1 Global Forestry Education Guidance and Monitoring: How Imperative is it?

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ABSTRACT

The forester's job has transformed from managing forests to applying a wide range of skills to respond to the needs of forestry stakeholders and contextualize their demand for products and services from trees and forests that are different landscapes and owned/managed by a wide range of people and institutions. This requires very different knowledge and skills from the kind currently imparted by schools of forestry. Today's forester is constantly challenged to remain professionally relevant in a very dynamic environment, and there are no simple reference resources. Worldwide, there is a decline of enrolment in forestry education, particularly since the 1990's. The reasons are various, but can be summed up as failure to adequately respond to rapidly changing social, economic and political environments. The erstwhile Advisory Committee on Forestry Education (ACFE) provided good guidance on forestry education since its formation in 1956 until it ceased to exist in 1996, at a time it was badly needed. A historical analysis of its work is presented here with a view to coalescing ideas on how to re-orient forestry education to meet the emerging demands on the profession. Despite the materialization of new education programmes covering areas of environment, biodiversity and integrated natural resources management, forestry remains critical to sustained productivity and conservation, hence the need to refocus forestry training to make it more responsive to ever changing societal demands worldwide. It is argued that there is a need to re-establish a global forestry education advisory mechanism to provide guidance to forestry schools in evolving ever-relevant training to fill this lacuna.

1.1 INTRODUCTION

Forests are a conspicuous and crucial component in the livelihoods of all societies – rich or poor, developed or developing, endowed with forests or not. The growing prominence of conserving biodiversity, arresting desertification, conserving soils, sequestering carbon, improving water quality and quantity and providing bio-energy raises the premium on forest resources. The balance between wise use and conservation is often argued from very different perspectives. The number of stakeholders in forestry has been increasing rapidly, crossing territorial as well as social, economic and political boundaries. The forester's job has drifted from managing trees and forests for timber, to managing trees

and forests to achieve multifarious stakeholders' interests and biological systems that are threatened and/or influenced by among others:

- Local communities who derive livelihoods directly from them;
- Industrialists who make profits from them;
- Governments who want to utilize them to leverage development;
- Farmers who view them as agricultural land reserves and sources of new germplasm;
- Die-hard conservationists who believe forests should never be cut for whatever purposes; and
- Climate change mitigation and adaptation groups that want more carbon sequestered.

The forester occupies the fulcrum position, holding onto a lever that is under pressure to swing in all directions at the same time. Griffin (1990) aptly described the situation: "The history of the forestry profession since the 1950s and more so in the last 20 years can be characterized as one of a struggle to remain relevant in a world experiencing a social and environment crisis".

The situation becomes more complex when we attempt to define forestry. Current thinking is that forestry should include trees and forests, wherever they occur. The rapid growth of Agroforestry science and practice is certainly a major factor pushing in this direction. This introduces the issues of land and tree tenure, and value systems that change widely with social, cultural and economic conditions. The traditional forester has been groomed to manage large chunks of forests, applying ecological and economic principles to sustain productivity and profitability while conserving the environment. His area of comfort therefore has been the public and private sectors. The philosophical and practical changes described therefore create a new paradigm in forest management. With the inclusion of trees outside forests, the challenges facing foresters now require application of knowledge and skills that were never imparted in the old school.

It is against the above settings that we sought to investigate the trends in forestry education advisory from 1956 to 2006. We strongly believe that the forestry profession has been under very high pressure to evolve into a broader perspective, which should have triggered changes in forestry education. It is therefore instructive to reflect on changes in global institutions and instruments, societal perspectives (including the emergence of new and more stakeholders) in tandem with the responsiveness of foresters and forestry education in particular. In this treatise, emphasis is placed on the content of and response to forestry education advisory, particularly that arising from the FAO's Advisory Committee on Forestry Education (ACFE). As will be seen in the next section the choice of ACFE was on the strength of its global coverage on forestry education issues, as compared to any other frameworks related to forestry education in the period covered in this analysis. This work is based on ACFE reports, consultations with schools of forestry, a large number of publications on forestry education and FAO annual reports. We believe that the historical perspective will help to inform our future vision. The key questions we ask are:

- What should be the role of forestry in society today and tomorrow?
- How do we prepare the necessary human and institutional capacity to meet the emerging needs?

- What structures can guide forestry institutions in evolving forestry curricula that meet national, regional and global demands for forestry?

1.2 GLOBAL ADVISORY ON FORESTRY EDUCATION: 1956 - 2006

In 1956, A FAO panel on forestry education was formed as a follow up on recommendations at the Fourth World Forestry Congress in 1954. Among other things the panel's terms of reference were indicated as to:

- Advise FAO on all phases of education in forestry and conduct studies as it may be called upon;
- Promote liaison among forestry schools of the world and between the schools and FAO;
- Prepare agenda for discussion on forestry education at international forestry meetings and prepare reports on deliberations of such meetings;
- Facilitate faculty and student exchange programmes among colleges and universities and to provide information on study opportunities at various schools; and
- Advice FAO on personnel for staffing technical missions.

Its mandate included university level education leading to a bachelor's degree, ranger schools offering diplomas and certificates, vocational training of forest workers, and informing forest owners and the public about forestry.

