

Impact of the Southeast Asian Network or Agroforestry Education (SEANAFE) on agroforestry education capacity

*Per G Rudebjer, Leila D. Landicho, Damrong Pipatwattanakul,
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Southeast Asia



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Preface

Agroforestry, connecting the worlds of agriculture and forestry, is easy at the level of farmers: they build on thousands of years of practical experience in managing landscapes and farms with trees. From the government's view, however, institutions for forestry differ in culture, mandate and agenda from those for agriculture. Trees and shrubs are artificially divided between these two institutions; for example, rubber and coffee belong to the agricultural domain. Although similar ecological processes and principles apply across the spectrum of annual to perennial plants with more or less woody stems, there is a tradition that places 'forestry science' in a separate category from 'agricultural science.' To prepare students for jobs in these separate worlds of agriculture and forestry, academic conventions have created different faculties. Southeast Asian countries and their universities have followed this tradition of separate study programmes. Thus, the segregation continues, and both agriculture and forestry schools have been missing out on important aspects of the landscape and the rural people: one group views the latter as 'farmers' and the other, as 'forest dependent people' or 'local communities'.

When the term 'agroforestry' was coined 30 years ago, it was meant to bring science and education closer to the practices, opportunities and constraints of growing trees in the rural landscapes. Agroforestry was to bridge the two sides and integrate economic and environmental goods and services that can be obtained from such landscapes.

However, instead of focusing on 'integration', the newly emerged agroforestry institutions tended to define and defend their turf, often presenting agroforestry as a separate kind of *science* that requires separate streams for *education* and a separate niche among government institutions as well. At its start, the Southeast Asian Network for Agroforestry Education (SEANAFE) was part of this movement to create new streams of education and to be recognized for developing a new type of professionals as well as the academic curricula and study programmes that prepare them for a new type of jobs. However, the reality was that these new streams would grow out of existing schools of forestry or agriculture. Rarely would they be connected to both in equal measure.

Within the SEANAFE network and based on the different experiences of the five countries, the separate curricula stream has learned to coexist with the 'integrated' stream, which aims at adding an agroforestry flavour to many types of existing education. This change in SEANAFE's orientation came about when the network was reformulated as a 'network of national networks', allowing more differentiation according to national needs. But ultimately, the commonality of experiences and opportunities for achieving mutual benefits remains to be the primary reason for a regional network; a balance is needed between standardization and diversity.

Urban consumers have more food choices now than at any time in history. Likewise, most of the food today is produced on farms that are less diverse than at any time in history. Globalization has been partly responsible for the loss of agricultural biodiversity, while increasing the diversity at the level of individual citizens. This paradox may also apply to students as consumers of university education: global efforts to enhance standardization now allow students to choose from a much wider array of study programmes and come up with individualized programmes. In this light, SEANAFE's efforts to map the current strengths and weaknesses of the universities teaching agroforestry in Southeast Asia

would provide a valuable resource. This current report was also designed as an ‘impact study’ to help the SEANAFE institutions, ICRAF (World Agroforestry Centre) as the technical support organization and the Swedish International Development Cooperation Agency (Sida) as donor to take stock of what has been achieved and identify where the main opportunities lie to make further progress in advancing natural resources education in Southeast Asia.

I hope this report will stimulate further discussion on the merits of the ‘segregation’ and ‘integration’ approaches, as there is a general concern that both agriculture and forestry have lost their appeal to students and that society expects new approaches to the multifunctionality of landscapes.

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Lily Tallafer's editing greatly improved the text.

Executive summary

The Southeast Asian Network for Agroforestry Education (SEANAFE) was established in April 1999. SEANAFE's mission is to develop human resources for agroforestry and integrated natural resource management through collaboration among educational institutions. Presently, the network has 82 member institutions in 5 countries.

In mid-2006, SEANAFE conducted an impact study covering 15 of the 33 founding members: universities and technical colleges in Indonesia, Laos, Philippines, Thailand and Vietnam. The study aimed at understanding the network's influence on its member institutions' capacity to teach agroforestry in the past seven years. Below are highlights of the study results.

The institutions used three main approaches to agroforestry education:

- A full agroforestry Diploma or BSc programme. This model is primarily used in the Philippines, where eight such programmes were offered in five agriculture and forestry colleges. Nine percent of the enrolled students in those colleges studied agroforestry. One BSc programme in Vietnam started in 2003. There was no full MSc programme in agroforestry in any of the five countries.
- Agroforestry as a core course. This was the case in 11 out of 24 Diploma, BSc and MSc programmes in agriculture and forestry. In Vietnam, all surveyed institutions had 'mainstreamed' agroforestry in their programmes. In Indonesia and Laos, some institutions offered agroforestry as a core course.
- Agroforestry as an optional course. This was the case in eight of 24 programmes. It was also a topic in other courses in three programmes. All institutions surveyed in Thailand and many in Indonesia belonged to this category.

Enrollment in faculties and colleges responsible for agroforestry decreased from 1999 to 2006 in 18 of 32 programmes, except in Vietnam and Laos where it increased.

Of 38 agroforestry programmes and courses in Indonesia, Philippines and Vietnam, all except two had been revised during the institutions' SEANAFE membership. Two-thirds (67%) of the surveyed members institutions had used SEANAFE's curriculum guide in their review. SEANAFE's influence on formal agroforestry curricula in Thailand was limited due to policy constraints.

The 18 faculties and colleges surveyed reported a total of 78 agroforestry lecturers in 2006, of which 31% were female. Eighteen percent of the agroforestry lecturers had formal training in socioeconomic subjects; the vast majority had a bio-physical educational background. From 1999 to 2006, the number of agroforestry lecturers increased in one-third of the faculties/colleges and was stable in the remaining 12. Sixteen institutions reported that SEANAFE had positively influenced staff capacity.

Access to resources for agroforestry teaching was inadequate in Laos and varied greatly among institutions in the other four countries. All faculties, except one in Indonesia, confirmed SEANAFE's positive influence on their access to teaching materials; the network's library support was widely

recognized. Compared with a control group of six non-member institutions, two each in the Philippines, Indonesia and Vietnam, SEANAFE members had better access to books, lecture notes and audio-visual materials.

Many respondents indicated that the availability of teaching materials and references enriched their teaching methods. Practical learning improved in several institutions, and teaching methods became more interactive.

SEANAFE had mixed impact on the institutions' agroforestry research capacity. Some institutions in Indonesia, Philippines and Vietnam noted SEANAFE's research support to staff and students. One member in Philippines reported 'not much influence on the research aspects', while Thai institutions reported influence on the individual capacity and connections.

Among the 18 faculties/colleges surveyed, 101 teachers and institutional leaders had participated in SEANAFE activities (81.2% male, 18.8% female). Three institutions had only 1 or 2 staff members participating in SEANAFE activities during the seven-year period, raising questions of the institutional ownership.

The second stage of the impact study assessed the institutional capacity for agroforestry education based on a modified Horton model (Horton et al. 2003), which looks at staff capacity, infrastructure, leadership, curricula and networking. The major findings were:

- The institutions in the Philippines, Indonesia and Vietnam generally rated their status in 2006 as 'adequate or 'very good' (data were incomplete for Laos and Thailand).
- There was a positive change from 1999 to 2006: the vast majority of the surveyed institutions recorded 'slight improvement' or 'much improvement' for all variables.

Two important external factors influenced SEANAFE's impact on agroforestry education:

- Presence of national policies – agriculture/forestry, as well as education –that recognize agroforestry. This was the case in the Philippines and Vietnam and, to a lesser extent, in Laos. In contrast, Thailand lacked such policies and, consequently, agroforestry education in this country was limited.
- Cooperation or synergy with other projects with similar objectives. In Vietnam, SEANAFE collaborated with the Social Forestry Support Programme, which enhanced the former's impact. In the Philippines, synergies with the earlier 'ASPECTS project' played a similar role.

The third and final step of the survey was a self- assessment, which helped identify future directions for SEANAFE. It revealed some common issues, which SEANAFE's leadership would need to study further, as follows:

- Many institutions commented that SEANAFE's communication to its members needs strengthening. It should be regular, shared widely, and include university leaders and administrators.

- Direct participation in SEANAFE activities should be shared or rotated among faculty members to enhance institutional ownership.
- Collaboration among faculties in the same institution could be enhanced. Good examples of such collaboration in Vietnam were cited.
- Curriculum content needs further attention, but approaches need to be tailor- made considering national and institutional contexts. Curricula from the other countries in the network should be shared and translated.
- Continued support for agroforestry books and materials is important. Teaching materials produced in the previous phase could be promoted and translated.
- SEANAFE should assist especially in capacity building of the young teaching staff.
- The network has room for expansion especially in Laos and Thailand.
- SEANAFE should engage in policy dialogue and awareness to influence the agroforestry agenda, as a precondition for curriculum review, and to enhance employment of graduates.
- SEANAFE should continue its support for agroforestry student theses, which should balance bio-physical and socioeconomic aspects.

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Acronyms

ACIAR	Australian Centre for International Agricultural Research
ASPECTS	Agroforestry Support Program for Empowering Communities Towards Self-Reliance
BSU	Benguet State University
CHED	Commission for Higher Education
CMU	Central Mindanao University
FUV	Forestry University of Vietnam
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICRAF	World Agroforestry Centre
INAFE	Indonesian Network for Agroforestry Education
JICA	Japan International Cooperation Agency
KASC	Kalinga-Apayao State College
KKU	Khon Kaen University
LaoNAFE	Laos Network for Agroforestry Education
LSU	Leyte State University
MARD	Ministry of Agriculture and Rural Development
MOET	Ministry of Education and Training
MOSCAT	Misamis Oriental State College of Agriculture and Technology
NAFEC	National Agroforestry Education Committee
NUOL	National University of Laos
PAFERN	Philippine Agroforestry Education and Research Network
RUTTO	Rajamangala University of Technology Tawan
SEANAPE	Southeast Asian Network for Agroforestry Education
Sida	Swedish International Development Cooperation Agency
STOU	Sukhothai Thammathirat Open University
ThaiNAFE	Thailand Network for Agroforestry Education
UNIBRAW	Universitas Brawijaya
URS	University of Rizal System
VNAFE	Vietnam Network for Agroforestry Education

I. Findings in brief

Status of and changes in agroforestry education (1999-2006)

Introduction

The Southeast Asian Network for Agroforestry Education (SEANAFE) was established in April 1999 by 33 founding members composed of universities and colleges in five countries: Indonesia, Laos, Philippines, Thailand and Vietnam.

From October 1997 to mid-2006 (including a pre-SEANAFE status and needs assessment), the network received approximately US\$ 2.1 million in financial support from the Swedish International Development Cooperation Agency (Sida). In May-June 2006, SEANAFE conducted an impact study covering 15 of the founding members (Table 1). The study aimed at understanding how the network has influenced the change in its member institutions' capacity to teach agroforestry. Six non-member institutions—two universities each in Indonesia, Philippines and Vietnam—were also surveyed to serve as the study's control group.

Table 1. List of SEANAFE members included in the study

Country	SEANAFE member institution
Indonesia	<ul style="list-style-type: none">• Brawijaya University (UNIBRAW), Faculty of Agriculture• Gadjah Mada University (UGM), Faculty of Forestry and Faculty of Agriculture• Mulawarman University (UNMUL), Faculty of Forestry and Faculty of Agriculture
Laos	<ul style="list-style-type: none">• Luang Prabang Agriculture and Forestry College• National University of Laos, Faculty of Agriculture
Philippines	<ul style="list-style-type: none">• Benguet State University, College of Forestry and College of Agriculture• Leyte State University, College of Forestry and Natural Resources• Misamis Oriental State College of Agriculture and Technology, Institute of Agriculture• University of Rizal System, College of Agriculture
Thailand	<ul style="list-style-type: none">• Khon Kaen University, Faculty of Agriculture• Rajamangala University of Technology Tawan-ok, Faculty of Agriculture and Natural Resources• Sukhothai Thammathirat Open University, Faculty of Agricultural Extension and Cooperatives
Vietnam	<ul style="list-style-type: none">• Forestry University of Vietnam, Social Forestry Training Center• Nonglam University, Faculty of Forestry• Tay Nguyen University, Faculty of Agriculture and Forestry

Enrollment

In 2005/2006, the 15 respondents had a combined enrollment of 15,425 students in their faculties or colleges offering agroforestry courses (Table 2). Of these, 85.6% were BSc level students. Diploma-level education dominated in Laos. Thailand had the largest number of MSc students, followed by Indonesia. Equal male and female enrollments were reported in Indonesia, Philippines and Thailand. In Vietnam and Laos, 30% of the students were female.

