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Meeting of Higher Education Partners

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**Recent developments
and future prospects of higher education
in sub-Saharan Africa in the 21st century**

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Note of the Secretariat

Five years after the World Conference on Higher Education (Paris, 1998), UNESCO has once again reunited actors in higher education from across the world, represented by the focal points responsible for the follow-up of the World Conference and certain notable figures, for a meeting of partners in higher education (UNESCO, Paris, 23-25 June 2003).

The goal of the meeting is to evaluate progress in the implementation of the World Declaration over the last five years, to measure the impact that the Conference has had on the development of higher education at the world level, and to define orientations for future action at the level of Member States and institutions to ensure that higher education is able to better respond to rising needs and challenges.

The principal working documents made available to the participants to facilitate their deliberations and to allow them to reach their objectives were prepared on the basis of information collected by Member States and our principal partners in the follow-up of the World Conference, as well as our colleagues responsible for carrying out the higher education programme at the regional level.

The Division of Higher Education would like to express its sincere gratitude to all the actors who contributed to the organisation of the partners' meeting.

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Director
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Summary

This report briefly analyses the results obtained and the difficulties encountered by higher education in sub-Saharan Africa in the follow-up of the world conference on the higher education (WCHE) and gives some prospects for the development of higher education in sub-Saharan Africa in the 21st century. The report is composed of three major parts, namely:

- Higher education in sub-Saharan Africa on the eve of the world conference on the higher education (WCHE)
- Results achieved and difficulties encountered during the period from 1998 to 2003
- Contribution of UNESCO and other regional and international organizations to the follow-up to the WCHE.

Higher education in sub-Saharan Africa on the eve of the WCHE

Higher education in sub-Saharan Africa made a major contribution to the training of human resources required for the operation of the civil service and the development of the education system. However, on the eve of the WCHE, it was beset with several challenges related to access, gender equality, relevance, quality, management, funding and research

During the last decades, the growth rate of student enrolments in higher education in sub-Saharan Africa was among the highest in the world. However, in spite of this rapid increase in enrolments the gross enrolment ratios gap between sub-Saharan Africa and developed countries has continued to widen and currently higher education in sub-Saharan Africa is the least developed of all the regions of the world.

Several reasons, in particular, the shortage of the resources allocated to higher education and the deterioration of staff conditions of service led to a significant decline in the quality of teaching and research.

Prior to the WCHE, some countries and higher education institutions had already undertaken reforms of their systems in order to improve their effectiveness and to enable them to better meet the national needs

Regarding research, it is worth mentioning that there are centers of excellence and institutional networks supported by bilateral and international cooperation agencies that are implementing high-level research activities.

Achievements and difficulties of higher education in sub-Saharan Africa during the period from 1998 to 2003

The follow up to the WCHE mobilized several stakeholders in higher education, in particular governments, higher education institutions, private sector, bilateral, regional and international co-operation agencies. Sub-Saharan Africa has achieved several results which relate to reforms carried out in order to revitalize higher education, widening of access, improvement of relevance and quality, reduction of the impact of brain drain, strengthening research capacity, access to new information and communication technologies and improvement of access of women to higher education.

The follow-up of the WCHE experienced a lot of problems in countries confronted to social crises and civil wars.

Contribution of UNESCO and other regional and international organizations to the follow-up to the WCHE sub-Saharan Africa

In addition to African governments and their higher education institutions, several regional and international organizations contributed significantly to the follow-up to the world conference on the higher education in sub-Saharan Africa. In this report, we highlight the contributions made by UNESCO, the Abdus Salam International Centre for Theoretical Physics, the Association of the African universities, the "Agence universitaire de la Francophonie", the American foundations, the bilateral and international co-operation and other organizations like the World Bank, the African Development Bank and the ADEA (Association for the Development of Education in Africa) Working Group on Higher Education.

Future prospects for the development of higher education in sub-Saharan Africa in the 21st century

Several changes and trends, in particular the renewed interest for higher education at the international level, the experience gained by some higher education institutions, the prospects for return to peace in West and central Africa and the priority given by African regional organizations and initiatives like NEPAD to teacher training and promotion of centers of excellence open new prospects for the development of higher education in sub-Saharan Africa in the 21st century.

Introduction

It is now well established that higher education in sub-Saharan Africa made a major contribution to the training of human resources required for the operation of the civil service and the development of the education system.

Unfortunately, since the 1980s, the development of higher education in sub-Saharan Africa was characterized by a rapid increase in student enrolments and inadequate financial resources necessary to ensure quality education and research. This situation led to a significant deterioration of academic and research infrastructures, a reduction in the capacity of student supervision, lack of learning materials and in the final analysis to the decline of the quality of teaching and research.