The first meeting of the panel was held in 1956 at the 12th World Forestry Congress, with a membership of 14 individual nominees (FAO, 1956). The members were drawn from Europe and North America, India, and South Africa, and it held two further meetings thereafter. At the 12th session of the FAO ministerial conference, it was noted that the convening of occasional meetings of the panel were no longer adequate, and it was recommended that it should be converted to the FAO Advisory Committee on Forestry Education (ACFE), which was effected in 1964. Its terms of reference were to advise the FAO Director General on the evolution and implementation of the programmes of FAO in the field of forestry education and on ways in which those programmes should be developed. Membership of the committee was also expanded from the original 14 to 21 to represent different regions of the world. The initial member countries were Argentina, Australia, Brazil, Canada, Chile, Finland, France, Germany, India, Iran, Japan, Liberia, Mexico, Nigeria, Poland, Spain, Sudan, Thailand, UK, USA and Venezuela (FAO, 1964). The FAO Director General was mandated by this resolution to hold periodic committee meetings, and further meetings were held as shown in Table 1.1.

At its third and fourth sessions, the committee recognized the need for global consultation to further understanding and cooperation in forestry education. The first consultation was held in 1972 (FAO, 1972), and at least four more global and many regional consultations were held during the life of the committee. These consultations had representation from educators, practitioners, and other stakeholders across the world, and recommended actions to improve forestry training. While the global meetings discussed issues on forestry education worldwide, the regional meetings focused on more localized problems and ways to remedy them.

Table 1.1: Meetings of FAO Advisory Committee on Forestry Education

Session	Year	City and Country	Participants		
			Members	FAO	Observers
1st	1964	Merida, Venezuela	10	10	12
2nd	1966	Madrid, Spain	N/A	N/A	N/A
3rd	1967	Munich, Germany	13	2	1
4th	1969	Ibadan, Nigeria	14	18	3
5th	1972	Stockholm, Sweden	World Consultation		
6th	1974	Hyvinkaa, Finland	N/A	N/A	N/A
7th	1976	Rome, Italy	13	3	20
8th	1978	Jakarta, Indonesia	10	2	17
9th	1980	Rome, Italy	12	1	24
10th	1981	Kyoto, Japan	13	8	4
11th	1983	Nairobi, Kenya	19	3	30
12th	1985	Mexico City, Mexico	15	8	17
13th	1986	Ljubljana, Yugoslavia	11	6	14
14th	1989	Antalya, Turkey	14	5	12
15th	1991	Paris, France	11	4	9
16th	1993	Bangkok, Thailand	27	N/A	N/A
17th	1996	Santiago, Chile	N/A	N/A	N/A

N/A = not available from proceedings and reports

A key recommendation of the committee's 1965 meeting was the creation of a forestry education branch at the FAO to coordinate forestry education activities worldwide, which was later effected. The committee recognized the need for it to have wider impact, and recommended that its members improve communication and exchange of information with training institutions in their countries to influence curricula development. In 1971, the ACFE recommended its expansion and strengthening, and asked for periodic consultation and assessment of educational problems. This recommendation was repeated in 1976, but with a further recommendation to widen the range of expertise within the committee in light of the expanding scope of forestry training. This suggests that the committee felt itself deficient in breadth of subject coverage. The membership comprised largely government officials and deans or heads of schools of forestry. Over the years, membership to ACFE was expanded to include countries, which were gaining independence. By 1993, the ACFE membership had increased to take into account emerging global political realities as shown in Table 1.2.

It is clear that global demand for advisory from the committee was raising and therefore, its attempts to be more inclusive. At its 17th Session in 1996, the committee recommended its own restructuring, but ACFE was abolished in 1997, and the FAO forestry education post was scrapped in 2006.

Table 1.2: ACFE Membership by Regions in 1993

Region	Developmental Status of Country			Total
	Developing	Transition	Developed	
Africa	5			5
Asia	4		3	7
Europe		1	9	10
Latin America	5			5
North America			2	2
Total	14	1	14	29

1.4 A REVIEW OF TRENDS IN AGENDA AND RECOMMENDATIONS OF ACFE

1.4.1 The agenda of ACFE

ACFE was mandated by FAO to advise on forestry education and human resource development at all levels, but with special emphasis on university-level degree training. It was also supposed to disseminate its findings widely to achieve impact. The committee's meetings were usually held in parallel with other forestry meetings, e.g. IUFRO and World Forestry Congresses. At each meeting, the agenda comprised a report by FAO on the status of forestry education activities, followed by presentations of voluntary papers, discussions and resolutions. Invited papers were mostly on subjects identified as requiring exposition by the committee on which situation reports were presented. Uninvited papers covered any subject of interest to the authors. Initially, very few uninvited papers were presented, but the numbers increased to exceed invited papers in latter sessions.

A review of the ACFE deliberations shows that issues discussed included items requiring FAO intervention to improve forestry education. Others were manpower assessment, curricula content, quality of forestry education, postgraduate training, forest extension, public education, continuing education, world and regional consultations on forestry education, and its representation and effectiveness, amongst other things. In Tables 1.3, we review the frequency of appearance of different themes in the committee agenda, and the number of papers presented on these themes over different periods.

The table reveals some interesting patterns. Training for forest industries was the most commonly discussed item in the agenda of the ACFE, which clearly demonstrate the importance the committee attached to the role of forests in industrial development. Even in countries that were under colonial rule, the forest policies prioritized production of industrial round wood as well as harvesting of the same, much as most of the industrial capacity was located outside these countries. Extension and social/community forestry featured as the second most frequent item in ACFE agenda. This high frequency reflected the growing importance of extension in forestry, especially with the widening of ACFE membership to developing countries. Vocational and in-service training was also frequently tabled as an agenda item of the committee, underscoring the importance attached to the need to upgrade skills of practicing foresters in light of the emerging issues in the sector.

