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# 3 Restructuring Africa's Forestry Education

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## ABSTRACT

In Africa, unlike in the west, local people are more dependent on forests for their livelihoods. In addition to timber, forests supply food, fuelwood, medicine, building poles and dry season grazing. In spite of this, forestry education over the last 70 years has focused mainly on timber production and water conservation and neglected other forest uses and products e.g., non-timber products, biodiversity, eco-tourism, etc. The central governments have reinforced this bias by putting a premium on timber production and water catchment value while undervaluing the other forest uses. Increasingly, however, changes in public perception of forests and forestry are defining new approaches to the conservation and use of trees and forests. Recognition of forests as major carbon sinks is raising the number of stakeholders and influencing the goals, science and practice of managing trees and forests. Reconciling all interests is hard for the forester and even harder for the forestry education curriculum developer. In this paper, we reflect on the history and status of forestry education in Africa and propose some ideas for the future.

## 3.1 INTRODUCTION

In order to re-focus forestry education in the continent three steps are needed. The first step is to understand the history and growth of forestry education in the continent. This will enable us understand the successes and failures and their underlying reasons. The second step is to understand how forestry relates to other associated disciplines and how forestry teaching can better integrate ecological, social/cultural and economic values and interests in order to improve forest management sustainability. This could help increase private sector and local community involvement in the forestry sector and also increase its capacity to adapt to changing conditions (e.g., shrinking public sector job market) and paradigms e.g., biodiversity, community forestry, agroforestry, trade in carbon (global warming), eco-tourism, etc. Lastly, we will review the global dynamics that have put new demands on forests leading to new perspectives in forestry management and increasing the number of stakeholders in the sector. These dynamics challenge the relevance and effectiveness of current forestry education programmes. The paper concludes by suggesting some necessary forestry education reforms.

### **3.2 HISTORICAL PERSPECTIVE**

#### **3.2.1 Establishment of formal forestry education**

Formal forestry education in Africa can be traced back to setting up of national forestry departments in the colonial era. The independence wave that swept through the continent in early 1960s coincided with the need to find nationals to replace expatriate staff leaving the public service, forestry included. Available local forestry professionals were very few and all were trained outside the continent. The Food and Agricultural Organization (FAO) of the United Nations (UN) spearheaded expert and consultative meetings on the need to produce professional foresters (FAO, 1962). The inception of forestry education in Sub-Saharan Africa was largely patterned and shaped after models that were already in place in Europe and North America. For example, the forestry curricula proposed by Sisam (1964) took a rather narrow perspective, i.e., it borrowed heavily from forestry schools established in North America. These put much emphasis on biophysical aspects of timber production as the main end product of forest management and underemphasised economic, social/cultural and ecological/environmental issues that also affect forestry. The conceptual framework was a vibrant public forestry sector raising and managing forests to feed into public and private wood and fibre industries; and also conserving forestry for multiple benefits (Wyatt-Smith, 1970) but the latter was taken as a spill over benefit rather than a mainstream purpose of managing forests. However, soil and water conservation were taken seriously. With this frame of mind, forestry education was structured to produce vocational workers, technicians and professionals. The training period recommended ranged from 2-3 three years (certificate and diploma level) and 3-4 years for Bachelors degree level training.

Vocational and technical forestry training (offering certificate and diploma qualifications, respectively) has a much longer history than degree level professional education. An overview of historical development for these institutions as well as their regional spread is worth our attention. Most of these were established as early as 1930s through 1950s (e.g., Nyabyeya Forestry College in Uganda 1931, Olmotonyi Forestry Training School, Arusha, Tanzania in 1936, Ivory Coast Forestry School 1938 and Technical Forestry School in Cameroon 1949, etc). Recognizing the heavy costs of establishing professional forest training institutions in each individual country, a regional approach was adopted (Williamson, 1964). Thus, the College of Forestry in Monrovia, Liberia 1955; Department of Forestry at Ibadan University in Nigeria, 1963; and Makerere University, Uganda, 1970 were established to cater for several countries within their proximity. Forestry schools in Congo-Kinshasa and Cameroon were planned to meet training needs for French-Speaking Africa. Southern Africa was well served from South Africa's Stellenbosch University. However, from the 1970s through to 1990s the countries abandoned this approach and started their own forestry programmes thus expanding forestry education considerably. For example, Moi University in Kenya was started to offer degree programmes in forestry and wildlife management.