From the 1990s, several meetings were convened and studies carried out at national, regional and international levels in order to define strategies required for the revitalization of higher education in Africa. These included the three seminars on management of higher education in Africa organized by UNESCO Africa Department from 1991 to 1993 in Accra, Dakar and Alexandria respectively and two major publications of the UNESCO Regional Bureau for Education in Africa (BREDA), namely *Higher Education in Africa: Challenges and Trends in the 21st Century* (UNESCO, 1992) and *Future Directions for Higher Education in Africa* (UNESCO, 1994). The outcomes of these meetings and studies were integrated in the UNESCO *Policy Paper on Change and Development in Higher Education* (UNESCO, 1995).

As part of the preparation for the World Conference On Higher Education (WCHE) BREDA organized in April 1997, a regional consultative conference which enabled all the stakeholders to take stock of the situation of higher education in Africa on the eve of the WCHE and to lay down the future directions.

The WCHE marked a significant step in the development of higher education worldwide. As in the other regions of the world, sub-Saharan Africa was able to set up the necessary strategies and mechanisms to ensure an effective follow-up to the major recommendations of the conference. This report briefly analyses the results achieved and the difficulties encountered on the follow-up to the WCHE and provides information on future prospects of higher education in sub-Saharan Africa.

Higher education in sub-Saharan Africa on the eve of the 1998 World Conference on Higher Education (WCHE)

The situation of higher education in sub-Saharan Africa on the eve of the WCHE is largely documented in two major publications of the UNESCO Regional Bureau for education in Africa (BREDA), namely, the Declaration and the Action plan of higher education in Africa adopted by the regional consultative conference on higher education in Africa, preparatory to the WCHE (UNESCO 1997) and the publication titled *Higher Education in Africa: Achievements, Challenges and Prospects* (UNESCO 1998 a).

These publications indicate that higher education contributed significantly to the training of human resources required for the operation of the civil service and the development of the education system. However, they also identify several challenges that the African countries and their institutions of higher education must take up in order to reinforce the contribution of higher education to the process of sustainable human development and peace building.

These challenges relate primarily to access, equity, gender equality, relevance, quality, management, funding, research and the contribution of the higher education institutions to conflict resolution and peace building.

Access

In the last three decades, the increase in student enrolments in higher education in sub-Saharan Africa was the highest of all the regions of the world. However, in spite of this expansion, the indicators used to measure the level of development of a higher education system, in particular the gross enrolment ratios and the number of students per 100,000 inhabitants, show that the higher education system in sub-Saharan Africa remains the less developed in the world.

One of the reasons that explain the low level of the gross enrolment ratios in sub-Saharan Africa is the limited level of diversification of the educational system. Indeed, except for Kenya, South Africa, Ghana and Nigeria, the percentage of higher education students enrolled in non university higher education institutions is slim. In Latin America and South East Asia, students enrolled in non-university higher education institutions represent sometimes more than half of the total enrolment in higher education (World Bank, 2000a).

With regard to universities, it is noted that the expansion of student enrolments did not occur at the same pace in all the sub-regions of sub-Saharan Africa; it was much faster in French-speaking countries mainly due to the admission policies in force in these countries which make it possible for any holder of an upper general secondary school-leaving certificate known as baccalauréat and equivalent to the A-level, to enroll to the university. As an example, it is usual to find in some French-speaking universities, more than 2,000 students piled up in lecture rooms planned for 700 people. Moreover such lecture rooms are usually deprived of basic facilities to ensure a quality education.

In English-speaking countries, enrolment to the university is subjected to a rigorous selection based on criteria likely to promote quality of education, in particular the capacity of classrooms and laboratories and the level of teacher/student ratios. In Kenya for example, less than 10% of the secondary school graduates are admitted each year in the six public universities of the country.

Normally, in order to fulfill the requirements of a quality education, such a major expansion of student enrolments that occurred in sub-Saharan Africa should have implied a suitable change in human, financial and material resources. Unfortunately, this was not the case. The shortage of financial resources has led to a significant deterioration of conditions of teaching and learning and in the last analysis to a decline in the quality of higher education.

Relevance

As indicated in the UNESCO *Policy Paper for Change and Development in Higher Education* (UNESCO, 1995), relevance of higher education should be analysed according to its role and its place in the society, its missions, relationships with the State and the public sources of funding and its interaction with the other levels and forms of education.

In sub-Saharan Africa, relevance of higher education was for a long time defined according to the appropriateness of the training provided in higher education institutions to employment available in the civil service.

Today, taking into account the lack of employment in the civil service, higher education institutions are challenged to train graduates able not only to constantly update their knowledge and skills but also to create jobs instead of claiming them as their right.

Consequently, relevance of higher education should increasingly be defined according to the ability of graduates to create jobs and to use effectively existing and emerging opportunities for lifelong learning.

Funding

The level of public expenditure

During the last three decades, African countries have made significant investments in the development of their higher education systems. The resources required for this development were mobilized through national budgets, grants and loans.