In order to meet personnel requirements for government services of countries then achieving independence, manpower assessment was frequently discussed in the early life of ACFE, from the 1950s to mid 1970s. Use of computers in forest management appeared for discussion from late 70s and became more prominent in the 80s and 90s. Policy issues were more prominent after the 80s, probably as a response to economic reforms that started being implemented in many developing countries during this period as well as a reaction to making forest practice match international agreements like those emanating from Rio '92.

Table 1.3: Agenda Topics by Frequency at ACFE Meetings at Various Periods

Subject item	Number of times subject appears in ACFE agenda over ten year periods					
	1956-65	1966-75	1976-85	1986-95	1996 +	TOTAL
Number of meetings held	1	5	6	4	1	17
Watershed Management			1			1
Training for Industries	2	4	4	4	1	**15**
Forestry & Employment	2	1	1			4
Wildlife & parks management		1	2	1		4
Extension, social/ community forestry		1	4	3		**8**
Forest products Marketing		1				1
Extension-Research-Education links			1	1		2
Vocational/In-service Training		2	2	4	1	**9**
Forestry curricula	1		1	1		3
Environment in Forestry Education			1	2		3
Forest Policy				2	1	3
Post graduate education		1	1		1	3
Manpower Assessment	4	2	1			**7**
Communication between ACFE and Institutions.	1		1			2
Information and communication technologies (ICT)				2	1	3
Organization of Forestry Education	2	3	2	2		**9**

Administration of forestry education had by far the most number of papers presented at ACFE meetings (Table 1.4). This may reflect the changing demands on forestry, which dictated continuing evolution of forestry education programmes. On the other hand, these were meetings of administrators of forestry and forestry education (Table 1.6). It is quite possible that this was an area in which many of them were working and therefore given more prominence. Other areas were training for forest industries, forestry curricula, extension education, manpower assessment, environmental education and continuing education in that order of frequency. Papers on administration of forestry education were presented at virtually all ACFE meetings, which points to the challenges facing forestry practice and the need for forestry training to respond to it. Training for industries was prominent up to 1990 and not so much thereafter. This could be due to the growing recognition of environmental roles of forestry after Rio 92. Papers on extension and social forestry were presented from 1975 and increasingly thereafter. This also coincided with the increased representation and participation by developing countries in the ACFE. Forestry curricula papers were regular throughout the life of the committee, but in much

greater numbers after 1986. However, review of curricula was mentioned in almost all papers presented on any one of the themes, so this statistic is somehow misleading.

Recommendations of ACFE largely followed the patterns in its agenda. At inception, the ACFE focused on offering technical advice to FAO on its forestry education support to developing countries, in order to produce manpower for government forest services, with industrial forestry as the focus.

Table 1.4: Number of Papers Presented at ACFE Meetings by Subject Areas

Subject Item	Number of Papers in subject area presented at ACFE meetings by ten-year periods					
	56-65	66-75	76-85	86-95	96+	TOTAL
Number of meetings	1	5	6	4	1	17
Watershed Management			1			1
Training for Industries		5	14	7	1	27
Continuing Education		1	4	4	1	10
Forestry & Employment	1	1		2		4
Wildlife & parks management			2	1		3
Extension, social/ community forestry			15	5		20
Forest products Marketing			1			1
Extension-Research-Education links	1	1	4			6
Forestry Curriculum	1	4		6	12	23
Environment in Forestry Education			3	7		10
Forest Policy				1	1	2
Post graduate education		3	7	1		11
Manpower Assessment	3	4	8	2		17
Communication between ACFE and Institutions.	1	1		1		3
ICT in Forestry				3	1	4
Organization of Forestry Education	6	5	12	20	1	44

Regional university education programmes were recommended as the most cost effective approach to meeting the manpower needs, but this was largely overtaken by nationalistic demands for training so that most countries initiated their own programmes. The most spectacular example was the initiation of an East African regional forestry education programme at Makerere University (with support from Norway) in 1970. By 1973, Tanzania initiated its own programme, while Kenya started its own in 1976, though this was mainly caused by political instability in Uganda in the 1970s. In the subsequent years, Zambia, Mozambique and Malawi also launched new professional forestry education programmes. At technical level, the training remained national. Assessment of manpower needs of countries was an early focus of the committee up to 1985, but featured minimally thereafter.

1.4.2 Debates on curricula and quality of delivery

Much of the discussion at ACFE meetings was centred on improvement of curricula. Ideas were generated on exactly what areas were becoming more important and why. H.C. Miller, the then ACFE chair, described forestry curricula as a "perennial subject for discussion reflecting the rate at which the forestry profession is changing, and the number of graduates who make their careers outside forestry" (Miller 1996).

Over the years, the committee recommended expanding forestry curricula by including the following courses: industrial forestry, engineering and wood utilization (1950's); agriculture, physical sciences, engineering, extension, range, watershed management, wildlife management and land use (1960's); environmental education, wildlife and parks management, extension, communication skills, and public relations (1970's); watershed management, agroforestry, dryland forestry, forest policy and law, agriculture, rural sociology, and politics (1980's), and; multiple land use, sustainable development, information technology, GIS (1990's). In Table 1.4, detailed data are provided. See also Annex 1.