One of the difficulties in evaluating the development and success of forestry education in Africa is the lack of published information on the expansion process. Earlier philosophical discourses in the 1960s to 1970s (Shirley, 1964, Williamson, 1964) and analyses of manpower requirements were not followed up with studies on how various programmes and institutions actually evolved. The period between 1980 and 2006 is conspicuous for its silence on forestry education.

### 3.2.2 Forestry education content

Fundamentally, curriculum content in most forestry schools has developed from the viewpoint of forestry as a biological science and the end products of forestry as mainly wood products. Sisam (1964) proposed that undergraduate forestry curricula be comprised of two main parts: two years of basic science courses (Physics, Chemistry, Botany, Zoology, Geology and Soils, Mathematics, etc.) and two years of “core” forestry courses: silviculture, forest ecology, surveying, forest engineering, tree morphology and physiology, forest mensuration, inventory and statistical methods, economics, pathology and entomology, forest management, wood technology and utilization, forest policy and administration, forest fire control, etc. These courses are found in forestry training curricula to varying degrees depending on the background and subject bias of faculty. Richardson (1969) criticized classical forestry training offered in North American and many other parts of the world schools for having a biological bias and being weak in industrial economics and business management. That in spite of the programmes being timber production oriented, curricula were not well suited or adequate for wood industry. Wood science is often offered as an option within forestry programmes. In rare cases wood science and technology is given as a stand alone programme. A first degree in forestry on the average takes 3-4 years. According to Roche (1975), as a basic minimum, expertise in all aspects of silviculture and management of large industrial plantations, in management of remnants natural forest ecosystems, in wood utilization, forest economics and forest engineering should be required to an increasing degree in Africa and hence reflected in training curricula.

Concerning the development of forestry curriculum in Africa, three key issues must be underscored. First, the curricula and basic forestry text books used in Africa had the character of temperate forestry and required vastly experienced faculty (with considerable field experience) to make appropriate application of the principles to the local situation. The strong temperate forestry bias has placed considerable emphasis on production forestry, with plantation forestry at the fore front. Criticism levelled against forestry training in the past decade could be attributed to this rather narrow perspective; namely, the prime goal of timber production and extraction. The need for basic text books in silviculture, forest mensuration, management, and other disciplines written specifically for use under tropical conditions has long been recognized by FAO and others but the need remains largely unfulfilled. Based on a recent survey report by Temu (2002), it is evident that forestry education institutions are responding to paradigm shifts by reviewing their curricula. Aspects such as forest extension, participatory forest management, non-timber forest products and values, biodiversity and environmental conservation are now finding their way into mainstream forestry training curricula. These are positive steps but a few pertinent questions remain for instance to what extent are the observed curricula changes informed by a clear vision at national and regional levels and not merely responses to donor-driven processes? How do forestry education institutions and academia get involved in broad based institutional reforms? Exactly where are the changes leading forestry as a whole? In 2003, the African Network for Agroforestry Education (ANAFE) organized a symposium on quality and relevance of agricultural and natural resources (read forestry) education in Africa. The highly intensive interactions and debates that ensued led to a very concrete declaration, strategy and action plan to improve quality and relevance of education programmes (Temu *et al.*, 2003). The linking of all land use disciplines in a common forum and networking as done by ANAFE helps to underscore the need to form and nurture strong relationships in educational programmes, and also the need to integrate

social-economic considerations into curriculum development. Thus, the teaching of agroforestry is helping to bring experts of land use programmes closer together.