However, it is established that as from the 1980s, the public resources allocated to higher education were largely inadequate to respond effectively to the rapid expansion of students' enrolments and to the basic requirements for quality education and research. Indeed, according to the World Bank and UNESCO, the average public expenditure by student in sub-Saharan Africa, decreased from \$6,300 in 1980 to \$1,500 in 1988 and \$1,241 in 1995 (World Bank 1995, UNESCO 1998 b).

Among the factors which led to this situation, it is worth mentioning the increase in external debt and its servicing, the deterioration of prices of raw materials and agricultural products, the devaluation of national currencies and the implementation of structural adjustment policies.

The structure of public expenditure

In sub-Saharan Africa, a significant share of higher education budget is often allocated to expenditures that are not directly related to the implementation of institutional missions, in particular to scholarships and various social services intended for students.

Indeed while these expenditures account for only 6% of the higher education budget in Asia and 14% in the OECD countries, they represent 55% of the higher education budget in French-speaking sub-Saharan Africa against 15% in English-speaking countries (World Bank, 1995). *The statistics available indicate that no other region of the world spends as much money on student social services as French-speaking sub-Saharan African countries.*

Initially the main objective of scholarships and other social services offered to students was to attract and motivate qualified students to enrol to higher education institutions to enable the countries to train the human resources required for the operations of the civil service and the development of the education system. Today, the worsening of the graduate unemployment phenomenon indicates that this objective was largely achieved.

It is consequently urgent to revise the current funding policies in order to allocate adequate resources to activities related to the missions of the higher education institutions. The reform of funding policies is also justified by the fact that currently, it is agreed that access to higher education can open better employment and income opportunities for individuals.

The need for a reform of higher education funding policies is shared by all the stakeholders including students associations. Indeed the regional forum of students associations in Africa organized by UNESCO-BREDA in March 1998 in Accra, Ghana, adopted the following recommendation: *"the higher education sector should be provided with adequate and sustainable funding. In view of the difficulty encountered by Member States in financing higher education, the forum recommends that higher education institutions mobilize additional resources through income-generating activities and minimal reasonable contributions from students"* (UNESCO, 1998 c).

Several efforts were made by the African governments and institutions of higher education to mobilize additional financial resources, but the results obtained are very limited. The strategies used include tuition fees, loans schemes, hiring of infrastructures, establishment of commercial enterprises and various initiatives related to cost reduction.

Quality

As indicated in the final report of the World Conference on Higher Education, (UNESCO, 1998 d), the quality of higher education is a multidimensional concept which takes into account at least the quality of programmes, personnel, students, equipment and teaching and learning materials.

The shortage of resources in the 1980s and 1990s has led to a significant deterioration of academic infrastructures, laboratories, teaching materials, student supervision capacity and in the last analysis to a major decline in the quality of

In addition due to the deterioration of staff conditions of service and the worsening of the brain drain phenomenon, several universities cannot manage any more to attract qualified faculty. In Ghana for example, it is estimated that in 1998, 40% of the faculty positions in the universities and more than 60% of those in polytechnics were vacant (Effah, 2000). For the same period, according to the standards established by the national universities Commission, more than 50% of the faculty positions in Nigerian universities were vacant (Jibril, 2000). It is also noted that the faculty available in higher education institutions increasingly accept several part-time jobs in order to improve their living conditions.

The quality of teaching and research was also affected by the suspension of existing academic staff development programmes and sabbatical leaves. These programmes made it possible for the academic staff and researchers to regularly update their knowledge and skills and to benefit from research facilities available in developed countries in order to carry out their research activities.

Consequently, one of the major challenges of higher education in sub-Saharan Africa is *to widen access and to improve relevance and quality of teaching and research when the current trends indicate that the average public expenditure by student will continue to drop.*

Research

Since their accession to independence, African countries affirmed on several occasions their will to use scientific and technological research as one of the strategies for achieving economic and social development. However, in spite of this political good-will, the various indicators used to measure the level of development of research, in particular, the number of engineers employed in research and development (R-D) activities and the number of publications and patents, show that sub-Saharan Africa remains the least developed region of the world in the area of research.

In addition, it is now established that except for South Africa, the quantity and the quality of research activities carried out in African universities have significantly declined in the last few years. The reasons that led to this situation include inadequate institutional research policies, shortage of resources allocated to research, deterioration of research laboratories and equipment, lack of a critical mass of the researchers able to supervise the research activities and limited number of postgraduate programmes and students.

It is also noted that research capacity is concentrated in a very limited number of countries. Indeed, statistics available indicate that if one excludes South Africa, then 70% of the publications produced in sub-Saharan Africa are carried out by three English-speaking countries, namely Nigeria, Sudan and Kenya (Saint, 1992).

However, in spite of this situation, there exist in sub-Saharan Africa several centres of excellence and research networks that produce high-level research outputs in African universities. It is particularly worth mentioning the International Centre for Insect Physiology and Ecology (ICIPE) based in Nairobi in Kenya which initiated the African regional postgraduate programme on insect sciences, the water resource engineering postgraduate programme at the University of Dar Es Salaam in Tanzania, the African Economic Research Consortium based in Nairobi and the postgraduate research programme in economics based in Ouagadougou, in Burkina Faso.