After 1990, unemployment of forestry graduates became more of an issue because job opportunities in public forest services were already dwindling in many countries. Therefore, more attention was drawn towards expanding the curricula to incorporate more management, economics and social sciences to widen employment opportunities for the graduates. Severe concerns were raised over the ever-increasing number of courses recommended for inclusion in forestry curricula. The inelastic 3 - 4 year duration of most degree programmes was considered 'too short' to accommodate the additional courses. It was also pointed out that including too many new courses would degrade the professional integrity of forestry programmes, which could then end up as "down market degrees" of other specializations.

Three approaches around this problem were proposed. The first was to generalize the training into a natural resource degree, with forestry as a major (Gilbert, 1993; Roche, 1992). The second proposal was to establish a 'core' of professional competence, around which a range of disciplines relevant for forest resource management would be built, to enable the graduates to work effectively with other disciplines (Temu, 1993; Griffin 1990). The last was to develop new programmes, e.g. agroforestry, environmental forestry, wood science, etc, to fill niches created by emerging demands on the profession (Roche, 1992). The approach selected by institutions depended on their countries socio-economic and forestry circumstances, and therefore needs for personnel. Following the termination of ACFE in 1996, there has not been a systematic follow up on what models were adopted and why.

Quality of forestry training became a concern in the latter stages of the committee's life, and teacher training, improvement of learning facilities, provision of learning materials, and continuing curricula review were recommended as offering the best opportunities for overcoming these. Forestry faculties were advised to regularly consult stakeholders on quality standards and curriculum evaluation.

Postgraduate education to develop capacity for training and research in the developing world did not feature greatly in committee deliberations. It was recommended at various times that postgraduate training be conducted in close links with research institutions, to make better use of the highly trained manpower available. Shortcomings in forest research were also recognized, and training in research skills, and education-research-extension linkages were recommended to improve this.

Continuing education and life-long learning were regularly discussed by the committee. It was recognized that continuing education was critical for practicing foresters, to ensure their relevance. However, funding for this was recognized as greatly hampering its realization. Another recurrent recommendation was the need for public education on

forestry issues to influence public perceptions on forestry, and to bring better understanding between forestry organizations and its 'publics' (FAO, 1972). However, this concern was either never adequately addressed, or was a continuing one hence its recurrence in the committee agenda.

1.4.3 Follow up on ACFE's recommendations

The committee's recommendations can be divided into three groups. Those requiring FAO action, those requiring ACFE action, and those made generally to countries and schools of forestry. The ACFE regularly reviewed the implementation of those recommendations requiring actions by FAO and the committee itself. At these reviews, the committee examined each recommendation made, and the status of its implementation. Up to the 1970's when the FAO had forestry education support programmes, the committee usually reviewed the status of implementation of its recommendations from the preceding meeting through a presentation and discussion of reports from the FAO Forest Education branch. These programmes dried up after the seventies, and the committee did not evaluate the implementation and impacts of its recommendations thereafter.

Follow up of recommendations of the committee to FAO was done mainly through visits by FAO missions to the supported institutions to assess the impacts of the support, and to encourage fulfilment of its recommendations. Indicators of success of these missions include the many forestry schools established in various parts of the world following ACFE's recommendations, curricula review, and FAO funding of various programmes recommended by the committee. At each meeting, there was the provision of progress reports to the panel by the secretariat. Follow up reports provided the secretariat with an indication on how to plan and formulate agenda for meetings, and activities to be undertaken by the secretariat.

The third category of recommendations comprises those to forestry training institutions on curriculum changes, organization of education programmes, etc. The follow up and impacts of these recommendations are more difficult to evaluate. In 1982, the committee recommended that the impacts of its recommendations on forestry education be evaluated, but this recommendation appears not to have been followed up. In the last years of the committee, it recommended that its composition be restructured and its membership widened and increased to include representation from developing countries, clearly demonstrating that the committee was eager to increase dissemination of its recommendations. However, some indicators show that the ACFE recommendations were adopted by several aid agencies, notably Sida, NORAD, UNDP and FINNIDA and national governments as more projects supporting education in areas recommended by the committee were developed and implemented, especially in the seventies and eighties. This was particularly visible in a few developing countries in Africa, Asia and Latin America.

1.5 ACFE's RESPONSE TO GLOBAL CONCERNS ON FORESTS

A review of the agenda and papers presented at ACFE (Tables 1.3 and 1.4), showed that in the 1980s, topics in focus were on environmental issues. This shows a progression in focus on world concerns on forests leading up to a climax in environmental issues after Rio Summit in 1992. The recommendations in the 90s were to link industry with educational institutions and to develop appropriate technologies for forest industries, silviculture, ecology and ecosystem dynamics, biodiversity conservation, and processing

non-wood forest products. Table 1.5 shows some key global protocols and agreements relating to forests agreed at Rio 92 and thereafter, the year they were adopted, and the year they came into force.

The correlation between concerns on forestry and the debates at ACFE meetings is not very conclusive. Apart from the spike in papers on environment and forestry linkages in the late 1980's and early 1990s leading up to and after the UNCED in Rio in 1992, there are no other clear linkages between the ACFE agenda and recommendations, to the developments in world agenda as evidenced by the Rio 92 (Agenda 21) and related agreements such as the Kyoto protocol, UNFCCC, etc.