The second issue regards the scope and breadth of teaching and learning in relation to institutional setup. Forestry programmes are variously found as departments in a faculty of agriculture, or natural resources and environment and rarely as stand alone faculties. Where the forestry programme is linked to related disciplines (agriculture or natural resource management), the curriculum content tends to reflect elements of the other disciplines. On the other hand, a stand alone forestry faculty tends to have a “higher loading” of forestry courses. There is also a difference between a forestry programme mounted by a department as opposed to a fully-fledged forestry faculty with various departments. There is of course more flexibility - a wider variety of courses and options to students in a faculty than in a department. Nevertheless, this advantage must be weighed against cost of running a full faculty as opposed to a department. It seems to make more sense to have a faculty if there is an intention to offer several degree programmes and it might be more efficient to house the programme in a department for one degree course. Both these situations predominate within various forestry institutions in Africa. There also seems to be a relationship between the institutional set up and funding support available. Where a university has received reasonable and consistent funding support, development of a faculty has resulted.

The third issue relates to the demand for forestry expertise. There seems to be a disconnection between training institutions and employment sector. A large proportion of job opportunities for foresters were initially in the public sector. This is derived from the forest service practice where gazetted forests are distinct and separated from other land uses, especially farms. The consequence of this is the perception that foresters are trained for public forest service and their mandate ends there. Furthermore, the public sector-driven training fails to address the broad spectrum of land use issues and interrelationships with rural livelihoods. However, public sector employment has been declining rapidly since the 1980's. Forestry curricula must be reformed to respond to a shrinking public and “expanding” non-public sector job market. Current thinking envisions tertiary education in an enlarged agricultural and natural resource management context, with a systems approach that taps into sectoral synergies and facilitates robust response to improvement of livelihoods and conservation of natural resources and environment. Further, emphasis on a graduate with entrepreneurial and business skills is increasingly becoming popular.

The fourth issue relates to the changing global perspectives. International interest in agroforestry in the 1980s heralded a raging debate (e.g. Huxley, 1987; Asare, 1990; York Jr. 1990; MacDicken and Lantican, 1990; and Zulberti, 1993) on strategies for forestry and agricultural education. At the centre of the storm were questions on how and who would offer agroforestry education, which was seen as better focused on understanding complete land use systems. There was a strong feeling that neither agriculture nor forestry as disciplines responded adequately to land production systems of small scale farmers and that there was a need to re-orient forestry training in this direction. The mantle of agroforestry education was spearheaded by the International Centre for Research in Agroforestry (now World Agroforestry Centre) through the Swedish funded ANAFE<sup>1</sup>. Perhaps the greatest single contribution of ANAFE to advancing agroforestry in Sub-

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<sup>1</sup> Currently renamed as African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFORE).

Saharan Africa (SSA) is the role it has played in facilitating the incorporation of agroforestry into training curricula in all land use disciplines. For the period 1993-2002, ANAFE supported 67 education and training institutions in Africa to adopt multi-disciplinary approaches to Natural Resource Management (NRM) in their curricula. It is noteworthy that the introduction of the tree into farming systems has transformed our perspectives of agriculture and forestry.

In this sub-section, we have focused the discussion on university programmes leading to a first degree in forestry. However, the content of education programmes at the vocational levels (so called certificate and diploma training) are very similar, the main difference being in the duration (usually no more than two years for vocational levels) and the greater emphasis on field practice (nursery operations, planting, silvicultural operations, logging and forest engineering, wood-processing industries) in the case of vocational training.

### **3.2.3 Trends in forestry education**

A survey reported by Temu (2002), revealed the following key trends regarding forestry education in SSA. A sharp decline in training of forest technicians especially in mid 1990s. In many countries, this was linked to Structural Adjustment Programmes (SAPs). The response of many governments was either to close down these institutes or drastically reduce enrolment. Mrema (1995) had aptly argued that overall, the agricultural sector (including forestry) in SSA in coming decades 'will be most impacted by macro-economic factors and training programmes tailor-made to produce personnel for public sector employment must be reformed in a fundamental manner to meet new realities'. It is suggested that a broader NRM and a rural development orientation combined with more entrepreneurial approaches can make graduates more attractive and less dependent on the public sector.