Enrollment decreased from 1999 to 2006 in 18 of the 32 programmes, and was stable in 11. Five programmes, all in Laos and Vietnam, reported increased enrollment. Data from non-member institutions showed similar trends.

Table 2. Enrollment in faculties/colleges responsible for agroforestry, academic year 2005/2006

	Diploma		BSc		MSc	
	N=	Enrollment	N=	Enrollment	N=	Enrollment
Indonesia	3	114	5	1058	5	113
Laos	2	894	1	86	0	0
Philippines	3	235	5	2353	1	2
Thailand	0	0	3	9121	1	856
Vietnam	0	0	3	593	0	0
Total	8	1243	17	13211	7	971
%		8.1		85.6		6.3

Agroforestry education

The extent of and approach to agroforestry education varied greatly among countries and institutions. There was no clear regional pattern because national policies differed so much.

Agroforestry was a core course in Vietnam and in some faculties in Indonesia and Laos. One institution in Vietnam also offered an agroforestry programme. Institutions in Thailand offered agroforestry as an optional course only. The Philippines is a special case: All SEANAFE member institutions offered full agroforestry programmes. It should be noted, however, that the study did not cover the agroforestry coverage in general agriculture and forestry programmes in the same institutions.

Of the eight full agroforestry programmes reported, seven are in the Philippines (three Diploma and one BSc programmes, and four BSc programmes with major in agroforestry). Vietnam had one BSc agroforestry program. None of the five countries had an MSc programme in agroforestry.

Of the remaining 24 Diploma, BSc and MSc programmes, 11 included agroforestry as a core course and eight as an optional agroforestry course. Three programmes contained various optional courses that included agroforestry topics. Two programmes, both in Indonesia, were reported not to include any agroforestry content.

Agroforestry thesis opportunities were available in almost all BSc and MSc programmes.

Agroforestry curricula and students

The number of agroforestry students in academic year 2005/2006 was reported as follows:

- Indonesia: A total of 790 students (of a total enrollment of 1285) took agroforestry courses. Seven out of 19 courses were theoretical without practical credit hours. All agroforestry curricula were reviewed between 2001 and 2003.
- Philippines: A total of 235 students (of a total enrollment of 2590) studied Diploma and BSc programmes in agroforestry, and four students took agroforestry courses at the MSc level. Seven out of 10 curricula were reviewed after the institutions offering them became SEANAFE members.

- Vietnam: Of the 1609 students in academic year 2005/2006, 41 were enrolled in the new BSc agroforestry programme. A core agroforestry course of 2-3 credit hours was included in all BSc forestry and agronomy programmes in this study. There was also an agroforestry course in the business administration and economics programmes. All nine agroforestry course curricula were reviewed between 2002 and 2005, using Participatory Curriculum Development (PCD).

Details on agroforestry students and courses in Thailand and Laos were not available.

SEANAFE's influence on curriculum development

Two-thirds (67%) of the surveyed member institutions had used the SEANAFE curriculum guide in their curriculum review (English or translated editions). Forty-seven percent of the institutions found the guide 'partly useful;' 24% found it 'very useful.' Institutions in Thailand and two institutions in Philippines reported no or limited influence on curricula.

Commenting on SEANAFE's influence, the respondents mentioned the following key points:

- SEANAFE was a main influence on curriculum development. (Indonesia)
- The agroforestry curricula of other SEANAFE members were used. Membership to SEANAFE influenced the revision of the Diploma and BSc agroforestry technology curricula. Course content was enhanced using the curriculum guide, as a result of the faculty members' training. (Philippines)
- Although there was no clear evidence of using the SEANAFE guide in curriculum review, SEANAFE's influence on the individual capacity of lecturers who sit in the curriculum development committee was evident. (Thailand)
- The participatory approach to curriculum development has been shared with others. (Vietnam)
- Lecture notes and reference books provided had a positive influence on curriculum content.
- Research and development results and 'new knowledge' became available to member institutions.
- The socioeconomic content of the agroforestry curricula increased and field visit programmes were improved.
- The availability of teaching materials and references enriched the teaching methods, according to many respondents.
- Practical learning improved in several institutions (agroforestry village, agroforestry 'field complex').
- Teaching methods became more interactive.

External influences on curricula

There was a range of other external influences on agroforestry curricula, namely:

- government's education policies (Indonesia, Philippines and Thailand)
- government projects (Vietnam)
- external development projects (Vietnam) or research partnerships (Philippines)
- external environment, including the need for institutions to respond to the concerns of the mining sector (Indonesia) or the requirements of prospective employers (Philippines)
- university expansion (i.e. upgrading), requiring curriculum development (Thailand)

Agroforestry teaching staff

The 18 faculties and colleges surveyed listed a total of 78 agroforestry teachers, of which 31% were female. Eighteen percent of the agroforestry teachers had a formal education in socioeconomics.

The number of agroforestry teachers increased from 1999 to 2006 in 6 faculties/colleges and was stable in 12. Faculty qualification increased in 16 institutions and was stable in two. The number of agroforestry lecturers varied from 1 to 14 per institution. The Lao institutions and Rajamangala University of Technology Tawan-ok in Thailand had only one each, while the Faculty of Forestry of Benguet State University in the Philippines, registered 14 agroforestry lecturers. The student/teacher ratios also had huge variations, with the Philippines having the lowest figure and Vietnam, the highest ratio, although figures are not directly comparable because programmes and courses have so different durations.

A total of 101 teachers and institutional leaders were reported to have participated in SEANAFE activities from 1999 to 2006, an average of almost 6 persons per institution. Only 18.8% of them were female. In 3 of the 18 faculties/colleges, participation in SEANAFE activities was restricted to only one or two individuals during the seven-year period.

With the exception of two faculties in Indonesian universities, all surveyed institutions confirmed SEANAFE's positive influence on staff capacity. In both the exception cases in Indonesia, another faculty in the same university was more actively involved in SEANAFE.

The perceived SEANAFE influence on staff capacity was reported as follows:

- Indonesia: Three Indonesian faculties confirmed SEANAFE's influence on the teachers' capacity. In contrast, two faculties indicated that SEANAFE did not influence staff capacity – in both cases another faculty in the same university participated more intensively in the network.
- Laos: SEANAFE positively influenced individual capacity, as reflected in the improved course content and teaching methods. In Laos, the national policy on poverty eradication was an important external influence on education.

- Philippines: All institutions confirmed SEANAFE's positive influence. The network's training programmes, curriculum development workshops and seminars enhanced agroforestry teachers' knowledge. Other influences on agroforestry education included the ASPECTS project; ICRAF, GTZ, etc.
- Thailand: All three members reported enhanced individual capacity, as reflected in the teaching methods and content they used. There was, however, a lack of mechanisms to influence the institution and other staff outside the NAFEC team.
- Vietnam: SEANAFE positively influenced agroforestry teachers in all surveyed institutions. Other influences on agroforestry education included the Social Forestry Support Programme, other international projects and Ministries.

Resources

Resources for agroforestry teaching were assessed using an adequate/inadequate scale. The following categories were assessed: library books, library journals, lecture notes, audio-visual materials, field sites on- and off- campus. The information and communication facilities, including computer access and connectivity, were also studied.

Institutions in Laos had inadequate resources. In Indonesia, Philippines, Thailand and Vietnam, access to resources greatly varied among institutions: some had adequate resources while others had inadequate access, especially regarding library and teaching materials.

Compared with the six non-member institutions (control group), SEANAFE members had better access to books, lecture notes and audio-visual materials.

Sixteen (88%) of the faculties/colleges had Internet access: eight (44%) had high-speed connection, six (33%) had a slow broadband and two (11%) relied on dial-up connection.

All institutions, except the Faculty of Agriculture of Gadjah Mada University in Indonesia, recognized SEANAFE's positive influence on their access to teaching materials.

Extension

Most institutions reported being involved in agroforestry extension. Training of farmers and collaboration with extension organizations were the two most common strategies. Four institutions (three in Thailand, and the Faculty of Agriculture, Gadjah Mada University, Indonesia) reported not being involved in agroforestry-related extension.

The majority of the institutions confirmed SEANAFE's positive influence on their agroforestry extension. In Indonesia, two of the five institutions surveyed mentioned improvement in teaching methodologies and outreach to surrounding communities. Both Lao institutions said they used the knowledge gained in their activities to train farmers. Non-SEANAFE influences in Laos included the national policy on poverty eradication. (No data from Thai institutions were provided since they reported not being involved in agroforestry extension.)

In the Philippines, four of the five institutions confirmed SEANAFE's influence on their capacity in agroforestry extension. For example, MOSCAT established a collaborative research and extension project called 'Agroforestry *sa Barangay*' with SEANAFE funding. One institution indicated significantly improved staff capacity for agroforestry extension. Another mentioned learning experiences from SEANAFE-organized events helped establish the credibility of the university to implement agroforestry-related extension programmes.

All three institutions in Vietnam claimed increased extension capacity as a result of membership in SEANAFE, although one university felt that agroforestry extension capacity was more influenced by projects other than SEANAFE. More staff members used the participatory approach in carrying out extension work. Other external influences in Vietnam include the agroforestry extension programme of MARD, the Social Forestry Support Programme (SFSP) and the agroforestry fund of the local government. The Participatory Technology Development method was introduced by SFSP as a main method for working with farmers.

Research

The surveyed institutions' agroforestry research capacity varied greatly. Twelve institutions had among them 65 faculty members involved in agroforestry research, ranging from 3 to 10 persons per institution (average of almost 6 persons per institution). The remaining six institutions, including those in Laos and Thailand, did not have agroforestry research programmes. The number of staff involved in agroforestry research increased from 1999 to 2006 in eight institutions, was stable in four and decreased in one institution.

SEANAFE had mixed impact on the institutions' agroforestry research capacity. Some members reported 'not much influence of SEANAFE on the research aspects.' Thai institutions reported influence on the individual capacity level and in making connections. Institutions in Vietnam indicated that reference books and research funds to students and staff provided by SEANAFE contributed to research capacity.

At the time of this survey, 11 institutions had 32 ongoing agroforestry research projects. Thailand had only one such project and Laos had none. Each institution had 1-5 projects. The number of research projects increased from 1999 to 2006 in seven institutions, remained stable in five and decreased in two.

A total of 61 agroforestry theses were reported in 2005 from eight faculties and colleges; these included all institutions in Indonesia and Vietnam and one college in the Philippines. Notably, the Forestry University of Vietnam reported 25 theses in 2005. Thesis research in agroforestry increased from 1999 to 2006 in seven of the eight institutions. It decreased in one case.

SEANAFE's influence on research capacity was relatively limited. In Indonesia, UNIBRAW already had a strong research capacity. Other respondents cited SEANAFE's support to demonstration plots and community research, and provision of access to methodologies. The Philippine respondents mentioned the positive influences of thesis research support and of participation in a training course on research design and management. In Thailand, SEANAFE was recognized to influence teachers'

individual capacity and connections. Institutions in Vietnam appreciated the reference books and some research funds for staff and students that the network provided. They also mentioned a shift to research that is based on the needs of farmers, but it was not clear up to what extent this had been a result of participation in SEANAFE.