Table 1.5: International Agreements, When They Were Adopted and Came Into Force

Agreement/ convention	Adoption	Entry into Force
UN Convention on Biological Diversity (UNCBD)	05/06/1992	29/12/1993
UN Framework Convention on Climate Change (UNFCCC)	09/05/1992	21/03/1994
Kyoto Protocol on Clean Development Mechanism (CDM)	1994	In force on voluntary basis
UN Convention on Combating Desertification (UNCCD)	17/06/1994	26/12/1996

It is therefore very unfortunate that the committee was terminated in the nineties. This created an organizational vacuum among forestry education institutions as they disparately struggled to understand and incorporate emerging global issues such as climate change, biodiversity, environment, poverty eradication, and millennium development goals into forestry education.

1.6 REPRESENTATION AT ACFE MEETINGS

Many countries in Africa and a few in Asia were still under colonial rule when the committee was formed in 1956. Moreover, forestry schools offering professional training at the time were mainly found in Europe and North America. In many cases, therefore, European countries represented African and Asian colonies in ACFE deliberations up to the mid 1960s. With many countries becoming independent by this time, the committee recognized that it had very limited representation and recommended its expansion. Further, it was observed that there was need to widen expertise within the committee, and it was proposed that profiles of required representatives be prepared by FAO.

1.6.1 Representation of African countries at the FAO advisory panel on forestry education meetings

A key question about the trends in forestry education as deliberated by ACFE is that of the level and type of representation to the committee, and the effect that representation had on the evolution of forestry curricula, particularly in Africa. We start by examining representation by African countries in the committee over the years until its demise. As stated earlier, representation in ACFE was only by invitation, while non-members attended and contributed as observers or resource persons. Over the life of the committee, Africa was represented most commonly by Kenya (6 times), followed by Nigeria (4 times), Cameroon (3), Ghana (2), Liberia (2), and one each by Gabon, South Africa, Ivory Coast, and Sudan (See Table 1.6). Africa was represented by five countries that have tropical

rain forests. The emphasis in forestry in these countries was logging the natural forests for export of logs. With the exception of Nigeria and Ghana, there was scanty wood processing capacity in the other countries. Even in these two countries, there was considerable export of logs in the colonial period and some years after political independence. South Africa and Kenya developed an industrial wood processing industry, hence the prominence of training for industries in Table 1.3.

Only North America, Europe and India were represented at the first meeting of ACFE. It was recommended at that meeting that Liberia and the Republic of South Africa be invited to send representation as the only countries then offering professional forestry education in Africa. South Africa was unable to participate due to the distaste of apartheid, despite having one of the earliest forestry schools on the continent. Thus, Liberia was the only African representative at the 1961 meeting, while Nigeria and Ghana attended from 1969 to 1981, at a time when forestry education programmes had just been established in these countries. Some countries such as Liberia and Sierra Leone may have been prevented from attending by a breakdown in education systems due to civil strife, which explains the sporadic attendance at the meetings between 1961-1972, and not at all thereafter.

Table 1.6: Type and Level of Representation to ACFE by Region from 1960 to 1996

Region	1961-65	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95	1996
Africa								
Educators	-	1	-	1	2	-	-	1
For. Service	-	3	-	2	5	1	2	-
Research	-	-	-	1	1	-	-	-
Asia								
Educators	1	1	1	3	1	3	2	-
For. Service	-	2	1	4	3	-	1	-
Research	2	-	-	1	1	-	-	-
Others	-	-	-	-	1	-	-	-
Europe								
Educators	8	5	4	10	10	5	10	5
For. Service	-	2	-	-	-	4	2	-
Research	-	1	-	-	-	3	-	-
Others	-	-	1	-	1	1	2	-
N. America								
Educators	2	4	2	5	2	2	3	5
For. Service	1	-	-	-	-	-	-	-
S. America								
Educators	-	1	-	1	-	-	-	-
For. Service	3	-	-	-	-	-	-	-
Others	-	1	-	-	-	1	1	-
C. America								
Educators	-	-	-	1	1	1	-	2
Others	1	-	-	1	-	-	-	-
Australia								
Educators	-	-	1	2	3	2	2	1

'Others' included some donors or industry

A very clear pattern emerges from the attendance records in Table 1.6. Africa and Asia were largely represented in these meetings by their forest services. In most of this period, these regions were developing their forestry education institutions, and most probably, the appropriate representatives had to come from the forest services that were in all probability overseeing these developments. South and Central America were least represented in these meetings. Europe and North America were represented largely by educators. The many Northern educators in forestry were obviously talking with the few

Southern public forest administrators. Evidently, the ensuing forestry education direction reflected mostly the views of the Northern educators. The conspicuous absence of civil society, business (industry) and other related professions, especially agriculture, biodiversity and environment further limited the scope of discussions. A university professor from the North always chaired the committee. The critical question this brings is whether the nascent African, Latin American and Asian educators could be effective in influencing the agenda or the outcomes.

1.7 CURRENT TRENDS IN FORESTRY EDUCATION AND ENROLMENT

Today, forestry education is in a crisis. Over the last ten years, graduates from forestry education and training programmes have declined by over 30% worldwide, and many forestry technician schools either have closed down or have vastly reduced enrolment. Enrolments in forestry technician training in Europe and Africa have declined substantially since 1993 as shown in Figure 1.1. This is happening despite the trend of rapid expansion in university level education, where enrolments in universities have tripled over the last twenty years. At the undergraduate level, graduations from forestry institutions in Africa and Europe have been declining slightly since 1993, while that in Southeast Asia has roughly doubled. There was a drastic drop in graduating technicians in both Africa and Asia after 1995, while that in the UK and Germany was stable.