Student enrolment in forestry is generally low compared to disciplines such as agriculture. Based on data from 20 forestry training institutions surveyed covering as many countries, graduation numbers do not seem to justify the heavy investment already made in terms of staff and infrastructure. Some schools secure temporary donor support and are able to occasionally enrol more students but the pattern is not predictable. The unpredictable fluctuation in student enrolment and graduation hampers any meaningful planning and implementation of forestry programmes. The current trend for certificate holders to register for diploma and diploma holders for BSc without corresponding admissions into certificate level training is of concern and an important policy issue to consider. The trend is eroding the vocational and technical cadre in forestry, thus creating a vacuum in practical supervision of forestry work. The result is declining capacity for and quality of forest management. There was a modest increase in the number of students obtaining BSc qualifications in forestry during the 1980-1990s, but this was accompanied by a shrinking forestry job market. Many of the graduates remain jobless or are engaged in jobs often completely unrelated to their training.

### **3.2.4 Funding forestry education**

Investment in education has varied considerably from country to country and over different time periods. Reidar (2003) sketches the different phases of forestry assistance in the past four decades focusing on industrial forestry (predominant in the late 1960s and

70s), social forestry (1980s), environmental forestry (1980s-90s) and the more recent focus on NRM. In most cases, funding has been from public and donor resources.

Considerable bilateral donor financing was experienced especially during programme (institutional setup) inception. A good example was the Food and Agriculture Organisation (FAO) and United Nations Development Programme (UNDP) support to establish the Department of Forestry at the University of Ibadan, Nigeria; NORAD (Norwegian Agency for Development Cooperation) funding support to Makerere University, Uganda and Sokoine University of Agriculture in Tanzania. Such funding usually involved establishing physical infrastructure (class-rooms, laboratories, computers labs, field stations, vehicles etc) and paying salaries to expatriate faculty for a defined time frame during which national staff capacity was developed. International organizations that have supported university education (not necessarily only in the field of forestry) include: NORAD, Swedish International Development Cooperation Agency (Sida), Sida's Department for Research Cooperation (SAREC), Netherlands Organization for Cooperation in Higher Education (NUFFIC), Danish International Development Agency (DANIDA), Canadian funded, International Development Research Centre (IDRC), German Agency for Technical Cooperation (GTZ), plus various Foundations and international forestry research organizations.

Another source of resources is collaborative research projects with other universities, individual projects to international organizations (e.g. African Forestry Research Network (AFORNET), Rockefeller Foundation, Ford Foundation, IDRC, GEF small grants projects, International Foundation for Science (IFS) etc). This kind of funding is usually very limited and used for research and for extremely limited equipment support to educational institution in the form of laboratory equipment, computers, copiers etc. The volume of such funds depends strongly on leadership, creativity of individual lecturers in the institution, as well as institutional policy and practice in managing grants. Such funds have played an important role in advancing forest science, in maintaining professional interest and contacts among educators and in supporting postgraduate programmes. Thus, they contribute to faculty retention and stability.

A rather poorly utilized funding source is forest and related industries. The linkage between universities and industry are generally weak especially in the area of NRM. As a consequence, industrial funding support to forestry training is limited. Most universities have received some funding in terms of prizes for students but these are largely tokens. Recently, Total International Oil Company through its Kenyan subsidiary (Total Kenya) has started an initiative to support afforestation in the country with the Department of Forestry at Moi University giving technical leadership to the project. This is a potential that has not been exploited in the past, but it is too early to determine the direction this partnership will take. More substantive support for forestry and wood science education have been made by Mondi and SAPPI forest companies in South Africa for the forestry schools at Stellenbosch and Kwa Zulu Natal universities. The support includes infrastructure, research equipment, scholarships and paying for field attachments and field trips for student to gain practical experience.

