and international bodies are urged to collaborate with African Governments in these efforts.

SPECIFIC RECOMMENDATIONS OF THE CONFERENCE

GENERAL OBJECTIVES AND STRATEGY IN THE IMPLEMENTATION OF THE LAGOS PLAN OF ACTION

40. The main aim of the conference was to work out details of what should be done and how it should be done, in order for higher educational institutions to make vital contributions towards the implementation of the Lagos Plan of Action. The ultimate objective of the Lagos Plan of Action is to set the economy of Africa on a firm and self-reliant and integrated foundation with self-sufficiency in food production and supply and with a level of industrialization which would free Africa from under-development and economic dependence. This goal challenges third-level educational institutions to consider what role they must now play in;

- (a) The development of human resources to meet the socio-economic development needs of African States;
- (b) Generating the essential technological and scientific knowledge and capabilities which will promote rapid development and economic independence;
- (c) Co-operating with Government and other development agencies in the planning and execution of socio-economic development programmes.

41. The strategy for the implementation of the Lagos Plan requires on the part of higher educational institutions:

- (a) A critical re-appraisal of their present status, roles and activities in society;
- (b) A recognition of the socio-economic problems and realities of the African continent;
- (c) A re-orientation of their roles and activities in the light of the developmental objectives of the Lagos Plan;

42. Heads or accredited representatives of African higher educational institutions attending this Conference hereby resolve to foster the expeditious implementation of the recommendations of this Conference, as listed below, which are designed to ensure the urgent and full realization of the Lagos Plan of Action.

Recommendations

(See General Recommendations of the main report)

The Conference recommends as follows:

(a) Curriculum content and orientation

(See paragraphs: 10, 12, 15, 19, 22, 35 and 39)

- (i) Curricula throughout the educational system in Africa should be oriented towards meeting the socio-economic developmental needs of African States, and particularly the needs of rural communities which constitute the vast majority of African societies and the pillars of African economies;
- (ii) Third-level educational institutions should introduce courses in appropriate and pertinent technologies such as food technology, preservation, storage, rural technology, solar energy, nuclear energy, and other areas of know-how which would prepare graduate more adequately to contribute to the development effort aimed at the majority of the African people;
- (iii) Curricula should include appropriate learning approaches, which take into account the background of students vis-a-vis the lack of prior exposure to technological culture, for developing their practical knowledge;
- (iv) Curricula should include courses that will provide students with an adequate knowledge of the African society in relation to its past, ideals and goals;
- (v) Curricula should include communication skills development which will enable graduates to relate to those they work with.

(b) Research and development

(See paragraphs 11, 13, 19, 27, 30 and 39)

- (i) Research and development in institutions of higher learning should be stepped up and should be oriented towards solving the socio-economic problems of industry agriculture and society in Africa;
- (ii) Socio-economic research should be intensified into the effects of development intervention, such as social and cultural challenges posed by innovative agricultural production practices, resistance to the acceptance of technology or new and innovative production methods; and research results should be used to guide further development action;
- (iii) A "data bank" should be created for research and for the dissemination of research results, as well as the development of African scholarly journals and publications for easy dissemination;
- (iv) There is need for co-operation in the research effort through sharing facilities and information should be strengthened so as to optimize the utilization of the results of research;

(c) Services

(See paragraphs 11, 13, 19, 27, 30, 39)

- (i) Institutions of higher learning should foster greater understanding and co-operation between them and Government and industry through the consultancy, technical and advisory services;
- (ii) Institutions of higher learning should use the resources available to them to produce components required by industry and society so as to enhance the relevance of teaching and research as well as to render services to the community;
- (iii) Centres of work experiences or teaching companies should be established for third-level educational institutions which will provide practical technological disciplines to what the established industries in the society can provide;
- (iv) Non-formal educational services and in-service training should be provided by third-level institutions to meet socio-economic needs in Africa and should include external degree courses, literacy programmes, refresher courses, etc;
- (v) The services of institutions of higher learning should be extended to the rural areas where the skills, expertise and knowledge acquired by students could be readily employed for rural development.

(d) Manpower planning and development

- (i) Third-level educational institutions should participate in manpower planning in relation to the socio-economic needs in Africa;

- (ii) Academic planning in higher institutions of learning should be tailored to projected manpower needs so as to arrest graduate unemployment, which tends to lead to the 'brain drain' as well as, avoiding manpower wastage through the misuse of graduates in areas outside their fields of training;
- (iii) More women should be absorbed into higher education since they represent more than half of the potential labour force;
- (iv) Sub-degree and diploma programmes in the third-level education should be encouraged in order to aid middle-level manpower development;
- (v) Positive steps should be taken for the development of staff in adequate numbers and quality for all levels of education through the expansion of training programmes to include pedagogic training and industrial experience, staff exchange between government, industry commerce and institutions of higher learning;
- (vi) Post-graduate programmes should be intensified especially in the critical disciplines of science and technology, so as to increase the quality of manpower available to educational institutions for teaching, as well as to the economy at large.

(e) Resource development

(See paragraphs: 11, 23, 28, 29, 39)

- (i) Institutions of higher learning should participate actively in the production of textbooks and instructional materials particularly in technology and science which should as far as possible be integrated with local culture to meet the critical needs of secondary schools which are feeders of the third-level institutions;
- (ii) Institutions of higher learning should also secure the support and co-operation of AAU, the African Governments and academy of sciences, in the production of textbooks in all fields of higher education, particularly science and technology, where few books exist by indigenous authors;
- (iii) Institutions of higher learning should participate in the design and manufacture of equipment for the education system.

(f) Intra-African co-operation

(See paragraphs 18, 23, 39)

- (i) A scheme of enrolment and exchange of students between African institutions of higher learning at the undergraduate and post-graduate level should be instituted;
- (ii) Ad hoc committees should be set up to study the possibilities of selecting institutions to specialize in specific areas of education and training for regional use.

(g) Double intake

(See paragraph 32)

- (i) African institutions of higher learning should seriously consider the possibilities of increasing their student intakes through the "double intake" system, especially in areas of critical manpower needs in the national economy;
- (ii) A dialogue should be started with the Government and the community on the implications and mechanics of such a system of student enrolment;

(h) A pledge

We, here present, being heads of institutions of higher learning in Africa or their accredited representatives, do pledge ourselves individually and collectively to foster the expeditious implementation of the recommendations and resolutions of this Conference to ensure the full realization of the Lagos Plan of Action.

VOTE OF THANKS

The Conference of Vice-Chancellors, Presidents and Rectors of Institutions of Higher Learning in Africa jointly organized by ECA and AAU, in collaboration with OAU and UNESCO, which met in Addis Ababa from 25 to 29 January 1982, expresses its deep gratitude to the Government of Ethiopia for the cordial and friendly welcome extended to participants.

The Conference in particular expresses its gratitude to Comrade Goshu Wolde, Minister of Education of Ethiopia, for the honour done to the Conference by assisting personally at the opening session and for the important speech that he delivered on this occasion.

The Conference avails this opportunity to express its deep thanks to ECA, AAU and also to OAU and UNESCO for their initiative in convening this meeting and also for the perfect material arrangements for the Conference and for the enriching communications submitted.

The Conference highly appreciated the quality of the contribution of Addis Ababa University and of its dynamic President, Prof. Duri Mohamed, who had deployed commendable efforts to make the stay of the participants pleasant and instructive and conducted the work with perfect mastery.

Finally, the Conference expresses its thanks and congratulations to the secretariat of the conference and to all who contributed from near or from far to assure the success of the meeting.