Institutional capacity for agroforestry education: status and change (1999-2006)

The study's second stage asked the institutions to assess their capacity for agroforestry education in 2006 and the change in capacity since becoming SEANAFE member in 1999. Five variables of institutional capacity were assessed, based on a modified Horton model (Horton et al. 2003):

- staff (teaching agroforestry)
- infrastructure, technical and financial resources for agroforestry education
- leadership
- programmes and process management, especially agroforestry curricula
- networks and linkages

Table 3. Institutional capacity for agroforestry education in 15 SEANAFE member institutions: status and change (1999-2006)

Variable	Status (2006) (No. of institutions)				Change (1999 – 2006) (No. of institutions)				
	Inade- quate	Ade- quate	Very good	(No data)	Redu- ced capacity	No change	Slightly impro- ved	Much impro- ved	(No data)
Staff capacity for AF education		1	9	5			3	10	2
Infrastructure, technical and financial resources for agroforestry education	1	7	2	5		3	7	4	1
Leadership related to AF development	2	5	5	3	1	1	4	6	3
Programme management & AF curricula		5	5	5			5	5	5
Networking and linkages		3	9	3			5	8	2

To gain a better understanding of the impact pathway, respondents were also asked to comment on: (1) key change events; (2) underlying causes and influences; (3) description of the change process and (4) examples of results and outcomes. Respondents had considerable difficulty in differentiating these 'steps' of the impact pathway as well as in attributing change, which the study tried to capture by recording other external (non-SEANAFE) influences.

The following paragraphs summarize the respondents' perception of the change process and its outcomes.

Staff capacity

Indonesian institutions commented that the number of agroforestry publications increased. Lecture notes and books on agroforestry written by the teaching staff contributed to this improvement.

Philippine members, which provided the most detailed information throughout this study, reported the following outcomes of increased staff capacity:

- Course curricula were revised based on the experiences gained from training courses.
- Faculty members provided technical assistance to local government units and served as resource persons and lecturers in local training programmes. They also supported the other units of the institution.
- Faculty members presented papers in agroforestry conferences, wrote project proposals and participated in collaborative agroforestry research.

In Thailand, the teaching staff used knowledge gained from being a SEANAFE member to update teaching methods and the contents of agroforestry courses. In one university, membership contributed to the introduction of an agroforestry subject in 2000.

Vietnamese lecturers were trained in participatory curriculum development, which encouraged the use of more active teaching methods. One university was diversifying to meet new demands for professionals. Textbooks were updated. Linkages between research, teaching and extension increased. Lecturers in Vietnam also did consulting work on agroforestry for the government and NGO projects.

Facilities and resources

In Indonesia, SEANAFE's library support was widely recognized by the members, but books were supplied in limited copies. The network's support for demonstration plots was also recognized. Results and outcomes included identification of research topics in agroforestry and establishment of research demonstration plots. References on agroforestry were made available and agroforestry lecture notes were modified by the staff. One member supported an 'agroforestry village', and another set up an agroforestry demonstration plot off-campus. One university was involved in a land reclamation project, working with coal mining companies.

The Philippine member institutions reported availability of agroforestry references to students and faculty members, and an increasing number of off-campus learning laboratories. One college has an 'agroforestry field complex' that also served as a learning laboratory for other state colleges, and was

used by external partners for training courses. Furthermore, it served as a research and production area, generating income for the college. Some institutions increased their resources by submitting project proposals to institutions supporting agroforestry endeavours.

Institutions in Thailand reported that participation in SEANAFE resulted in more connections to other organizations, and more teaching materials, books and journals.

Vietnam emphasized the combined influence of SEANAFE and several stakeholders, especially the Social Forestry Support Programme (SFSP), as well as the support by the local government and the university leadership. This resulted in better access by universities to facilities and equipment for fieldwork. Funds for research also increased. Many books and textbooks became available for staff and students. The number of these related to agroforestry increased. Likewise, the number of students enrolled in a new agroforestry programme increased. One institution reported significant improvement in infrastructure such as classrooms, facilities for teaching and Internet access.

Leadership

Although SEANAFE did not design specific activities for leaders of member institutions, many deans, college presidents, vice rectors, etc., attended the network's events and some served as members of the SEANAFE Board.

Indonesian members reported full support from institutional leaders. Such support enabled the conduct of course reviews, staff training and the involvement of teaching staff from the other departments.

One Lao member institution linked inadequate leadership to the weak capacity and frequent change of the agroforestry teacher. In contrast, the other Lao institution rated its strategic leadership as very good and contributing to agroforestry education.

The Philippine members generally enjoyed strong leadership support for their agroforestry activities. This may be linked to the fact that agroforestry is taught as a full programme, or as a major. Leadership support helped to build links and external partnerships and contributed to the provision of technical assistance to local partners. Staff development programmes were in place in several cases. Curriculum revision was supported. A scholarship programme for agroforestry students was in place in one institution. The hosting of SEANAFE events also indicated leadership support.

Data from Thailand were incomplete although two universities mentioned two outcomes: increased awareness of environmental, forest, and natural resource management, and being a driving force for curriculum change. However, the institutions also noted a major constraint: the regulation of the Ministry of Education's Commission for Higher Education that any curriculum has to have a committee of five lecturers dedicated to the curriculum.

SEANAFE members in Vietnam generally had good leadership support for agroforestry development. This was reflected in the allocation of funds for agroforestry research, policies for staff development and increased teaching staff for the agroforestry subject. Curriculum and teaching methods had changed during the period. For example, agroforestry was adopted a new major programme in one

university. Lecturers were tapped as consultants in agroforestry projects and were involved in agroforestry development projects, indicating that their expertise was in demand. One university mentioned the recognition of agroforestry as a major field of study.

Curricula

In Indonesia, members reported a shift to competence-based curricula and student-based learning in Indonesian universities. The use of Participatory Curriculum Development (PCD), spearheaded by SEANAFE, was mentioned also. One university reported that agroforestry had spread to another department in the same university. In another university, agroforestry was a compulsory course in two departments. External factors influencing curricula included regional autonomy, adaptation to increasing economic activities in East Borneo and forestry issues in Java. Universities also responded to private sector needs, including crop estates and mining companies. The guidelines of the Directorate General of Higher Education, a policy instrument regulating Indonesian universities, were seen as hindering the offering of new curricula. Indonesian institutions reported outcomes such as increased agroforestry research, improved communication capacity and learning methods, and inclusion of a topic on reclamation of ex-mining sites in the agroforestry course.

In Laos, the National University of Laos reported that the process of managing the agroforestry course depended on the personal interest of the lecturer. The use of the English language in the information materials of SEANAFE and LaoNAFE was seen as a barrier. At Luang Prabang College, the course content and field practical exercise had been discussed at LaoNAFE meetings. Results had been applied in the theoretical part of the course. But practical agroforestry education was restricted to planting trees in the farm around the college.

The Philippines differs from the other countries in the network in the sense that agroforestry is taught as a full programme or a major in all SEANAFE member institutions. Institutions in the Philippines reported many activities on agroforestry curricula during the period 1999-2006. The work of SEANAFE and PAFERN built on the earlier 'ASPECTS' project, as mentioned by three out of four institutions. The outcomes reported include a new BSc Agroforestry curriculum approved by the Commission on Higher Education (CHED). The old agroforestry technology curriculum was being phased out in two institutions. One member was in the process of unifying the agroforestry curricula of the university. Another was setting up a 'ladderized' Diploma in Agroforestry, leading to the BSc Forestry major in Agroforestry.

All three universities in Vietnam reported a change in agroforestry curricula and programmes. Both SFSP and SEANAFE were reported to have had an influence on the development of such curricula. The Forestry University of Vietnam has been offering a BSc Agroforestry programme since 2003. In Nonglam University, a new programme was adopted and teaching materials improved. Tay Nguyen University had updated the agroforestry curriculum and its textbook and reported changes in research and in students' field practice. Outcomes of these changes included increased capability of the university staff, which are now able to conduct agroforestry short courses for the 'grassroots level', and the staff being in demand as consultants in agroforestry projects.

Networking

All three Indonesian universities reported a demand for their services in various development projects by NGOs, the local government units and the private sector (crop estates and mining companies). University lecturers worked as consultants for rehabilitation projects and nursery establishments.

Respondent in Laos confirmed that their current status of networking was very good and better than the period prior to 1999. Links have been established among institutions offering agroforestry at the different levels of education.

All four institutions in the Philippines described in detail their networking with like-minded universities and colleges in the Philippines and Southeast Asia. They also reported strengthened linkages with local government units, DENR and people's organizations. Linkages had also increased with international organizations such as ICRAF and ACIAR.

In Thailand, lecturers at Khon Kaen University mentioned that knowledge and connections gained via the network were useful for their careers. Respondents at Rajamangala University of Technology Tawan-ok reported that being a member of SEANAFE/ThaiNAFEC was positively correlated to the changes in agroforestry education. Other links influencing agroforestry included a network for medicinal plants, the local government and the city council. Sukhothai Thammathirat Open University mentioned that the connections established via SEANAFE would be utilized to revise a textbook on agroforestry.

In Vietnam, the network enabled the exchange of materials, textbooks and staff among universities. They collaborated on writing textbook, shared information and conducted joint training and research.

Self-assessment and future direction for SEANAFE

The third and final step of the impact study was a self-assessment to validate the findings, draw out lessons learned and seek advice on SEANAFE's future direction. The self-assessment, presented in Part 3, was organized as a workshop in Indonesia, Philippines and Vietnam; in the case of Laos and Thailand, the results of individual interviews were compiled. Responses from students were also included.

This summary puts emphasis on lessons learned and future directions for SEANAFE, and validates the findings of Part 1 and Part 2 on the study.

Indonesia

Two institutions, UNIBRAW and UNUL, said the staff members in their universities are not familiar with SEANAFE. Information exchanges tended to be limited to the faculty leader and the SEANAFE contact person. Communication was also weak between the faculty of agriculture and faculty of forestry.

Regarding external factors, the Directorate General of Higher Education (DIKTI) did not provide a ‘slot’ for development of agroforestry curricula. Nor was the job market for graduates with agroforestry knowledge defined at the ministries of agriculture or forestry.

UNIBRAW reported that research grants from SEANAFE were small compared with those provided by other sources, and therefore not attractive.

There is a view in Indonesia that agroforestry belongs to the forestry domain, and not to agriculture.

All universities commented on the generally declining interest and quality of students in agriculture and forestry programmes. The passing grade and competitiveness in agricultural sciences have generally decreased compared with the other sciences.

SEANAFE’s most valuable contributions as well as the network’s activities that did not work so well in Indonesia are listed in Table 4.

Table 4. Lessons learned: Indonesia

SEANAFE’s most valuable contributions	SEANAFE activities that did not work so well
<ul style="list-style-type: none"> • Curriculum development on sustainable agriculture, and workshops on agroforestry curriculum development (2 universities) • Literature (2) • Networking and linkages (2). In one case this led to staff development in another network member university for two PhD students. • Demonstration plot support (2) • Staff development 	<ul style="list-style-type: none"> • Writing of lecture notes, because coordination did not work well (2 universities) • Strategic leadership (2) • Research grants • Limited budget for demonstration plots and curriculum development

Indonesian member institutions suggested that SEANAFE should target its future assistance as follows:

- SEANAFE activities in member institution need wider participation of staff within the institution.
- Curriculum content needs further attention. Integrated approaches should be enhanced and broadened.
- Research grants for BSc, MSc and PhD research must be offered, but the bio-physical and socioeconomic aspects should be balanced.
- Assistance must be provided in the development of agroforestry demonstration plots off-campus, especially on farmers’ fields.

- SEANAFE should get involved in public awareness activities to address the trend of decreasing quality of students.

Laos

Students at the Luang Prabang college preferred a more practical course but the college had a limited area for that purpose. Students in the two institutions surveyed said teaching materials were not sufficient for all students. At NUOL, taking care of the agroforestry demonstration plot during the semester break was a problem because of the costs of hiring labour.