Recent scaling down of donor contributions have resulted in substantial decreases in funding as governments fail to fill in the funding gaps. Generally, national support to forestry educational programmes has been demonstrably inadequate as is the case indeed with overall funding of other university programmes. Willet (1998), cited in Temu et al.

(2003) reported that between 1987 and 1997, the World Bank provided US \$4, 819 million of which 51.50 % went to agricultural research, 46.25% to extension and the remainder 2.25% to tertiary education. This demonstrated the low appreciation of the contribution of tertiary agricultural education to the production chain of the economy and hence the low priority accorded to it.

### **3.2.5 Postgraduate education**

Postgraduate training in forestry is still at a fairly low level in terms of student enrolment although in some universities e.g., in the Department of Forestry at Ibadan University, postgraduate training appears to be more stable than undergraduate training. Given the heavy investment of overseas graduate training that took place in the 1980s through 90s, some of the forestry schools have fairly well established capacities in terms of manpower to mount effective postgraduate programmes yet this capacity is largely underutilized. For example, Faculties/departments of Forestry at Sokoine University, Ibadan University and at Moi University have highly qualified staff and yet only Ibadan seems to have a good population of graduate students. The main reason for this could be lack of funding for postgraduate programmes or preference by forestry professionals to get their graduate training overseas. In almost all cases, institutional capacity is limited or severely constrained by lack of infrastructure and /or teaching staff.

The shrinking capacity for postgraduate training is pushing interested students to foreign universities. However, studying overseas is expensive and very few find the necessary resources. Besides, few of them return to serve their countries. This has affected negatively on overall scientific and especially on research capacity. A regional approach to postgraduate education is recommended. Griffin (1982) questioned the logic of graduate training of personnel from developing countries in developed countries where young scientists are exposed to and led to perceive research in terms of sophisticated equipment and experimental conditions that are way beyond what is available to them when they return home. Thus, although there is need for rigorous exposure to research tools and methodologies, care must be taken to ensure relevance of such training.

### **3.2.6 Forestry education in comparison with other professional fields**

Forestry has traditionally been regarded as a sub-sector within the agriculture sector and it is for this reason that departments of forestry at universities are often housed within faculties of agriculture. Although forestry scholars in the sixties and seventies saw this as strategic and a more efficient way of using scarce resources in developing countries, they cautioned that it was necessary for forestry not to lose its identity. Contrary to the romanticized view of forestry by these early thinkers (forestry put at par with such other profession as law and medicine (Shirley, 1964)), in practice, professional training in forestry or agriculture has never come close to these professions either in terms of student admission or employment after graduation.

One can almost generalize that student admission into agriculture and forestry courses is not nearly as competitive as it is, say for medicine or engineering. In some cases, university admission criteria are deliberately lowered to lure students into these courses (agriculture, forestry and NRM related). There may be differences from country to country and among different universities but the general trend is the same. For example in a survey of public universities in Mozambique, in 2000, 230 students sought admission in

Agronomy and Forestry against 100 available positions (ratio of 2:3), 228 for computer science against 37 available positions (ratio of 6:2), in medicine 277 against 90 (3:1), in economics and management, 486 against 75 (6:5), and in law 1062 against 100 places (10:6). In Kenya, public universities in the recent past have introduced privately sponsored courses (the so-called parallel degree programmes – becoming a common trend in many other African countries) in various fields (mainly attractive courses such as medicine, law, commerce and business management etc). As a result, it is becoming increasingly difficult to get students admitted in courses of second or third choice if they can afford to get their first choices under privately sponsored programmes. Basic science courses and those related to earth sciences (agriculture, forestry, wildlife management, botany, zoology, and geology) are not as attractive because of their limited job market. A Makerere University report (Musisi and Muwanga, 2001) showed that the Faculty of Forestry had the lowest number of students at 157 in 1999. This was in fact lower than those registered for continuing education (211), and considerably less than the 539 for agriculture, 665 for medicine and 971 in the faculty of law although reasonably comparable to 211 doing veterinary medicine. The low enrolments in agriculture, forestry and other NRM degree courses is not just a reflection of public perception and shrinking job market but also a case of limited international as well as national support to tertiary education in these fields and non-empowering policies.