The African regional postgraduate programme on insect sciences (ARPPIS) was established by ICIPE in 1978 in collaboration with 7 African universities to train African specialists at the Master's and doctorate levels in various fields related to insects. In 1996, the programme was implemented in partnership with 30 African universities. The students enroll in their home universities but spend part of their time at ICIPE where they can benefit from research facilities and expertise available. From 1983 to 1996, the programme had produced 98 PhDs from 25 African countries and from 1988 to 1996 it graduated 43 students from 11 African countries at the Master's degree level. At least 20 organizations were involved in the funding of ARPPIS (Musewe, 1997).

The water resource engineering programme was established in 1982 at the University of Dar Es Salaam in Tanzania. In 2001, the programme had already produced 293 graduates at the Master's and 9 at PhD levels. Currently, the

programme receives every year more than 100 applications, but it can enroll only 20 candidates. The programme has been funded by more than 10 bilateral and international agencies (Mbwette, 2002a).

The African Economic Research Consortium (AERC) was established in 1988 in Nairobi to strengthen local capacity for economic policy research in sub-Saharan Africa. The consortium currently brings together 16 funders to support training and research activities. Training activities cover postgraduate programmes, which are implemented through a network of 20 universities in 15 countries. To date more than 128 grants for PhD thesis have been awarded and from these grantees, 80 have already completed their studies. AERC research programme covers small grants, methodological workshops, and biannual thematic research workshops. To date AERC has funded 280 research projects and the number of participating researchers has grown from 40 in 1988 to 200 in 1998. AERC has also published 127 research papers, 41 special papers and five books. (Lyakurwa, 1997; AERC, 2003).

In addition to the initiatives presented above, it is also worth mentioning that some African universities have adequate resources to carry out high-level research activities. For example, the Faculty of Science and the Okavango Research Centre of the University of Botswana have international standard laboratories and highly qualified researchers recruited at regional and international levels. Unfortunately, the number of students enrolled in postgraduate programmes at this university is extremely low, and therefore the existing facilities are largely underused.

Achievements and difficulties of higher education in sub-Saharan Africa during the period from 1998 to 2003

The implementation of the declaration and the framework of action adopted by the world conference on the higher education (WCHE) mobilized a significant number of stakeholders in higher education in Africa, in particular governments, higher education institutions, private sector, bilateral, regional and international co-operation agencies and the various committees set up to facilitate the follow up to the WCHE, namely the African regional committee and the African regional network for innovations in higher education

Several results were obtained. These relate in particular to the reforms carried out in order to revitalize higher education and the strategies implemented to widen access, to improve gender equality, relevance and quality of teaching, to reinforce research capacity and to reduce the impact of brain drain.

In spite of the results obtained, the challenges identified on eve of the WCHE were not completely taken up. On the contrary, higher education in sub-Saharan Africa is beset with new challenges emerging both from the requirements of the information society and specific problems of the African region. These challenges are about:

- The need for widening access to new information and communication technologies (ICTs).
- The contribution of higher education to the achievement of the EFA goals and the fight against HIV/AIDS.
- The follow-up to the WCHE experienced a lot of problems in countries confronted with social crises and civil wars. The prospects for return to peace in West Africa and the Great Lakes sub-region open new opportunities for the development of higher education in these countries.

Implementation of reforms of higher education

Several countries undertook or continued to implement reforms of the higher education in order to overcome existing problems, to improve relevance and quality of teaching, learning and research and to strengthen the capacity of higher education institutions in order to enable them to benefit from opportunities offered by the rapid expansion of ICTs and the regional and international co-operation and networks. In this regard, one can mention the examples of South Africa, Tanzania, Uganda, Cameroon and Nigeria. In Tanzania for example, the government adopted in 1999 a new higher education policy intended to adapt academic programmes to the new needs, to promote private higher education, to improve quality, and to revisit the act establishing the University of Dar es Salaam in order to adapt it to the new vision and the strategic plan of the university.

Today, the University of Dar es Salaam in Tanzania and Makerere University in Uganda are regarded as being successful experiences of reforms of higher education. Indeed, these universities which were at the edge of bankruptcy at the beginning of the 1990s managed to introduce new effective governance and management styles and new academic and research programmes which made it possible to improve and reinforce their relationships with the governments and other stakeholders, to attract new students, to reinforce their research capacity and to reduce brain drain.

Currently, these universities mobilize significant financial resources in order to achieve their missions. Makerere University obtains a sizeable part of its resources from tuition fees. Indeed, the share of tuition fees in the university budget increased from 17% in 1995 to more than 60% in 2000. The University of Dar es Salaam mobilizes significant resources from bilateral and international co-operation agencies. In 2001/2002 these contributions represented 43% of the university budget (Mbwette, 2002b).