Staff capacity was weak in both institutions. NUOL's Faculty of Agriculture did not have a lecturer permanently responsible for agroforestry. The current agroforestry lecturer was a recently recruited junior lecturer holding a BSc degree in agriculture. In Luang Prabang, no lecturer had a higher degree in agroforestry. The lack in English proficiency among staff and students was a serious constraint to accessing publications. On the other hand, one strength in the surveyed institutions is that most lecturers had good field experiences in agricultural systems.

The institutions generally had poor facilities and basic infrastructure. Books and teaching materials were insufficient and budgets for infrastructure maintenance, field trips and farmers' training were lacking.

The current curriculum supports the national policy on poverty eradication through appropriate agricultural system, including agroforestry. Linkages between educational institutions and other various governmental organizations and NGOs are good.

The two institutions identified the following threats:

- insufficient budget support from government and international donors
- competition for students from other schools, including newly established education institutions

Reflecting on the lessons learned from SEANAFE, the Lao institutions suggested the following:

- The administration and management of LaoNAFE should be analysed and improved.
- SEANAFE's communication should be improved. To keep member institutions informed, a brief update on the network should be provided to the network members every 3 or 6 months.
- The network's membership should be expanded. Laos has many other government organizations dealing with agroforestry. Expansion of the network to the National Agriculture and Forestry Institute (NAFRI) and other extension organizations would yield good networking.
- The use of teaching materials produced in the previous phase of SEANAFE should be promoted. Materials relevant to the Lao context should be translated from English into the Lao language.

Philippines

The strengths of the surveyed institutions are in the pool of competent faculty members involved in agroforestry education and INRM programmes. Most institutions have land areas suitable for agroforestry farms or projects, which could also serve as areas for research, instruction and production. In addition, the leadership capacity and the support of the key officials and constituents played a critical role in the institutions' agroforestry education.

The institutions were concerned about the declining enrollment and quality of students. Three institutions mentioned the limited employment opportunities for agroforestry graduates and 'lack of identity of agroforestry graduates' as factors for this decline.

Inadequate facilities and insufficient funding were mentioned by all four institutions. Insufficient funding had affected agroforestry research, development and extension, and the management of agroforestry demonstration farms. Information and communication facilities were insufficient also in several cases.

Lessons learned

The results of the assessment of SEANAFE’s activities in the Philippines are as follows:

Table 5. Self-assessment of SEANAFE’s activities

SEANAFE’s most valuable contributions	SEANAFE activities that did not work so well
<ul style="list-style-type: none"> • Staff capacity building through various training courses and workshops (4 institutions) • Support to library resources and teaching materials in agroforestry • Contribution to curriculum development (3 institutions) • Funding support for undergraduate thesis (1 institution) • Opportunities for faculty and staff to be exposed to local communities and international networks (1 institution) • Strengthened capacity of the faculty to conduct agroforestry research (1 institution) • Financial assistance for the establishment of the ‘Agroforestry Field Complex’ (1 institution) • Increased interest by key university officials and constituents in the institution’s agroforestry programme (1 institution) • Widened networks and linkages of the university, facilitating the promotion of agroforestry in the region 	<ul style="list-style-type: none"> • Actual operation of networking at the regional/local levels (1 institution) • The network has not been putting responsibilities and accountabilities to the level of recipient members (1 institution) • There has not been any monitoring and evaluation of the SEANAFE/PAFERN-supported projects (1 institution) • The spreading of a fixed funding support to many schools in the Philippines (1 institution) • Restricted budget for collaborative research and extension limited the number of recipient schools (2 institutions)

SEANAFAE’s member institutions in the Philippines suggested the following future directions for the network:

Table 6. Suggested future directions for SEANAFAE in the Philippines

Area	SEANAFAE’s role
Facilitate resource mobilization	Provide financial support and link PAFERN with funding institutions to sustain the networking initiatives at the national level Conduct agroforestry research and curriculum development workshops and improve the agroforestry demonstration farms
Staff capacity	Provide training programmes for affiliate faculty members
Extension	Organize short-term training courses on agroforestry for local government units
Teaching materials	Provide textbooks and other teaching materials on agroforestry
Curricula	Integrate entrepreneurship concepts in curriculum development initiatives
Scholarships for students	Establish a scholarship programme at the undergraduate level
Network management	Closely monitor compliance of member-institutions with the network’s policies (i.e. membership fees, annual dues) Provide technical assistance in various areas of agroforestry
Policy advocacy	Enhance lobbying activities to have agroforestry as a distinct discipline Continue the policy advocacy programmes Continuously strengthen PAFERN so it could influence policies in forestry and natural resources.
Entrepreneurship	Establish a system for soft loans to the students who will go into self-employment or agroforestry entrepreneurship

Thailand

Sukhothai Thammathirat Open University has a good media production unit, which also could serve the mass communication activities of the network. Inclusion of current issues in the agroforestry education programme was limited because of the lack of practical courses in the distance learning system.

The number of MSc students at the Department of Land Resources and Environment at Khon Kaen University was low, resulting in only 2-3 registered students in agroforestry in each class.

All three institutions commented that the number of staff was insufficient. Two universities reported that all lecturers had a heavy workload, and that they lacked a lecturer with a degree in agroforestry. On the other hand, all three universities saw emerging opportunities regarding agroforestry curricula.

The threats to agroforestry education in Thailand are policy-related, according to all three respondents. A new regulation of the Commission of Higher Education, Ministry of Education, which requires five lecturers per curriculum, hinders the development of new curricula.

The results of the Thai institutions' assessment of SEANAFE's activities are as follows.

Table 7. Assessment of SEANAFE's activities in Thailand

SEANAFE's most valuable contributions	SEANAFE activities that did not work so well
<ul style="list-style-type: none"> • The network comprises outstanding people in various fields of expertise. • Current linkages cover all regions of the country. 	<ul style="list-style-type: none"> • ThaiNAFE was not so active at the time for the survey. • Most of the activities were meetings, 'not implementing'. • An initiative to set up joint research activities and seek funding from the National Research Council of Thailand was not implemented. • The network head was selected from among 'high performance persons', who normally had heavy workloads. • There was also a lack of regular communication from SEANAFE to the leaders of the institution. • The administration and management of SEANAFE were not clear for all member institutions.

Thai institutions suggested that future SEANAFE directions should involve regular communication between the network and its member institutions to keep the university leaders and administrators informed. The network communication should be expanded to include other lecturers within the same department or other departments. The network should also be promoted to other potential organizations through public relation activities.

Suggestions were that ThaiNAFE should do a self-assessment and pay more attention to joint research activities in collaboration among the member institutions. Funds for agroforestry research should not be limited to MSc students. Also, the network should be expanded to other campuses of Rajamangala University of Technology.

Vietnam

Most teachers of the Faculty of Forestry of Nong Lam University were not familiar with SEANAFE, except those who have joined VNAFE activities. Similarly, at Tay Nguyen University, although the faculty integrated agriculture and forestry since 10 years ago, only some forestry staff members joined VNAFE. This network was observed to have a forestry bias.

The support from SEANAFE was rather small compared with some other projects in Vietnam.

All three surveyed institutions remarked that the teaching of agroforestry subject in particular and other forestry subjects in general is theoretical; students had little practical time.

The universities cited issues on teaching materials such as the lack of agroforestry books in Vietnamese, and out-of-date agroforestry books and materials.

A job career in agroforestry is not yet identified, particularly in government institutions. There are little chances to get formal jobs for agroforestry graduates. Because students choose education that leads to modern industry jobs, the number and quality of students choosing forestry programmes have decreased.

The results of Vietnam’s assessment of SEANAFE’s most valuable contributions and of activities that could have worked better are as follows:

Table 8. Assessment of SEANAFE’s activities in Vietnam

SEANAFE’s most valuable contributions	SEANAFE activities that did not work so well
<ul style="list-style-type: none"> • Improved awareness of agroforestry among staff and students • Support to members’ attendance to agroforestry seminars and workshops inside and outside the country • Support to curriculum development (2 institutions) • Support for agroforestry research for teaching staff and students • Improved access to agroforestry literature (3 institutions) • Networking and linkages created, leading to increased sharing of experiences among the members of VNAFE (3). 	<p>Activities:</p> <ul style="list-style-type: none"> • Limited budget for literature in Vietnamese • Weak support for agroforestry research • Some activities were not attractive, due to limited budget • Limited exchange of staff and students between members <p>Network strategies:</p> <ul style="list-style-type: none"> • No common strategy on agroforestry among VNAFE partners • Weak sharing and linking with other networks • Insufficient information sharing among the five countries • Activities were seen as being for members of network only <p>Network management:</p> <ul style="list-style-type: none"> • Some activities were not participative • Poor effectiveness and flexibility of management

All universities acknowledged other external influences on the network in Vietnam, including the Social Forestry Support Programme (SFSP). There was also a competition for teachers’ time from other non-SEANAFE programmes, including IDRC, SIDA, GTZ, etc. The new forestry law, approved by the Government in 2005, influenced the universities.

In the future, Vietnam suggests that SEANAFE should continue supporting capacity building for staff, especially for young teaching staff. SEANAFE could support regional exchange of staff and students.

Continued support for the publication of agroforestry books and materials will be important. Curricula from the other countries in the network should be shared and translated into Vietnamese. SEANAFE should also continue its support for agroforestry student theses.

SEANAFE should support information sharing among its members. Opportunities are expected to increase by sharing agroforestry experiences in the region (e.g. through seminars and workshops). The network should increase its communication activities.

II. Full Report

Background

The Southeast Asian Network for Agroforestry Education (SEANAFE) was established in April 1999 as a regional effort to strengthen the quality of and access to agroforestry education. It had 33 founding members, which are universities and colleges in five countries: Indonesia, Laos, Philippines, Thailand and Vietnam.

Since its inception, the network has been supported by the Swedish International Development Cooperation Agency (Sida) through a series of grants managed by the World Agroforestry Centre (ICRAF)'s Southeast Asia Regional Office. Sida provided SEANAFE approximately 18.7 million SEK (~US\$2.14 million¹) from October 1997 to mid 2006 (Table 9). In addition, SEANAFE's members provided significant in-kind contribution to the project, especially staff time of faculty as well as membership fees and co-funding of some activities.

Table 9. Sida's financial support to SEANAFE

Grant	Expenditure (SEK, million)	Expenditure (US\$, million)
Preparatory status and needs assessment: 1997 - 1998	1.3	0.15
SEANAFE Phase 1: 1999 - 2003	11.6	1.41
SEANAFE component of a 'bridging grant': 2003 – 2004 (estimate)	2.9	0.35
SEANAFE Phase II: May 2005 – June 2006 (estimate)	1.9	0.23
TOTAL	18.7	2.14

By 2006, SEANAFE had grown to 80 member institutions, most of which joined in 2001/2002. This gives an average total investment of US\$ 27,000 per institution in 8.5 years².

Seven years after its formal establishment, SEANAFE decided to conduct an internally commissioned impact study in 2006. The study aimed at understanding how the academic network has influenced the capacity of its member institutions to teach agroforestry. Specifically, the impact study sought to answer the following questions:

- To what extent did the regional and national networks succeed in improving the quality and availability of agroforestry education in their member institutions?
- How has the institutional capacity to teach agroforestry changed, and what factors influenced such change?

¹ Average exchange rate of US\$ 1=8.2 SEK

² Approximately equivalent to one year's tuition in a U.S. university

- What indicators of outcomes and impact of SEANAFE on member institutions can be found?
- How and where should SEANAFE focus its future efforts?

The impact study was carried out in May and June 2006 by a team of four researchers, which visited 15 of the 33 founding SEANAFE member universities and colleges in five countries. For comparison, six non-member institutions teaching agricultural programmes – two each in Indonesia, Philippines and Vietnam – were included to serve as the ‘control’ group.