### **3.2.7 Dynamics influencing global perspectives on forestry**

The urgency and frequency with which schools of forestry are seeking to review their educational programmes is in recognition of the inadequacy of the traditional forestry education and training. The broadening forestry professional area suggests the demand for *additional* expertise in inter alia:

- Policy, social and economic issues, including participatory methodologies interactive learning, communication skills, social values and ethics;
- Broad-based handling of the larger field of natural resources management, including capacity for analysis, synthesis and decision making on complex natural resource situations and sustainable forest management;
- Management of both tree and forest resources beyond designated ‘forest’ areas;
- Agrarian and natural resource production systems;
- Entrepreneurship and business management;
- Agroforestry, farm forestry, community forestry;
- Gender issues, access to and natural resource benefit sharing, resource and land tenure regimes; and
- Processes and impacts of globalization, climate change, biotechnology.

These aspects while not entirely new are major modifications to the forestry profession and have not been emphasized in traditional forestry training curricula. Although considerable progress has been made in the past two decades to incorporate some of the above issues in forestry training curricula, it is evident from analysis of forestry institutions that they have inadequate capacity to do so. This must be addressed in three ways. Faculty in most cases lack adequate exposure to these emerging issues despite the heavy international discourse and publications from international research organizations and development agencies. The lack of adequate exposure is caused by many forestry institutions operating in isolation with no internet-networks, a situation that can easily be ameliorated through collaborative ventures and formation of regional networks. The



second aspect concerns curricular reforms. Three key factors delimit progress in this area the first one being the rigidity of university senates to programme changes, often requiring push and persuasion to get new programmes approved. The second reason is the high cost of reviewing curriculum and the policy vacuum linking education to other national needs. Urgent policy and institutional reforms are needed in these areas, as advocated by Temu *et al.* (2003). Thirdly is the weak delivery capacity – almost all institutions surveyed responded that they lacked or had inadequate facilities (lecture halls, labs, field stations, teaching equipment).

The wide range of changes envisaged leads us to suggest what could be the structure of future forestry programmes as in the illustration below.