Widening access

In spite of the rapid increase in student enrolments in sub-Saharan Africa during the last decades, the gross enrolment ratios gap between Africa and developed countries has continued to widen. Indeed, between 1980 and 1995, the gross enrolment ratios in sub-Saharan Africa and the United States of America increased from 2.5 to 4% and from 55 to 81% respectively (World Bank, 2002a).

Currently, the gross enrolment ratio of sub-Saharan Africa is the lowest of all the regions of the world. Obviously this regional figure hides significant disparities at national level. In Malawi and Tanzania for example, in 1999, the gross enrolment ratios stood at 0.5% and 0.3% respectively. (Chimombo, 2000; Mkude and Cooksey, 2000). Given the effects of HIV/AIDS on student numbers and graduation rates, Saint (1999) argues that in order to meet the human resources needs, several countries will need to triple their current higher education enrolments by 2010.

The other subject of concern relates to the widening of the gross enrolment ratios gap for postgraduate students. With the exception of South Africa, the proportion of students enrolled in postgraduate programmes in the African universities is very low and the growth rate of student enrolments at this level is equally low.

During the last years several countries implemented various strategies that made it possible to significantly increase student enrolments in higher education. These strategies relate in particular to the establishment of new public and private institutions, including open and distance education institutions, the establishment of the African Virtual University, promotion of short duration programmes, mainly through evening courses and the so-called parallel programs and promotion of the transnational higher education (Shabani, Okebukola, Sambo, 2002). In several countries, the establishment of new institutions is subjected to a rigorous procedure of accreditation and quality assurance coordinated by national or regional commissions for higher education.

Distance education has contributed not only to significantly widen access to higher education, but also to improve training opportunities for students living in rural areas and for women. In 2000, students enrolled in distance higher education programmes in South Africa represented 30% of all the higher education students (Butcher 2002) In 1999 the University of South Africa (UNISA) had a enrolment of almost 150,000 students and 55% of these students were women (Mackintosh, 2001). In 2000, the Zimbabwe Open University and the Open University of Tanzania had already established 10 and 21 regional centres respectively, in order to widen higher education opportunities for learners living in rural areas (Dzvimbo, 2001; Babyegeya, 2001).

The National Open University of Nigeria which was closed in 1985 re-opened its doors in May 2003 with 100 000 students and facilities distributed in 18 national centres. According to projections available, this University should enroll 600,000 students by 2007 (Jegede, 2003).

To further strengthen the capacity of distance higher education, UNESCO is developing with the assistance of the South African institute of distance education (SAIDE) a regional knowledge base to facilitate the development and the implementation of open and distance higher education policies. UNESCO also contributed in 2002 to the establishment of two UNESCO Chairs in distance education at the University of Botswana and the National Open University of Nigeria.

Improving relevance

As indicated in the preceding chapter, it is now agreed that relevance of a higher education programme should be measured at least partly according to the ability of graduates to create jobs. Some African universities have already integrated in their strategic development plans appropriate measures and mechanisms that allow the university to revise existing curricula in order to produce graduates who are able to create jobs.

As an example, for the period from 1998 to 2001, on the basis of tracer studies and market surveys, the University of Dar es Salaam in Tanzania introduced 23 new training programmes likely to meet more effectively the needs of the country. In addition, an academic audit carried out in 1998 recommended that each program should be revisited at least once every five years and adjusted appropriately to ensure that it responds to national needs and priorities

In sub-Saharan Africa, it is generally agreed that relevance of higher education should also be measured according to its contribution to the achievement of the EFA goals. It is from this point of view that the group of African Ambassadors accredited to UNESCO requested UNESCO to assist the African states to train a critical mass of primary education teachers necessary to ensure basic quality education for all by 2015.

Following this request, UNESCO has undertaken an evaluation of policies and teacher training institutions in all sub-Saharan Africa countries. The results of this evaluation will make it possible to define strategies required and mobilize adequate funds in order to improve teacher training in Africa.

Improving quality

Since 1998, three major strategies were implemented to improve quality of the higher education:

- Organization of training workshops on teaching and learning in higher education

- Organization of training workshops on development of materials for open and distance learning
- Establishment and/or reinforcement of national and regional bodies in charge of accreditation, quality assurance and recognition of qualifications

Thanks to a funding received from the Episcopal Conference of Italy and the International Development Research Centre (IDRC), UNESCO/BREDA organized between 1999 and 2002, thirteen national and/or sub-regional training workshops on teaching and learning in higher education for the academic staff from both public and private higher education institutions. These workshops made it possible to impart to more than 1,000 faculty basic skills in teaching and learning. Materials produced during the workshops were further developed, edited and published in the form of a guide (Obanya, Shabani, Okebukola, 2001) currently regarded as a major reference on teaching and learning in higher education. As a follow up to these workshops, the governments of Ethiopia and Nigeria decided to establish national centres for in-service pedagogic training of higher education academic staff. The national centre of Ethiopia established in 2002 and hosted by the University of Addis Ababa plans to train 500 academic staff in a 5-year period.