SEANAFE’s objectives

SEANAFE’s objectives were set at the network’s first General Meeting in 1999, and revised in 2003. The 1999 SEANAFE Charter contained the following objectives:

1. Improve the quality, availability and accessibility of agroforestry education
2. Foster collaboration among disciplines in the education system
3. Promote cooperation among stakeholders in agroforestry
4. Enhance exchange of information, staff, students and other resources among network members
5. Facilitate research connectivity and collaboration
6. Link agroforestry education to the extension system and practice in the field
7. Provide opportunities for human resources development in agroforestry education and training
8. Help create job opportunities for agroforestry graduates
9. Assist in mobilizing resources for national and regional collaboration on agroforestry capacity building

The 2003 General Meeting amended the Charter to include the following general objective: ‘To build individual and institutional capacity for agroforestry education, research and development’.

A model of the impact pathway of SEANAFE was developed in a tabular format, describing SEANAFE objectives, typical outputs, expected outcomes, and suggested methods for verifying them (Table 10).

Table 10. SEANAFE's objectives and examples of outputs, outcomes and indicators

SEANAFE Objective	SEANAFE output	Outcome	Method for verifying outcome/ Indicators
1. Improve the quality, availability and accessibility of agroforestry education	<ul style="list-style-type: none"> Curriculum guides (English+ local language) Teaching manuals/lecture notes (English + local language) Reference literature + other materials in libraries 	<ul style="list-style-type: none"> Curricula reviewed Teaching materials and methods applied New reference literature used 	<ul style="list-style-type: none"> Records & analysis of AF curricula Evaluation of teaching materials and methods
2. Foster collaboration among disciplines in the education system	<ul style="list-style-type: none"> Inter-disciplinary collaboration in SEANAFE's regional/national events 	<ul style="list-style-type: none"> Team-teaching and collaboration among departments/faculties Better understanding of complex biophysical and socioeconomic issues 	<ul style="list-style-type: none"> Self-assessment workshop / key informants
3. Promote cooperation among stakeholders in agroforestry	<ul style="list-style-type: none"> Participation in curriculum development workshops and other events 	<ul style="list-style-type: none"> More relevant curricula 	<ul style="list-style-type: none"> Self-assessment workshop / key informants Students' opinion
4. Enhance exchange of information, staff, students and other resources among network members	<ul style="list-style-type: none"> Information shared in national and regional networks 	<ul style="list-style-type: none"> National and regional AF knowledge applied in institutions Skills in information and communication 	<ul style="list-style-type: none"> Self-assessment workshop / key informants
5. Facilitate research connectivity and collaboration	<ul style="list-style-type: none"> Theses reports; staff research reports 	<ul style="list-style-type: none"> Capacity to do AF research Research results access 	<ul style="list-style-type: none"> Record ongoing AF research projects (theses, staff)
6. Link agroforestry education to the extension system and practice in the field	<ul style="list-style-type: none"> Records of frequency and type of contacts with extension/practice 	<ul style="list-style-type: none"> Students doing practicum in communities 	<ul style="list-style-type: none"> Assessment of change of teaching methods
7. Provide opportunities for human resources development in agroforestry education and training	<ul style="list-style-type: none"> Records of training of trainers (regional, national) 	<ul style="list-style-type: none"> Lecturers teaching differently, introducing new innovations and concepts in AF courses 	<ul style="list-style-type: none"> Self-assessment workshop / key informants Feedback from students
8. Help create job opportunities for agroforestry graduates	(N/A: This objective was too ambitious and long-term. No immediate SEANAFE outputs expected)	-	-
9. Assist in mobilising resources for national and regional collaboration on agroforestry capacity building	<ul style="list-style-type: none"> SEANAFE Phase II funded 	<ul style="list-style-type: none"> SEANAFE's national networks able to raise funds in-country 	<ul style="list-style-type: none"> Records of national network meetings

Methods

Data collection instrument

The study team had a two-day workshop on 24-25 April 2006 in Chiang Mai, Thailand to design the methodology of the study.

A table matching SEANAFE's objectives with expected outputs, outcomes and indicators was developed to help structure the study tool (see Introduction above).

The team decided to use three different, complementary tools for the impact study, as follows: a questionnaire, key informant interviews and self-assessment workshop.

Part 1: A questionnaire to capture the status of agroforestry education in 2006, and the change from 1999 to 2006 (Annex 2). The questionnaire captured information on:

- the institution/faculty
- students
- agroforestry curricula
- teaching staff
- resources: library and teaching materials and other resources
- agroforestry extension
- agroforestry research

Part 2: Interviews with key informants to assess change in institutional capacity related to agroforestry. A conceptual framework for organizational capacity by Horton et al. (2003) was used to assess the institutional capacity for agroforestry education (Figure 1). A form for the semi-structured interviews was developed (Annex 3), with a set of questions for each of the five elements of the framework, namely:

- staff (teaching agroforestry)
- infrastructure, technical and financial resources for agroforestry education
- leadership
- programmes and process management, especially agroforestry curricula
- networks and linkages

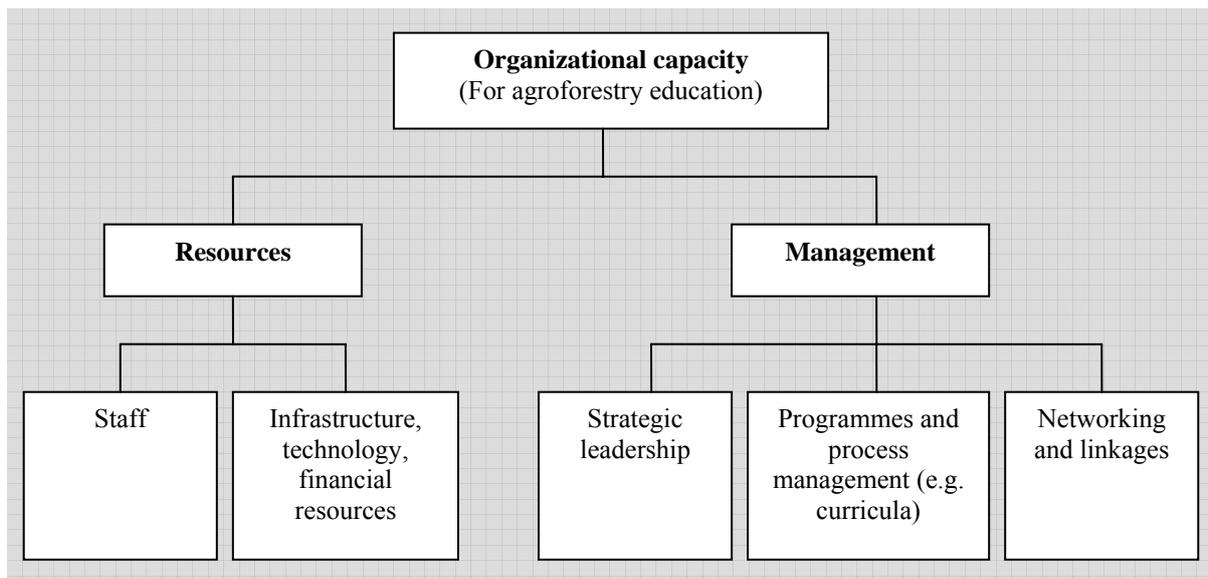


Figure 1. Conceptual framework for organizational capacity. (Adapted from Horton et al. 2003)

For each aspect, the respondents were asked to assess the status in 1998 and 2006, and the changes in the six-year periods prior to SEANAFE membership (1993-1998) and during SEANAFE membership (1999-2006).

Respondents were also asked to describe the change process for each of the five elements, as follows:

- key change events
- underlying causes and influences
- description of the change process
- examples of results and outcomes

The third and final step of the impact study was a **self-assessment workshop**, facilitated by a study team member (Annex 4). Its objective was to assess the institution's capacity to deliver and develop agroforestry and integrated natural resources management (NRM) programmes. The specific objectives were:

- to validate the findings from the questionnaire survey and key informant interviews
- to draw lessons learned from SEANAFE's networking initiative
- to seek advice on SEANAFE's future direction

The self-assessment workshop had three parts (Figure 2):

- Presentation and discussion of findings from the questionnaire survey and interviews
- A SWOT analysis of the institution's capacity to develop and deliver agroforestry and integrated NRM programmes
- Capturing lessons learned from SEANAFE's national and regional networking efforts (SEANAFE members only)

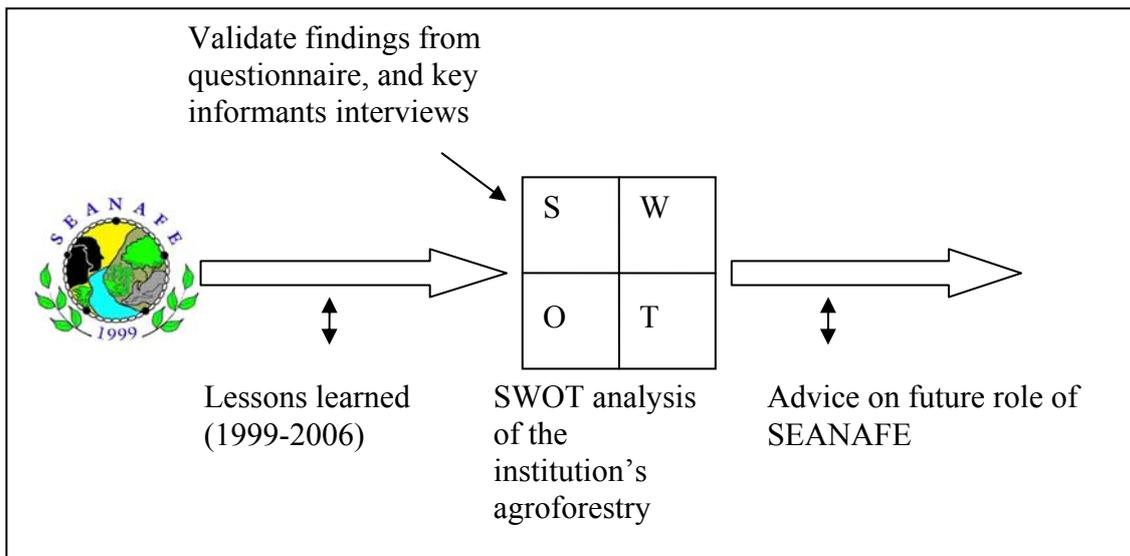


Figure 2. Conceptual framework for the self-assessment workshop

Selection of institutions

From the 33 founding member institutions in 1999, SEANAFE had grown to 80 members in 2006. Most new members joined in 2001/2002 when five national sub-networks were formed. This impact study focused on the founding members only.

The sample of institutions to be included was selected as follows:

- Within each country, institutions were grouped according to geography, structure (forestry, agriculture or both), and certain country-specific criteria such as size or type of institution.
- Sampling was done within each group, aiming to include approximately 40% of the member institutions.
- 15 institutions were selected, including 13 universities/colleges, one open university in Thailand, and one technical college in Laos.
- Of the 15 institutions, three institutions were found to teach agroforestry in both their faculty of agriculture and faculty of forestry. The faculties were treated as separate institutions for Part 1 of the survey (Tables 11 and 12).

Table 11. SEANAFE member institutions included in the study, by country and type of institution

	University	Open university	Technical college	Total
Indonesia ¹	3			3 (5)
Laos	1		1	2
Philippines ²	4			4 (5)
Thailand	2	1		3
Vietnam	3			3
TOTAL	13	1	1	15 (18)

¹ Two universities taught agroforestry in both the Faculty of Agriculture and Faculty of Forestry

² One university taught agroforestry in both the Faculty of Agriculture and Faculty of Forestry

Table 12. List of SEANAFE members included in the study

Country	SEANAFE member institution
Indonesia	<ul style="list-style-type: none"> • Brawijaya University (UNIBRAW), Faculty of Agriculture • Gadjah Mada University (UGM), Faculty of Forestry and Faculty of Agriculture • Mulawarman University (UNMUL), Faculty of Forestry and Faculty of Agriculture
Laos	<ul style="list-style-type: none"> • Luang Prabang Agriculture and Forestry College • National University of Laos, Faculty of Agriculture
Philippines	<ul style="list-style-type: none"> • Benguet State University, College of Forestry and College of Agriculture • Leyte State University, College of Forestry and Natural Resources • Misamis Oriental State College of Agriculture and Technology, Institute of Agriculture • University of Rizal System, Institute of Agriculture
Thailand	<ul style="list-style-type: none"> • Khon Kaen University, Faculty of Agriculture • Rajamangala University of Technology Tawan-ok, Faculty of Agriculture and Natural Resources • Sukhothai Thammathirat Open University, Faculty of Agricultural Extension and Cooperatives
Vietnam	<ul style="list-style-type: none"> • Forestry University of Vietnam, Social Forestry Training Centre • Nong Lam University, Faculty of Forestry • Tay Nguyen University, Faculty of Agriculture and Forestry

In Indonesia, Philippines and Vietnam, two additional non-member institutions each were included to serve as a 'control' group (Table 13 and 14).