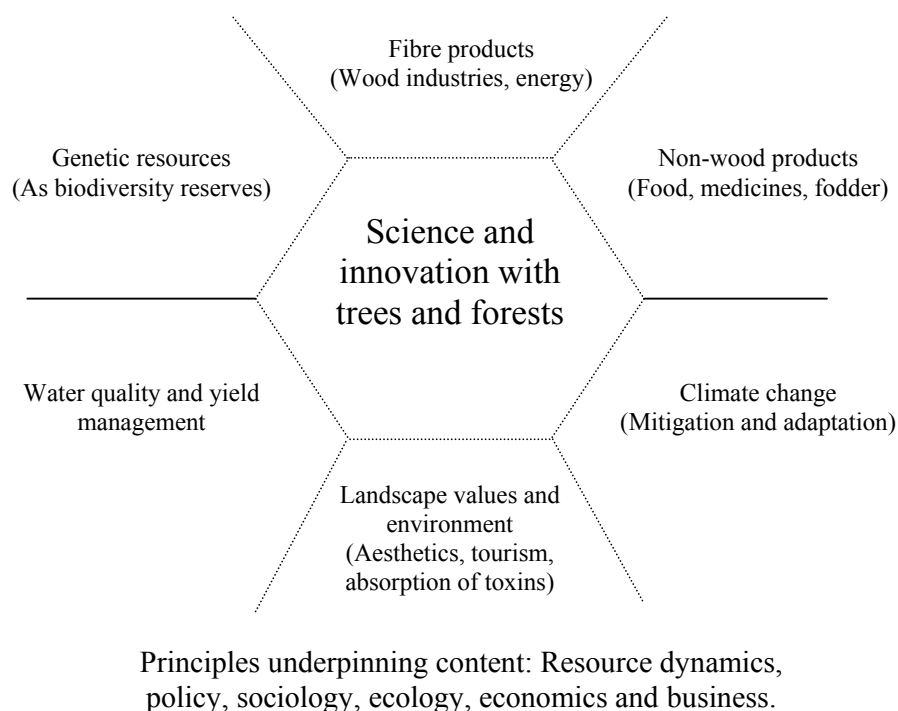


Figure 3.1. A Model For Future Forestry Education

### 3.2.8 Regional and sub-regional collaboration

The Rabat expert consultative meeting (FAO, 2001) identified regional networking and inter-institutional exchange of knowledge and experience as one concrete way of supporting and strengthening forestry education. One such initiative is RIFFEAC (Réseau des institutions de Formation Forestière et Environnementale d’Afrique Centrale or Forestry Schools in Central Africa) network. The network was created by eight forestry schools and research institutions in October 2001 with a view to improving the quality of forestry training to respond to the needs of sustainable management of forest ecosystems in the Congo Basin. Among other objectives, the network seeks to promote exchanges between the members, particularly in teaching and research. The facilitation role of IUCN helps RIFFEAC to build strong collaboration among its members and develop synergies with other regional initiatives.

The emerging geo-political and economic blocks provide a basis for possible collaboration of training and research institutions within the regional blocks. For instance, within the framework of the Economic Commission for West African States (ECOWAS), forestry schools in West Africa could take advantage of the economic and political cooperation to forge similar linkages as RIFFEAC. The three East African States (Kenya, Tanzania and Uganda), are once again reviving the spirit of the collapsed East African Community and this opens up avenues for collaborative ventures in sustainable forest management including networking in forestry training and research. In 2002, FAO and ANAFE facilitated a sub-regional workshop for forestry deans and heads from Kenya, Tanzania and Uganda to explore possible collaborative ventures. The Inter-University Council for East Africa is currently developing and implementing mechanisms for student exchange among East African Universities with at least forty students from each country receiving university education in the sister countries. Already, there are joint research projects being coordinated in the region by this body. How much forestry schools will be part of the equation will depend on how proactive forestry academics are within the universities. More than ever before, there is urgent need for forestry education to be profiled at the regional level and for a more active scholastic engagement and redirection of programmes to make them relevant in a rapidly changing job market. It is critical that the forestry academia plays an active role and help to focus the debate on the direction of forestry education vis-à-vis related disciplines in natural resource management. Collaboration should seek to ensure that respective institutional capacities are fully utilized to enhance complementarity and diversity (NOT duplication) and quality of programme delivery nationally and within regions.

### **3.2.9 Continuing education**

No amount of curriculum review will adequately cater for emerging issues and myriad of forest /land resource clientele. FAO (2003) advocated that curricula at all levels must be updated to include such topics as role of trees outside forests, collaborative management, gender equity, access and benefit sharing, the potential impact of certification schemes on forest practices and participatory learning. Although it would be nice to have a curriculum that addresses all these and other aspects of forestry (and including “traditional core forestry” courses), in reality such a programme will be impossible to implement as it is likely to be amorphous and lead to no definable competency. Inadequacies of forestry education and emerging issues have been addressed through short courses addressing specific aspects. For example, ICRAF runs training courses in agroforestry. The International Training Centre (ITC) mounts courses in social forestry, participatory forest management and NRM in which forest managers, extension workers and those teaching in forestry schools have benefited. The Oxford Forestry Institute has also given this type of courses in the past. Several universities in Africa offer short courses in agroforestry, social forestry, community forestry and some aspects of mainstream forestry subjects. In 1995-96, a GEF funded biodiversity project made it possible for university academic staff from Kenya, Uganda and Tanzania to attend intensive field courses on biodiversity resources assessment techniques including use of participatory methods. Short courses on ethnobotany have been supported by World Wide Fund for Nature (WWF), UNESCO, KEW Royal Botanical Gardens, and CIFOR. These institutions also support the regular publication of “People and Plants” handbook. Training workshops related to formulation and project management have also become a common phenomenon especially among Non-Governmental Organisations (NGOs) and for many donor-funded projects. Egerton University (Kenya) is well known for short courses on Participatory Rural Appraisal