The declines were attributed to scaling down of these programmes due to reduced funding and by structural adjustment programmes. The sharp rise in graduates in Asia after 1999 was due to a significant increase in the number of graduates from Indonesia and Vietnam, while those in other countries were stable or increased more modestly. These increases were driven by traditional job opportunities in government forest services, industry, and the NGO sector. Non-traditional jobs, while low, were also noted to be increasing in importance (Miller, 2004; Rudebjer and Siregar 2004). The decline in graduation in Africa has been attributed to dwindling employment opportunities for graduates despite the increased role of foresters in environmental management, devolution of forest management to communities, privatization of forest resources. It is also a result of students opting for training leading to better paying job opportunities in information and communication technology, manufacturing in fast growing economies, and increased productivity of forest industries (Nair, 2004).

An increasing number of forestry-related courses such as natural resources management and environment planning and management attract a considerable number of students who find employment in the mushrooming NGO sectors related to forestry. This indicates a switch from governments being the main employer of university forestry graduates to the NGO world, the private forestry sector and the informal forestry sub-sector. Emphasis in forestry training should therefore increasingly target these new markets for forestry graduates, by strategically harmonizing training programmes among related institutions, and relevant departments and faculties within institutions.

The decline in Europe is mainly a result of reduced funding opportunities for forestry education and the emergence of alternative programmes in environment and biodiversity. A lower proportion of students are opting to enter the forestry profession. Further, applicants to forestry programmes, especially in Europe, are increasingly those with lower passes at school level (Miller, 2004). Whatever the cause, forestry education programmes in Africa and Europe, and less so in Asia, are facing the challenge of attracting more and

quality students and resources. Reduced government funding for forestry education in many countries has led to universities and colleges reducing the scope of their training (usually cutting down on field exercises) to cut costs, with sacrificing quality and relevance.

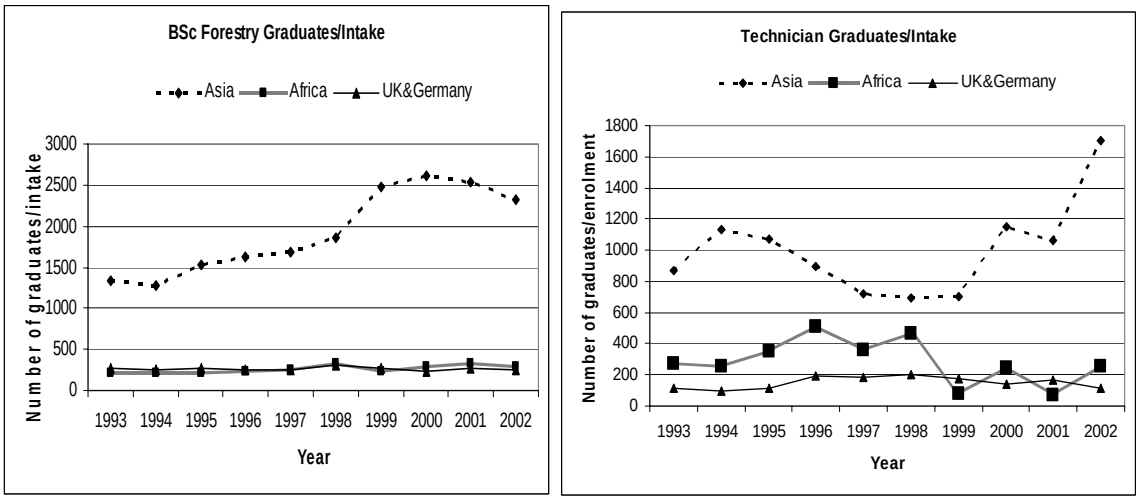

Figure 1.1: Trends in Graduation/Enrolment in Forestry Education in Selected Countries in Africa, Asia and Europe (Temu et al., 2005; Miller, 2004 and Siregar, 2004)

Griffin (1990) argued that we provide forestry "*education for capability*". To this, Miller (1990) aptly asks "*capability for what, and at which level*?", and to which we add "*how*"? These questions are critical to keeping the profession relevant to society, and the FAO Advisory Committee on Forestry Education (ACFE) was established to provide continuing global guidance on these important issues.

1.8 DISCUSSION

In terms of realizing its objectives, ACFE was instrumental in establishing, improving and influencing the direction of forestry education and support for it worldwide. Based on its recommendations, the FAO education department was established at FAO in Rome in the early sixties. The department undertook many projects in support of forestry education and training in developing countries. Forestry training in Bangladesh, Nigeria, Uganda, the Sudan, Ghana, Cote d'Ivoire, and many other countries around the developing world would probably not have been established so successfully without FAO support and the guidance of ACFE. Many fellowships were offered to students from developing countries to undertake graduate and post graduate training in forestry schools in Europe and North America, which had a multiplier effect on capacity development in their countries, as many beneficiaries of the fellowships ended up as trainers in institutions within their countries.