Table 13. Non-member institutions included in the study, by country and type of institution

	University	Open university	Technical college	Total
Indonesia	2			2
Philippines	2			2
Vietnam	2			2
TOTAL	6	0	0	6

Table 14. List of non-SEANAFE members visited by the study team

Country	Non-member institution
Indonesia	Jambi University (UNJA) University of Sumatera Utara (USU)
Philippines	Central Mindanao University Kalinga State College
Vietnam	Cantho University Hanoi University of Agriculture

Data collection and analysis

The study team members visited each university/college for two days in May and June 2006. During the visit, the researchers interviewed lecturers responsible for agroforestry education, usually the institution's SEANAFE contact person, and institutional leaders familiar with the history of agroforestry education.

Self-assessment workshops were held in Indonesia, Philippines and Vietnam; these could not be arranged in Thailand and Laos due to scheduling constraints with the institutions there. In lieu, the study team conducted a series of individual interviews to gather information needed for this part of the evaluation.

The interviews in Indonesia, Laos, Thailand and Vietnam were conducted in the local language; the researchers then translated the responses to English.

The translated data were submitted to the study leader using a prepared MS Excel sheet (Part 1) or in MS Word files (Part 2 and 3). The study leader then analysed the regional dataset.

For some variables, comparisons were made with the control group.

Limitations

Perceptions on the status and changes during the six-year period prior to SEANAFE (1993-1998) tended to be difficult to capture accurately. This variable was therefore excluded in the analysis. Only the changes in the first six years after SEANAFE's establishment are discussed in this report.

The level of detail of the responses varied considerably among countries. This was related to: (1) The need for translation in four countries (only in the Philippines was the entire study conducted in

English), (2) scheduling constraints of institutions in Thailand and Laos, hence the self-assessment workshop could not be held, (3) the use of four researchers to separately conduct the interviews in the local language led to some differences in reporting style; (4) the data collection form was viewed as a bit too complex.

This led to the following issues regarding the data set:

- In Thailand and Laos, quantitative data on status in 2006 and changes in 1999-2006 were generally not provided. When available, verbal descriptions of perceptions on institutional capacity and change process were utilized.
- In the Philippines, data were collected at a much more detailed level than in other countries, which made it necessary to edit the responses. In spite of editing, there is still a certain proliferation of information from the Philippines in this report.
- For Part 2 of the study (i.e., analysis of institutional capacity), the team observed that the respondents had considerable difficulty in separating the four steps in the change process (i.e., change, underlying causes, change process, and evidence). These steps were therefore combined during data analysis.

Results - Part 1: Status of and changes in agroforestry education (1999-2006)

Students

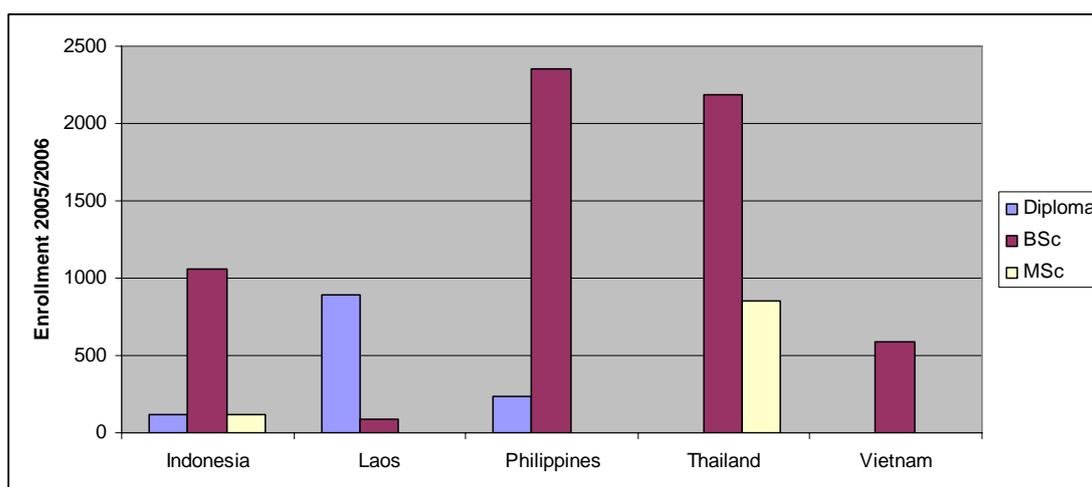
Enrollment

Enrollment data for academic year 2005/2006 were collected from the faculty or college responsible for agroforestry education, by level of education (Certificate/Diploma, BSc and MSc) and gender. Enrollment trends were also captured.

The 15 surveyed SEANAFE member institutions (with 18 faculties/colleges) reported a total enrollment of 15,425 students. Sukhothai Thammathirat Open University, Thailand, being a large open university, accounted for 6,930 (45%) of them, all at the BSc level (Figure 3 and Table 15). Other observations were:

- Diploma programmes were offered in Indonesia, Laos and Philippines, and was the dominant level of education in Laos.
- Except in Laos, BSc was the most common level of study
- BSc programmes accounted for 85.6% of the students enrolled in 2005/2006 in on-campus programmes.³
- MSc programmes were offered in Indonesia, Philippines and Thailand, but not in Laos and Vietnam.
- One institution, Khon Kaen University in Thailand, accounted for 88% of the 971 MSc students reported to have enrolled in 2005-2006.

³ Excluding Sukhothai Thammathirat Open University



Note: Sukhothai Thammathirat Open University, Thailand is not included in the graph

Figure 3. Enrollment in 17 agriculture or forestry faculties/colleges, 2005/2006.

Table 15. Enrollment in 18 agriculture and forestry faculties, 2005-2006

	Diploma		BSc		MSc	
	N	Enrollment	N	Enrollment	N	Enrollment
Indonesia	3	114	5	1058	5	113
Laos	2	894	1	86	0	0
Philippines	3	235	5	2353	1	2
Thailand	0	0	3	9121	1	856
Vietnam	0	0	3	593	0	0
Total	8	1243	17	13211	7	971
%		8.1%		85.6%		6.3%

Gender

Regionally, the enrollment in 2005/2006 was almost balanced between genders: 52.8% male and 47.2% female (Figure 4 and Table 15). At the country level, Laos and Vietnam had fewer female students, at 29.5% and 30.7%, respectively. Diploma programmes had fewer female students (34.2%), while BSc and MSc enrollment was balanced between male and female students (Table 16).

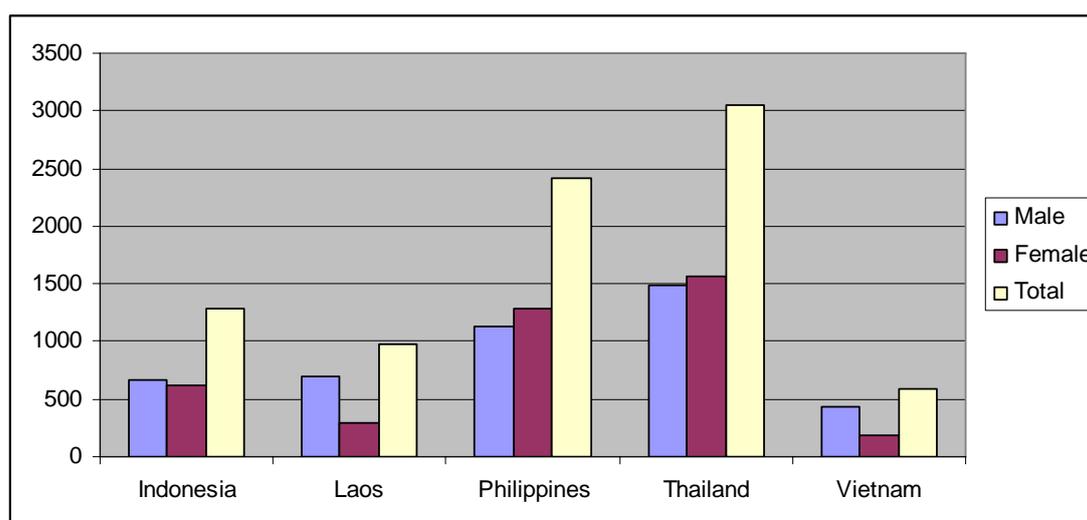


Figure 4. Enrollment in 13 SEANAFE member institutions, 2005-2006.⁴

Table 16. Enrollment, by country and gender

	N	Total	Male, %	Female, %
Indonesia	3	1285	52.1	47.9
Laos	2	980	70.5	29.5
Philippines	3	2421	46.6	53.4
Thailand	2	3047	48.9	51.1
Vietnam	3	613	70.3	29.7
TOTAL	13	8346	52.8	47.2

Table 17. Enrolment by level of education and gender

	Total	Male, %	Female, %
Diploma	1243	65.8	34.2
BSc	6132	51.1	48.9
MSc	971	47.5	52.5
TOTAL	8346	52.8	47.2

Enrollment and gender: Non-member institutions

Similar trends as given above were found in the non-member institutions in Indonesia, Philippines and Vietnam. Very few students were enrolled in Diploma or MSc programmes; the vast majority enrolled in a BSc programme. One institution, Cantho University, Vietnam, did not have agroforestry education, hence, enrollment data were not collected. The other five institutions had a gender-balanced enrollment: 48.1% male and 52.9% female in 2005/2006.

⁴ Gender data are not available for Sukhothai Thammathirat Open University, Thailand and University Rizal Systems, Philippines

Enrollment trends: Change in 1999-2006

Enrollment trends from 1999 to 2006 were assessed using a three-step scale: increasing, stable or decreasing. Reasons for the change in enrollment were also given.

Enrollment decreased in 18 of the 32 programmes during the seven-year period. It was stable in 11 and increased in 5 institutions, all which are found in Laos and Vietnam (Table 18).

Table 18. Enrollment change in number of programmes, 1999-2006

	Diploma	BSc	MSc	Total
Increased	2	3	0	5
Stable	1	3	5	11
Decreased	5	11	2	18
TOTAL	8	17	7	32

It was also noted that:

- In Laos, enrollment increased due to increasing number of high school graduates needing higher education.
- In Vietnam, new programmes attracted more students.
- Institutions reporting stable enrollment suggested that scholarships and saturation of job market for MSc graduates played a role.
- The majority (56%) of the programmes reporting a declining enrollment cited limited employment opportunities, global trends and competition as the main reasons for the low enrollment (Table 19).

Table 19. Reasons for declining enrollment.

Reason	Frequency
Limited employment opportunities; not interested in pursuing agroforestry	6
Global trend and competition	4
Many universities offer agricultural sciences.	3
Lacking in information drive	2
Financial constraints	2
Students' preference to take programmes with perceived market demands	2
Bad news on forestry issues	1
Downturn of forestry business	1
Preference for weekend classes by students	1

Enrollment trends: Non-members

The non-member institutions reported a similar picture. Four out of nine programmes saw decreasing enrollments in 1999-2006 (Table 20).

Table 20. Enrollment changes in non-member institutions, 1999-2006

	Diploma	BSc	MSc	Total
Increased	0	2	0	2
Stable	2	0	1	3
Decreased	0	3	1	4
TOTAL	2	5	2	9

Agroforestry curricula

The status of agroforestry education in 2006 was recorded using the classification below (Table 21). Data were collected separately for each programme where agroforestry was included at the Diploma/Certificate, BSc and MSc levels.