From 1999 to 2001, the Commonwealth of Learning and UNESCO/BREDA organized 5 training workshops and produced a Guide (Shabani, Okebukola, 2003) on development of materials for distance education. The training programme covered not only development of print materials but also audio and videocassettes, CD-ROMs and online materials.

Several countries have established national commissions for higher education, in charge of accreditation, quality assurance and recognition of qualifications. At the sub-regional level, the African and Malagasy Council for the higher education (CAMES) has continued to contribute to the improvement of quality in its 16 Member States. Other sub-regional organizations like the South African Development Community (SADC) and the Economic Community of West African States (ECOWAS) have carried out several consultations geared towards the establishment of sub-regional bodies in charge of accreditation, quality assurance and recognition of studies and degrees.

At the regional level, thanks to a financial and technical assistance from the Commonwealth of Learning and UNESCO/BREDA, African countries have initiated a process of revision of the African Convention on Recognition of Studies, Certificates and Degrees of Higher Education adopted in December 1981 in Arusha, Tanzania. The major objective of this revision is to adapt the Arusha Convention to the recent developments in higher education in order to promote new forms of higher education and to strengthen academic mobility at regional and international levels.

Funding

African countries have not made significant progress in improving funding of higher education. Some countries like Nigeria and Tanzania have increased their higher education budgets in absolute terms. Others like Botswana, Rwanda and South Africa continue to offer attractive working conditions. Several countries have failed to mobilize adequate financial resources to improve teaching, learning, research and staff working conditions. This situation is leading to strikes and closings of the universities and in the last analysis to a significant decline in the quality of education.

Brain drain

Initially, the phenomenon of brain drain was mainly limited to African students trained in developed countries. Today, for various reasons, in particular the deterioration of working conditions and the socio-political conflicts, the brain drain increasingly affects graduates trained in their home countries.

Two strategies were proposed in order to reduce brain drain in Africa: the return of qualified African nationals programme run by the International Organisation for Migration (IOM) and the TOKTEN project funded by the UNDP. For the period from 1983 to 1999, the IOM could reintegrate only 1857 African nationals, which is slightly more than 100 people a year (UNDP, 2001). Obviously, this strategy is not likely to make much difference. On the contrary, it agreed that the TOKTEN project implemented at the University of Mali by the UNDP and UNESCO has achieved satisfactory results.

Research

Several efforts were made at the national, regional and international levels in order to reinforce research capacity in African universities. Research carried out in the universities is funded from three major sources, namely:

- bilateral and international co-operation,
- centers of excellence and regional and international networks and
- contributions from African countries

Several universities carry out their research activities thanks to financial resources provided by bilateral and international co-operation agencies. In 2001/2002, funds received from external sources accounted for 43% of the budget of the University of Dar es Salaam and a sizeable part of this contribution was intended for research activities (Mbwette, 2002b). For the period from 1999 to 2002, the contribution of the international cooperation agencies to the budget of

the Okavango Research Centre of the University of Botswana varied between 27 and 75% (HOORC, 2002).

The centres of excellence like the Water Resources Engineering Programme of the University of Dar es Salaam and the networks of universities, in particular those coordinated by ICIPE and AERC continued to produce high quality research results. The African Network of Scientific and Technological Institutions (ANSTI) which links about thirty faculties of sciences and engineering in Africa has just mobilized significant resources from the European Union to carry out its core programme which covers mainly postgraduate scholarships, staff exchange including researchers and support to the publication of scientific journals.

Other research structures have been established or reinforced, in particular through the UNITWIN/UNESCO Chairs Programme. As an example, it is worth mentioning that currently, each of the two UNESCO Chairs hosted by Cheikh Anta Diop University in Dakar, Senegal, has the capacity of training every year 10 to 15 students at the level of "Diplôme d'études approfondies" which is equivalent to a Master's degree.

At the 7th Conference of African Ministers of education (MINEDAF VII), held in April 1998 in Durban, South Africa, the Minister of Education of South Africa pledged that his country would open its research infrastructures to other African countries. Following this commitment, the government of South Africa and UNESCO mobilized financial resources required to allow 28 African researchers to spend up to 6 months in research centers and laboratories located in five institutions in the Western Cape Province in South Africa. The external evaluation of this project carried out in 2001 recommended to the conference Ministers to strengthen this project and to extend it to other countries.

In July 2001, the government of Nigeria contributed \$5 Million to the endowment fund set up by the African Academy of Sciences in order to support activities in science and technology in Africa.

Several other research activities were carried out by national research centres and regional networks of applied research, in particular in the area of agriculture.