The work of ACFE was an inspiration for many parts of the world, but most especially Eastern and southern Africa. In 1971, an advisory Committee for Forestry Education in Eastern and Southern Africa was formed. It brought together educators, public forest managers and industry to discuss the human resource needs and determine the content and

quality of existing education programmes. It also planned additional programmes and refresher training. Unfortunately, the committee fizzled out in the late eighties.

A perennial recommendation of ACFE was for preparation and provision of textbooks and manuals. Because of this recommendation, the FAO produced many textbooks and manuals on many aspects of forestry practice, based on ACFE advice. In some controversial cases such as the planting of Eucalypts, FAO publications were the standard reference. Textbooks and manuals ranging from teaching methodologies to extension, sawmilling, ergonomics, nursery practices, etc were published and distributed to institutions and extension workers worldwide. In many developing countries, FAO textbooks and manuals were and still are the most readily available reference material on forestry bookshelves.

With regard to drawing agenda and background information to IUFRO and World Forestry Congresses, the committee produced technical papers such as background papers on technology and forestry education, training and extension to UNCED preparatory meeting in 1992; education and training for forests research for CIFOR's strategic planning, and; updated directories of forestry training institutions, etc. Further, the committee organized at least four world consultations on forestry education, which afforded forestry professionals, educators, and practitioners great opportunities to deliberate on trends and needs for education and training, and published the proceedings of these.

Because of concerns about manpower needs for forestry services at ACFE's formation, and through FAO efforts, skilled manpower requirements were met in most developing countries by the 1980s. After this period, the concern then became that of expanding the curricula to include other courses so that forest graduates could find employment in other areas. From late 1980s, it was realized that manpower requirement was no longer a pressing issue and to maintain the competence of the previously trained foresters and to equip the staff with specialized knowledge for example new developments such as IT, ACFE recognized the importance of continuing education. Therefore, this became ACFE's major concern in 1990s before it was terminated. Similarly, ACFE recognized the importance of vocational training so that workers could be equipped with basic work methods. Therefore the ACFE recommended that continuing and vocational education be undertaken by universities, state agencies, forest industries and employers. While not included in ACFE representation, professional societies can play an important role in continuing education, as is the case with other professions such as medicine, engineering and law.

Another perennial issue during the life ACFE was curricula content for first degrees and technical training such as diploma and certificate courses. Apart from dealing with curriculum content, many recommendations were made on added need for the courses to impart proper attitudes and ethics. It should be noted, however, that societies around the world depend on forests, and will continue to do so for the many important goods and services it offers. The objectives of forest management and the goods and services emphasized in different parts of the world will vary according to the developmental phases of the society.

Therefore, management objectives tend to differ not only from one country to the other but also within any society over time. Arising from this, there is an inescapable conclusion

that society will continue to require personnel trained in managing forest resources to meet whatever the needs of society may be. However, with globalization, forestry development in developing countries is paradoxically under heavy conservation as well as harvesting pressure! These pressures make the question of curricular content in forestry education and training in the developing world rather complex and difficult to resolve. This underscores the importance of an advisory body, which can provide continuing dialogue on forestry education issues worldwide. A new instrument with a balanced global vision and representation is needed.

1.9 CONCLUSIONS AND RECOMMENDATIONS

The now defunct ACFE and the Forestry Education Department at the FAO made very valuable contributions to forestry education around the world. This paper highlights the roles played in the past by the FAO and ACFE in supporting forestry education globally, their effectiveness, and of the likely gaps arising from their demise.

Society will continue to depend on forests for a variety of important goods and services including soil and water conservation, carbon sequestration, climate amelioration, recreation and tourism, wood and non-wood products. Forest management objectives are set by society, and these change as societies themselves change. Therefore, the forestry profession will continue to be required to shift paradigms from time to time. We know now that forestry education has not been able to transform at pace with global changes, resulting in failures and triggering perceptions that foresters are not what society needs. Flexible curricula with a diversity of specializations are urgently needed to address this issue.

There is still a need to develop databases and strengthen regional and national institutions through the worldwide and regional networks and ICT systems to inform and guide forestry training.

There are now international forestry and forestry related research organizations such the World Agroforestry Centre (ICRAF) and the International Centre for Forestry Research (CIFOR), which are active globally in forestry research and education activities. The International Union of Forestry Research Organization (IUFRO) and regional education networks such as ANAFE, AFORNET, CATIE, COMIFAC, ETFN, RIFFEAC and SEANAFE are other important players in forestry education matters.

A global mechanism to guide the process, mentor institutions and facilitate peer reviews to achieve common standards is urgently needed. The above institutions have organizational structures and contacts and are very well placed to house global, regional and sub-regional mandates to promote and support a global advisory body.

The critical issue is whether such a global advisory mechanism is necessary in today's world to provide a new global vision on forestry education. If the answer is affirmative, how can we raise the effectiveness of such an instrument? To answer these questions there is a need to discuss and resolve the following:

- What are the desired specific outcomes and impact?
- What kind of agenda would it be mandated to carry out?
- What representation would such an instrument have?

- What mechanisms will the instrument need to influence education and training programmes around the world? and;
- How would it be funded?

These questions have been bothering many universities offering forestry and related education and other stakeholders. The ACFE appreciated this since the 1980s. It is a function uniquely suitable for a global advisory body. After long informal debates, the International Partnership for Forestry Education (IPFE) was launched in April 2005, at a meeting hosted by FAO in Rome. The partnership has a secretariat at the University of Joensuu in Finland, thanks to a Finnish government grant. It is our belief that the answers to these questions will enable the IPFE to take this debate to another level.