Table 21. Classification of agroforestry curricula

Full agroforestry degree programme	<input type="checkbox"/> Yes <input type="checkbox"/> No
Agroforestry course/subject	<input type="checkbox"/> Yes, core course/ <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No
Agroforestry as a topic in other courses	<input type="checkbox"/> Yes, core course <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No
Thesis research in agroforestry	<input type="checkbox"/> Yes <input type="checkbox"/> No

The agroforestry curricula in SEANAFE member institutions are summarized by country and level of education in Tables 22 - 24.

Diploma level

- Diploma in Agroforestry was offered in three institutions in the Philippines.
- Diploma programmes in Indonesia showed a mixed agroforestry content. One institution offered a core agroforestry course, while two offered agroforestry as a topic only. Two Indonesian Diploma programmes did not report any agroforestry content.
- The two institutions in Laos offered agroforestry as a core course and an optional course, respectively.

Table 22. Agroforestry curricula in SEANAFE member institutions, Diploma level

Country	N	AF programme	AF core course	AF optional course	AF topic
Indonesia ^{Note 1)}	5	-	1		2
Laos	2	-	1	1	-
Philippines	3	3	-		-
Thailand	0	-	-		-
Vietnam	0	-	-		-
Total	10	3	3	1	2

Note 1. Some Diploma programmes in Indonesia did not have enrolled students in 2005/2006.

BSc level

- BSc programmes in agroforestry were offered by one institution each in the Philippines and Vietnam.
- In the Philippines, four other SEANAFE members offered BSc programmes, major in agroforestry.
- The university in Laos taught an optional course in agroforestry.
- Three of five Indonesian faculties included a core agroforestry course in their programmes. One faculty offered an optional course. Students in all five institutions had opportunities to do thesis research in agroforestry.
- In Thailand, one BSc programme had an optional agroforestry course, while two institutions offered agroforestry topics only in other courses.
- All Vietnamese institutions included a core agroforestry course in their curricula.
- Institutions in Indonesia, Philippines and Vietnam in general offered thesis research opportunities in agroforestry.

Table 23. Agroforestry curricula in SEANAFE member institutions, BSc level

Country	N	BSc AF programme	BSc, major in AF	AF core course	AF optional course	AF topic	Thesis research
Indonesia	5	-		3	1	5	5
Laos	1	-			1		
Philippines	5	1	4			1	4
Thailand	3	-			1	2	
Vietnam	3	1		3			3
	17	2	4	6	3	8	12

MSc level

- No full MSc programme in agroforestry was reported among the surveyed institutions.
- All five Indonesian faculties included agroforestry courses in their MSc curricula, either as core or optional courses.
- In the Philippines, two institutions reported MSc programmes. One included agroforestry as a core course, the other as an optional topic.
- In the two institutions in Thailand that offered MSc programmes, agroforestry was an optional course or topic.
- Agroforestry thesis research opportunities were generally available.

Table 24. Agroforestry curricula in SEANAFE member institutions, MSc level

Country	N	MSc AF programme	MSc AF core course	MSc AF optional course	MSc AF topic	Thesis research
Indonesia	5	-	2	3		5
Laos	0	-				
Philippines	1	-	1	2	1	1
Thailand	1	-		1	1	1
Vietnam	0	-				
Total	8		3	6	2	7

Agroforestry education by country

The status in 2006 of agroforestry curricula by institution, country and level of education are shown in Tables 25 – 27.

Table 25. Status of agroforestry education, Diploma level, 2006

Institution	Faculty	Country	Programme	Course	Topic
Gadjah Mada University	Faculty of Forestry	Indonesia		Core	Optional
Gadjah Mada University	Faculty of Agriculture	Indonesia			Optional
Mulawarman University ¹⁾	Faculty of Agriculture	Indonesia	-	-	-
National University of Laos	Faculty of Agriculture	Lao PDR		Core	Core
Luang Prabang Agriculture and Forestry College	Faculty of Agriculture and forestry	Lao PDR		Optional	
Benguet State University	College of Agriculture	Philippines	Yes		
Misamis Oriental State College of Agriculture and Technology	Institute of Agriculture	Philippines	Yes		
University of Rizal System	College of Agriculture	Philippines	Yes		

¹ Enrolled students in 2005-2006 but did not report agroforestry content.

Table 26. Status of agroforestry education, BSc level, 2006

Institution	Faculty	Country	Programme	Course	Topic	Thesis research
Brawijaya University	Faculty of Agriculture	Indonesia		optional	core	core
Gadjah Mada University	Faculty of Forestry	Indonesia		core	optional	core
Gadjah Mada University	Faculty of Agriculture	Indonesia			optional	core
Mulawarman University	Faculty of Agriculture	Indonesia		core	core	core
Mulawarman University	Faculty of Forestry	Indonesia		core	core	core
National University of Laos	Faculty of Agriculture	Lao PDR		optional		
Benguet State University	College of Forestry	Philippines	major		optional	core
Benguet State University	College of Agriculture	Philippines	major			core
Leyte State University	College of Forestry and Natural Resources	Philippines	major			core
Misamis Oriental State College of Agriculture and Technology	Institute of Agriculture	Philippines	yes			
University of Rizal System	College of Agriculture	Philippines	major			core
Khon Kaen University	Agriculture	Thailand			core	
Rajamangala University of Technology Tawan-ok	Agriculture and Natural Resources	Thailand		optional		
Sukhothai Thammathirat Open University	Agricultural Extension and Cooperatives	Thailand			optional	
Forestry University of Vietnam	Social Forestry Training Center	Vietnam	yes	core		core
Nong Lam University	Faculty of Forestry	Vietnam		core		core
Tay Nguyen University	Faculty of Agriculture and Forestry	Vietnam		core		core

Table 27. Status of agroforestry education, MSc level, 2006

Institution	Faculty	Country	Programme	Course	Topic	Thesis research
Brawijaya University (UNIBRAW)	Faculty of Agriculture	Indonesia		optional	optional	yes
Gadjah Mada University(UGM)	Faculty of Forestry	Indonesia		core		yes
Gadjah Mada University(UGM)	Faculty of Agriculture	Indonesia		optional	optional	yes
Mulawarman University(UNMUL)	Faculty of Agriculture	Indonesia		core		yes
Mulawarman University(UNMUL)	Faculty of Forestry	Indonesia		optional	optional	yes
Leyte State University	College of Forestry and Natural Resources	Philippines		core	core	yes
University of Rizal System	College of Agriculture	Philippines			optional	
Khon Kaen University	Agriculture	Thailand		optional	core	yes

The study team collected detailed information on agroforestry programmes and courses, particularly the title, credit hours (theory and practical), and the year of latest curriculum review. The team also captured the number of agroforestry students in academic year 2005/2006. For institutions offering full programmes, data were collected at the programme level only, not for individual courses.

There were great differences among countries, reflecting difference in their respective national education policies. The analysis of curricula was therefore done by country. Details on courses in Laos and Thailand were not available.

Indonesia

Nineteen courses on agroforestry were reported among the five faculties surveyed. All course curricula were reviewed between 2001 and 2005, after the institutions became SEANAFE members. All courses had 2 or 3 credits. As many as 7 of the 19 courses were theory courses with no practical credits (Table 28).

Table 28. Agroforestry curricula in Indonesia

Institution	Level	Course	Credits, theory	Credits, practical	Credits, Total	Curriculum review
Brawijaya University, Faculty of Agriculture	BSc	Agroforestry	2	1	3	2003
	BSc	Watershed Management	2	1	3	2003
	BSc	Soil and Water Conservation	2	1	3	2003
	MSc	Agroforestry	2	1	3	2003
Gadjah Mada University, Faculty of Forestry	Diploma	Agroforestry	2	0	2	2002
	Diploma	Soil and Water Conservation	2	1	3	2002
	BSc	Agroforestry	2	1	3	2002
	BSc	Agroforestry Management	2	0	2	2002
	BSc	Soil and Water Conservation	2	1	3	2002
	MSC	Agroforestry	3	0	3	2005
Gadjah Mada University, Faculty of Agriculture	BSc	Home Gardening	2	0	2	2002
	BSc	Agroecology	2	0	2	2002
	MSc	Cropping Systems	2	1	3	2003

A total of 790 students (61,5% of the total enrollment of 1285) took agroforestry courses in academic year 2005-2006, 85% of which were BSc students (Figure 5). Fifty-six percent were male and 44% female.

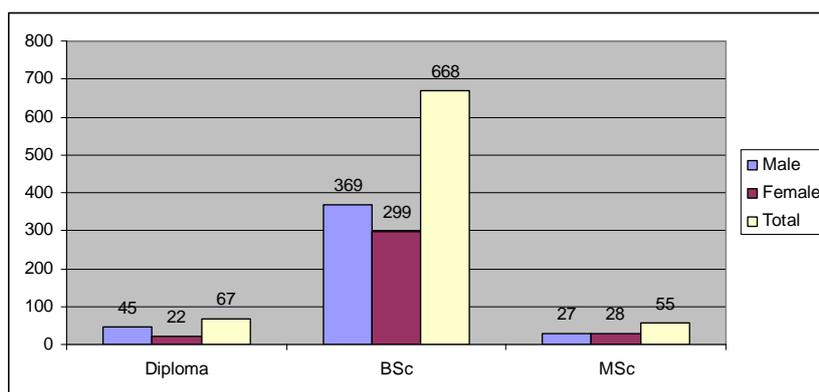


Figure 5. Number of agroforestry students, 2005/2006, Indonesia.

Philippines

The surveyed institutions offered three Diploma and five BSc agroforestry programmes and two MSc courses. Seven of the 10 curricula had been reviewed after the institutions became SEANAFE member. Exceptions were the two programmes at Benguet State University, College of Agriculture, and one at Leyte State University (Table 29).

A total of 239 students (about 9% of the total enrollment of 2,590) took agroforestry courses in 2006-2006; they were evenly distributed between males and females. Notably, only four were MSc students (Figure 6).

Table 29. Agroforestry curricula in the Philippines

Institution	Level	Course	Credits, theory	Credits, practical	Credits, Total	Curriculum review
Benguet State University, College of Forestry	BSc	BS Forestry major in Agroforestry				2006
Benguet State University, College of Agriculture	Diploma	Diploma in Agroforestry				1994
	BSc	BS Agriculture major in Agroforestry				1994
Leyte State University, College of Forestry and Natural Resources	BSc	BSF major in Agroforestry				1989
	MSc	Project Design and Development in Agroforestry	2	3	5	2001
	MSc	Advanced Silviculture	2	3	5	2001
Misamis Oriental State College of Agriculture and Technology, Institute of Agriculture	BSc	Bachelor in Agroforestry Technology				2004
	Diploma	Diploma in Agroforestry Technology				2004
University of Rizal System, College of Agriculture	BSc	BSF major in Agroforestry				2000
	Diploma	Diploma in Agroforestry				2004

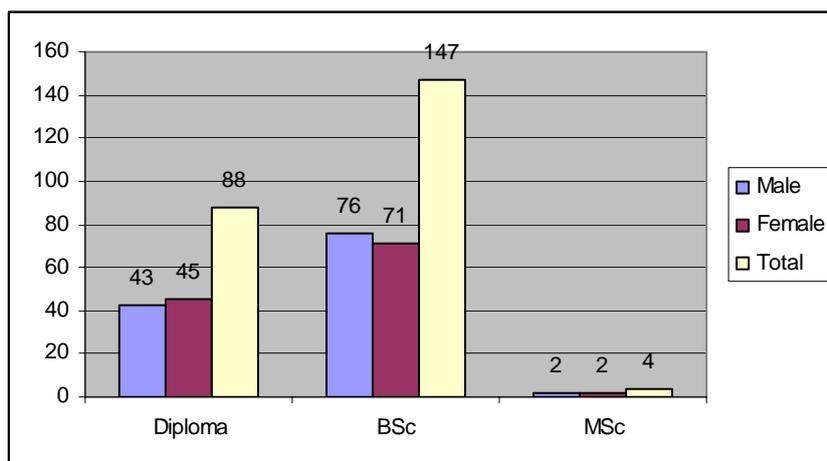


Figure 6. Number of agroforestry students, 2005/2006, Philippines.