For the period from 1998 to 2001, the Association for Strengthening Agricultural Research in Eastern and Central Africa which coordinates 18 networks, programmes and projects in 10 countries achieved impressive results. Indeed, during this period the potato research network has released 14 new varieties of potatoes and 16 sweet potatoes. The new varieties are disease resistant and tolerant of acidic and marginal soils. Moreover, the yields of these improved varieties are at least three times those of local varieties (UNDP, 2001, p 113).

The establishment and/or strengthening of centers of excellence is one of the priorities of regional organizations and economic development initiatives in sub-Saharan Africa, in particular the New Partnership for the African Development (NEPAD), the South African Development Community (SADC) and the West African Economic and Monetary Union (UEMOA). This renewed interest for centers of

excellence opens new opportunities for research development in sub-Saharan Africa.

Access to information and communication technologies (ICTs)

Since 1998, African universities invested a lot in ICTs in order to strengthen their management capacity, to improve quality of teaching and learning, to develop open and distance learning and to widen access to various international networks and online resources.

In Nigeria the computer:student ratio has decreased from 1:200 in 1998 to 1:150 in 2001 (Okebukola, 2001). At the University of Dar es Salaam this ratio stood at 1:60 in 2000 and it is expected to fall to 1:10 very soon. The University of Dar es Salaam has also achieved several other results in the area of ICTs. These include the following (World Bank 2002b):

- establishment of a university-wide data communication network connecting all the twenty six academic buildings on the main campus with 8 km of fiber-optic cable
- full internet connectivity provided to the colleges via a satellite link
- establishment of a virtual distance learning system using the fiber optic and wireless backbone and Internet infrastructure
- computerization of many aspects of the administrative system.

Other universities are also using ICTs to provide various services to the learners. The University of Mauritius is providing computer-based network services and management information systems and access to computing facilities to students, staff and administrators. Universities in Botswana, Cameroon and Zambia are using university-based Internet systems to support interactive regional study centres for distance learners (World Bank 2002b).

The rapid expansion of Internet in African universities makes it possible to access to thousands of sites and online resources available in the developed countries whereas the access to the printed documents was much more difficult.

The access to Internet has also helped to improve opportunities to distance education, in particular through the African Virtual University, the Francophone Digital Campus and other online programmes offered by public and private sectors and bilateral, regional and international co-operation agencies.

The African Virtual University (AVU) is a distance education programme which uses satellite transmission. Since the establishment of its pilot phase in 1997, AVU has delivered over 3,000 hours of instructional programmes to approximately 9,000 students and registered more than 24,000 in short duration programmes. AVU also provides to the public free e-mail accounts and offers a digital library with

full-text journals and a catalogue of subjects related to web links (World Bank, 2002b).

The rapid expansion of Internet has also contributed to the promotion of research in sub-Saharan Africa, mainly through the reinforcement of regional and international networks. As an example, it is noted that the number of countries involved in co-publication of research articles with scientists from Kenya increased from 52 in 1988 to 81 in 1997 (UNDP, 2001, p.97).

Nigeria has just launched its national virtual library which currently offers various services to more than 1.4 million students and 160,000 academic staff (Okebukola, 2003).

Among future prospects for the development of Internet in sub-Saharan Africa, it is worth mentioning the recommendation adopted by the 2001 Africa Conference of the International Telecommunications Union to increase the rate of connectivity to Internet in sub-Saharan Africa to 1% by 2005 and to provide access to Internet to all secondary and primary school pupils by 2006 and 2011 respectively (Valérian, 2002).

Improving access of women to higher education

Universities such as Makerere and Dar es Salaam have continued to implement affirmative actions in order to increase girls' enrolment in higher education. At the University of Dar es Salaam for example, female candidates are admitted with 1.5 points lower than male candidates but not lower than the university entrance requirements (Mluma, 1998). Application of similar measures between 1990 and 1999 helped to increase the percentage of girls' enrollments from 27 to 34% at Makerere University and from 21 to 27% at the University of Ghana (World Bank 2002 a).

In Tanzania, in order to increase girls' enrolment in mathematics and sciences, the University of Dar Es Salaam organizes every year an intensive six-week remedial course in science and mathematics for girls who did not pass the matriculation examination. Those who complete the course are allowed to take the exam for the second time and the university reports a high pass rate at the second round. An evaluation of this programme conducted recently revealed that these girls are doing much better than students who did not benefit from this programme (World Bank 2002a).

Two women's universities were established in 2002: the Africa Women's University based in Harare, Zimbabwe and the Kiriri Women's University for Science and Technology in Kenya.

Contribution of UNESCO and other regional and international organizations in the follow-up to the WCHE in sub-Saharan Africa

In addition to African governments and their higher education institutions, several regional and international organizations contributed significantly to the follow-up to the world conference on the higher education in sub-Saharan Africa. In this section, we highlight the contributions made by UNESCO, the Abdus Salam International Centre for Theoretical Physics, the Association of the African universities, the “Agence universitaire de la Francophonie”, the American foundations, the bilateral and international co-operation and other organizations like the World Bank, the African Development Bank and the ADEA (Association for the Development of Education in Africa) working group on higher education. This list is not exhaustive; it is used to illustrate the nature and the scope of partnership set up in order to ensure an effective follow-up to the World Conference on Higher Education.