(PRA), a participatory approach used in all sectors of rural development including in the field of natural resources. All these are critical aspects of continuing education and it can be correctly argued that much of the professional awareness created in emerging issues of tree and forest resource management has been achieved through issue-specific and targeted short courses obtained from a variety of institutions. However, in most cases, the efforts are anecdotal and highly dependent on external support. There is a need to establish fitting regional and/or sub-regional mechanisms to capture the needs and to design and manage such programmes. Existing networks such as ANAFE, African Forestry Research Network (AFORNET) and RIFFEAC could be instrumental. The emerging African Forest Forum (AFF) could also provide an excellent platform for this.

### **3.2.10 Necessary forestry education reforms**

The XII World Forestry Congress held in Quebec Canada made the following observation: "... the forestry profession does not reflect the diversity of stakeholders involved in forests. Education needs to adapt to new elements in forestry practice, including social sciences and communication skills. However, funding for forestry education is declining in many parts of the world, and training institutions often operate in isolation. Continuing education and professional accreditation are being implemented in many developed countries to maintain public confidence in the forestry profession" (Congress Report, 2003). From the foregoing and based on empirical evidence, the following pertinent issues can be raised regarding education in forestry and NRM:

- The public perception is critical for successful implementation of natural resource initiatives especially where historically these resources were managed on a restricted narrow domain of officialdom. We need a new understanding of the role of a 'forester' or whatever we will call the new professional, who in addition to expertise in forestry will also be conversant in local community participation techniques and proficient in other relevant disciplines;
- Curriculum reviews notwithstanding, current university degree programmes must change to embrace new paradigms, which reflect emerging societal perspectives, policies and international instruments. More fundamental reforms are necessary, including possibilities to run several degree programmes or options in areas such as Community Forestry, Industrial Forestry, Environmental forestry, Landscape forestry, Fibre products and Technologies, Bio-prospecting etc;
- The traditional board-and-chalk method of teaching and learning delivery is inadequate in a world that is increasingly dependent on information technology communication tools. Better access to ICTs is necessary; and
- National and international support must be increased and channelled to institutions of learning to assist with the transformation.

There are three key points to be underscored regarding needed reforms in forestry education and related NRM fields. Firstly, considerable synergy is building in terms of reforms of higher education in Africa. Partly because of declining national funding to colleges and universities and also because of external initiatives (e.g., the multi-donor Partnership for Higher education in Africa Initiative), institutions are embracing phenomenal reforms hitherto thought impossible in order to remain relevant. Forestry faculties and Departments should take advantage of these reforms. Secondly, because the field of NRM is broad and it can be used loosely to mean different things, there is need for academia to focus and sharpen the idea of integration of land use related disciplines to

allow relevance and coherence in proposed programme delivery. Thirdly, evolution of these ideas cannot be left to institutions alone. Strong international participation and collaboration are necessary to provide depth of perspectives and build synergy. It is also critical that this kind of change is brought about through national policy systems to ensure ownership and a wider consensus.

### 3.3 CONCLUSION

As global societies, recognize the multi-functional nature of forests; their expectations from forestry professionals are changing, creating a gap between what is learnt in forestry schools and the new expectations. Increasingly, the role of society in determining how forestry will be managed to meet the rising social, economic and climatic and environmental challenges is rising. Current education programmes appear to be a patchwork of reviews and additions to old curricula. There is a need to link forestry to other land use and environment disciplines in order to curve out the content of forestry education. New programmes are emerging but without sufficient global guidance on the content and quality. Concerted efforts are needed particularly at global and regional levels to coordinate and link programmes as well as provide advice at the national level. This implies major transformations of forestry education, so new resources are needed to finance improved forestry education programmes. Inter-institutional collaboration through networking of institutions and other stakeholders will augment efforts by individual countries or institutions.

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