REFERENCES

FAO. 1956. Summary Record of the FAO Panel on Education in Forestry, Oxford 1956. Rome.

FAO. 1964. FAO Advisory Committee on Forestry Education: First Session, Merida, Venezuela. Rome.

FAO. 1972. World Consultation on Forestry Education and Training. FAO, Rome.

FAO. 1993. List of meetings of the FAO panel on Education in Forestry and the FAO Advisory Committee on Forestry Education. In Forestry education: new trends and Prospects. FAO Forestry paper No. 123, Rome.

Gilbert, F. 1993. Forestry response to changing social values and other resources knowledge. In Forestry education: new trends and Prospects. FAO Forestry paper No. 123, Rome.

Griffin, D. M. 1990. Forestry's widening role in Resource and Environmental Management – the challenges to forestry education. In Proceedings Vol. 1: International Conference in Forestry Education, University of Tuscia, Viterbo, Italy.

Miller, H. 2004. Trends in forestry education in the Great Britain and Germany, 1993-2002. Unasylva, 55(216): 29-32

Miller, H. C. 1990. General Summary. *In*: Proceedings Vol. 1: International Conference in Forestry Education, University of Tuscia, Viterbo, Italy.

Miller, H. C. 1996. Summary report of the 18th Meeting of the FAO Advisory Committee on Forestry Education, Santiago, Chile November 1996. Proceedings, FAO Advisory Committee on Forestry Education 18th Session. Rome.

Nair, C. T. S. 2004. What does the future hold for forestry education? Unasylva, 55(216): 3-9.

Roche, L. 1992. The profession of forestry: a modern synthesis. In Proceedings Vol. 1: International Conference in Forestry Education, University of Tuscia, Viterbo, Italy.

Rudebjer, P. G., Siregar, I. 2004. Trends in forestry education in Southeast Asia, 1993-2002. Unasylva, 55(216): 11-16.

Temu, A. B. 1993. Integrating multiple land-use approaches into forestry education with emphasis on ways to train teaching staff and focus on field exercises and the development of instruction materials. In Forestry education: new trends and Prospects. FAO Forestry paper No. 123, Rome.

Annex 1: Focus of ACFE Forestry Education Advisory by Decades

Topic	Main content of ACFE advisory by decades
Forestry Curricula	1950s Admission criteria 1960s Extension, forest terminology, work studies, industry organization, wildlife management, watershed and range management 1980s Continuing education in extension; continuing education for forest workers; assess needs for continuing education; continuing education to be part of extension; FAO to increase activities in ergonomics 1990s -Consult stakeholders to increase frequency of curricula review and base it on needs; GIS and computer modelling in watershed management in dry lands; personnel management, work science and ergonomics
Human resources and employment	1950s Employment possibilities versus trained personnel-surveys; manpower requirements versus training needs; 1960s Manpower requirement versus training; manpower assessment techniques 1970s Methodology for manpower assessments; increase more women in forestry education; career outlook of forestry education; role of forestry in employment 1980s Manpower needs for wildlife management; manpower planning and training to based o research; balance employment to training needs; fully-fund planned forestry manpower assessments and planning 1990s Retention of manpower; lessen brain-drain; mobilize manpower
Training for forest industries	1960s Wood technology; logging and sawmilling 1970s Industrial training; occupational safety and health; assess manpower requirements for industry; tools, machinery and ergonomics; harvesting, processing and sawmilling; and industrial processing 1980s Draw code of practice and standards; link institutions to industry; FAO and Finland to help in training for industries 1990s Develop appropriate methods for forest industries; link industries to educational institutions

Topic	Main content of ACFE advisory by decades
Forest extension	1970s Communication skills; agriculture and attitudes; forestry and society-public relations; awareness on role of forests; compile extension manuals; extension for small scale sawmills; community forestry development; socioeconomics and resource allocation; FAO to publish books; business management; manual on training methodology 1980s Social forestry; afforestation of wastelands; link research, education and extension; FAO to introduce extension manuals; include extension in all training programmes; 1990s Teach alternative livelihoods; extension methods; methodologies for extension in watershed management
Vocational/in-service training	1970s Strengthening continuing education 1980s Watershed, parks and range management; Forest policy to be more developed in curricula; introduce ergonomics at all levels; train lecturers on pedagogy; business management; expand education to fit other job opportunities; Sociology, anthropology, extension
Information and communication technology	1970s Production of textbooks; manuals on training methodology
Administration of forestry education	1960s Textbook needs assessments; standardizing Forest terminology; establishment of university-level education; University-to-university linkages; 1970s Organize world consultations; new methods of teaching; comparative study of forestry education; integrated work study; pre-university exposure in forestry 1980s Establish exam boards; develop regional centres of excellence, coordinate research and education; regional centres for industrial training 1990s Teacher training; link education and research to obtain data in dry land watershed management
Postgraduate education	1960s Postgraduate education, intensification of research 1970s University-to-university linkages in community education 1980s ACFE to focus on postgraduate training; training in forest product marketing; increase harvesting, socioeconomics, wood sciences and technology content in curricula and specializations; pedagogical training to lecturers; correct bias in favour of professional training and encourage technical training
Others	1960s Organize world consultations; organize ACFE in 6 regional committees 1980s Rehabilitate wasteland through afforestation; research on energy biomass; research on conservation and management of tropical forests; develop network of information centres