UNESCO

UNESCO's contribution covered various activities, in particular those relating to capacity building through training and research, development, implementation and monitoring of policies and reforms and development of teaching and learning materials. These activities were mainly carried out by the higher education unit of the UNESCO/BREDA through regular programmes and extra-budgetary projects. Among the major activities carried out, it is worth mentioning the publication of a guide to teaching and learning in higher education and a guide on the development of learning materials for distance education, technical and financial support provided to the African regional committee in charge of the follow-up of the WCHE, implementation of the African regional convention on recognition of qualifications, technical and advisory services provided to Member States on various issues related to higher education, training workshops conducted in higher education institutions, assistance to Member States and higher education institutions for fund raising, development of various databases and support to UNESCO Chairs and UNITWIN networks.

The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy

This centre which is mainly funded by UNESCO, the Italian Government and the International Atomic Energy Agency offers several opportunities to Africans fellows for postgraduate training and research in various areas of theoretical physics. Indeed, the centre has contributed financial resources towards the establishment and functioning of several research units in Africa, including the institute of mathematics and physical sciences at the University of Abomey Calavi in Benin Republic, a laboratory of applied physics at Cheikh Anta Diop University in Dakar, in Senegal and a research unit in molecular physics in Douala, Cameroon.

Every year, the Centre invites several African researchers to take part in training and research seminars organized in Trieste or to carry out research activities in Italian laboratories within an agreement signed between the centre and several Italian universities.

The Association of the African Universities (AAU)

AAU implements several programmes intended to reinforce the capacity of African universities and to promote inter-university co-operation. Among major AAU ongoing programmes, it is worth mentioning the study programme on the management of higher education funded by the governments of Sweden and the Netherlands, the training workshops for senior university management and the database on Master's and PhD theses.

The Agence Universitaire de la Francophonie (Francophone University Agency)

This organization continued to promote inter-university co-operation, mainly through its staff exchange programme, which provides support for approximately 200 missions per annum. It also supports the activities of the Committee of Francophone Vice-chancellors, networks of Deans of faculties and Directors of higher education institutions and thematic research networks.

Since 1998, the Agency gives a high priority to the establishment and the development of Francophone digital campuses. In 2001, it had already established four digital campuses in sub-Saharan Africa: Yaoundé, Bamako, Libreville, Dakar (Mve Ondo, 2001).

American foundations

In the last few years, four American foundations, namely Ford, Carnegie, Rockefeller and Mac Arthur have made significant investments in African universities in order to strengthen their capacity in the area of new information and communication technologies.

Bilateral and international co-operation

Several African universities receive significant resources from bilateral and international co-operation agencies in order to implement their research and teaching programmes. At the University of Dar Es Salaam for example, the share of external funding in the university budget increased from 27% in 1996/97 to 43% in 2001/2002 (Mbwette, 2002b).

The contribution of other organizations

One of the major contributions of the World Bank relates to the publication of its policy document titled *Constructing Knowledge Societies: New Challenges for Tertiary Education* (World Bank, 2002a) that re-affirms the crucial role that higher education institutions should play in taking up the challenges emerging from the knowledge-driven economy.

To contribute to the efforts made by African countries to revitalize their higher education systems, the African Development Bank has just provided a major grant to the West African Economic and Monetary Union (UEMOA) to carry out a regional study on higher education in the its member countries.

The ADEA Working Group on Higher Education, coordinated by the Association of the African universities, continues to organize various forums in order to promote dialogue between stakeholders on major issues related to higher education in sub-Saharan Africa, in particular those related to policies and reforms. More recently, the Working Group carried out several activities on HIV/AIDS in African universities. In September 2003, it will organize in Accra, Ghana a training workshop intended to analyze the successful experiences of reform and management of the higher education in sub-Saharan Africa.

Conclusion

During the 1960s and 1970s, higher education institutions in sub-Saharan Africa contributed significantly to the training of human resources required by the civil service and the education system. From the 1980s higher education was beset with major challenges related to access, relevance, quality, research, gender, funding and management

Several efforts were made during 1990s in order to revitalize higher education in sub-Saharan Africa. These efforts involved all the major stakeholders at national regional and international levels.

Although some of the challenges identified on the eve of the World Conference on Higher Education (WCHE) are still threatening the operations of higher education, it is generally agreed that sub-Saharan Africa has achieved satisfactory results in the follow-up to the WCHE. Moreover, the renewed interest expressed by the major stakeholders and the prospects of peace restoration in West and Central Africa open new opportunities for the development of higher education in sub-Saharan Africa.

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