Vietnam

Forestry University of Vietnam offered a BSc Agroforestry programme. The three Vietnamese member institutions also offered eight agroforestry courses at the BSc level. All were core courses of two to four credits; the 2-credit courses being theory courses. All curricula were reviewed between 2002 and 2005. There was cross-faculty collaboration in agroforestry education in that the Faculty of Forestry, Nong Lam University offered agroforestry courses to students in the economics and agronomy faculties (Table 30).

The three institutions had a total of 1609 students taking agroforestry courses in academic year 2005-2006; 65% of them were male and 35% female. As previously indicated, in Nong Lam University agroforestry courses were taught also at the Faculties of Agriculture and Economics. Likewise, the Forestry University of Vietnam was responsible for an agroforestry course for the BSc Business Administration programme. Its new BSc Agroforestry programme had 41 students (Figure 7).

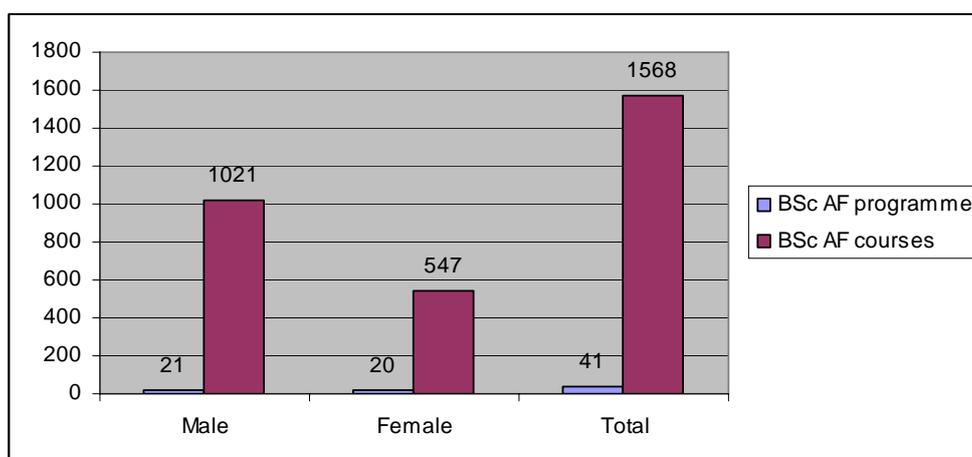


Figure 7. Number of agroforestry students, 2005-2006, Vietnam.

Table 30. Agroforestry curricula in Vietnam

Institution	Level	Course	Credits, theory	Credits, practical	Credits, Total	Curriculum review
Forestry University of Vietnam, Social Forestry Training Center	BSc Social Forestry	Agroforestry	3	1	4	2003
	BSc Agroforestry	((full programme))				2003
	BSc Silviculture	Agroforestry	2	1	3	2003
	BSc Business Administration	Agroforestry	2	1	3	2004
	BSc resource and environment management	Agroforestry	2	1	3	2004
Nong Lam University, Faculty of Forestry	BSc Economics	Agroforestry	2	0	2	2002
	BSc Forestry	Agroforestry	2	0	2	2005
	BSc Agronomy	Agroforestry	2	0	2	2003
Tay Nguyen University, Faculty of Agriculture and Forestry	BSc Forestry	Agroforestry	3	0	3	2005

Curriculum development, by country

The curriculum development processes were studied with respect to participation of stakeholders and the resulting change in content and in teaching and learning methods. Data on Laos were not collected.

Indonesia

All curricula were reviewed between 2001 and 2003. Four of the five faculties used the Ministry of National Education guidelines. Three conducted tracer studies. Brawijaya University used the Participatory Curriculum Development (PCD) method.

In terms of participation, all faculties involved employers, students and former graduates. All except one also involved policy makers. National research and development organizations took part in four of the reviews. Two faculties involved farmers' communities. Two others engaged international organizations. Other universities, NGO's and local government units also contributed to the curriculum development process.

The curricula reviews resulted in more emphasis on the integration of the biophysical and socioeconomic aspects of agroforestry. Multi-disciplinary approaches to agroforestry problem-solving and integrated farming were also put in place. Agrostology – the study of grasses – and land reclamation of mining sites were other additions to the curricula.

Teaching and learning methods changed towards:

- student-based active learning or problem-based learning;
- being more interactive
- ‘soft skills’ improvement (e.g., communication skills or use of participatory approaches)
- more literature and enriched SEANAFE lecture notes
- more interactive fieldtrips, visits to agroforestry villages and farmers’ agroforestry plots.

Philippines

At the BSc level, three of the five programmes in the Philippines were reviewed between 2003 and 2005. Leyte State University also developed MSc courses in agroforestry in 2001.

The institutions followed a typical curriculum review process, as described by Misamis Oriental State College of Agriculture and Technology: The College Executive Council develops the curricular proposal in consultation with various stakeholders. The proposal is presented to the College Academic Council and the University Academic Council. It is finally approved by the Board of Regents.

The universities held wide consultations stakeholders in the curriculum development process, with the exception of University of Rizal Systems.

The following curriculum changes were reported:

- inclusion of recent development topics in all major subjects
- updating of the course contents based on recent developments
- addition of one unit of undergraduate seminar
- merging of course contents
- rescheduling/realignment of the offering of basic education courses
- enhancement of course codes and sequencing
- course contents are enhanced by the faculty members themselves and do not pass through curricular reviews.

Teaching and learning methods were enhanced towards more practical and experiential learning as follows (in order of frequency):

- fieldwork and field trips (5 institutions)
- participatory discussions (4)
- laboratory classes (2)

- practicum (2)
- research (2)
- demonstrations
- use of visual aids
- experiential learning method
- project methods

Thailand

Because Thai institutions did not offer core courses in agroforestry, the information on the curriculum review process referred to the institution generally. For example, Sukhothai Thammathirat Open University, which revised its BSc programme in 2005, used the following process:

- The faculty appointed a Curriculum Development Committee, which processed the curriculum review.
- Various stakeholders were consulted.
- A public hearing was held and the curriculum finalized.
- The curriculum was then submitted for approval.
- Being an open university, an education technologist was involved in preparing the teaching materials in a range of media.

Vietnam

All surveyed institutions revised their curricula in 2004 and 2005 using the Participatory Curriculum Development (PCD) method. Stakeholders consulted included private sectors, government employers, former students, policy makers, national research organizations and trainers.

The curricula's new contents included multidisciplinary knowledge and subjects on social sciences and integrated resource management. New knowledge in agroforestry was added to the BSc programme. Active teaching methods and learner-centred teaching methods were applied in most subjects; the time for the practical aspect of the course was also increased.

SEANAFE's influence on curriculum development

The study asked the surveyed institutions whether or not they had used the SEANAFE Curriculum Guide (in English or in the national language), and about its usefulness. The respondents were asked to describe how SEANAFE had influenced the curriculum development process, content and learning methods, and the evidence for such influence. Other external factors influencing agroforestry education were also determined. Data on Laos on this aspect of the study were not available.

Use and value of SEANAFE’s curriculum guide

Two-thirds (67%) of the surveyed member institutions had used the SEANAFE curriculum guide for their curriculum review (Figures 8). Either the English or the translated editions, and in some cases both, had been used.

Almost half (47%) of the institutions found the Guide partly useful; 24% found it very useful (Figure 9).

One-third of the institutions had not used the Guide. Five (29%) of the 18 faculties/colleges did not find it useful.

- In two universities in Indonesia, Gadjah Mada University and Mulawarman University, the faculty without a SEANAFE contact person reported not having used the Guide, indicating weak cross-faculty communication.
- In the Philippines, two faculties at Benguet State University (BSU) and Leyte State University reported not having used the Guide. No full curriculum review seemed to have taken place; BSU reported having only ‘enhancement of the course contents which is initiated by the faculty member.’

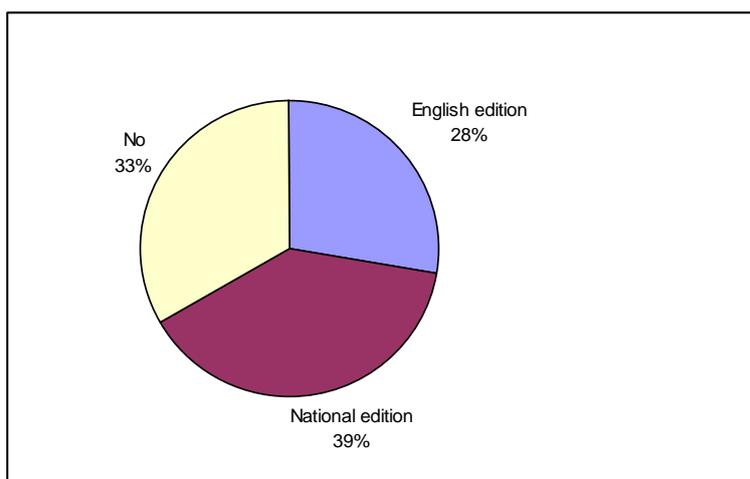


Figure 8. Reported use of SEANAFE Curriculum Guide, % of institutions.

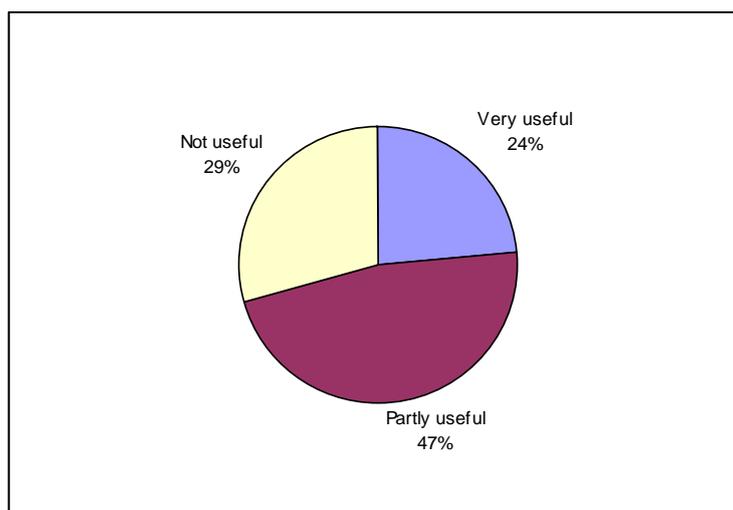


Figure 9. Perceived value of SEANAFE Curriculum Guide, % of institutions.

Influence on the curriculum development process

The surveyed institutions reported influences on curriculum development due to membership in SEANAFE (Table 31), which can be grouped into three categories:

- influence on the formal curriculum review of courses or full programmes
- influence on individual lecturers, who can enhance the course content (without formal review)
- exchange among members, for example, to get information on curricula in other institutions.

Table 31. SEANAFE's influence on the curriculum development process

Country	Influence
Indonesia	<ul style="list-style-type: none"> • SEANAFE was a main influence on curriculum development
Laos	(data not provided)
Philippines	<ul style="list-style-type: none"> • The agroforestry curriculum of other SEANAFE member institutions was used as guide • No agroforestry curriculum revision has made by the College yet, except for the enhancement of the course contents which was initiated by the faculty member • Curriculum on MSc in Forestry was developed in 2001 • The Diploma and BSc in Agroforestry Technology curricula were revised • Some course contents were enhanced using the curriculum guide, as a result of the faculty members' training
Thailand	<ul style="list-style-type: none"> • Although there was no clear evidence of using the SEANAFE guide book, SEANAFE influenced individual capacity of lecturers, which is reflected in their contributions as members of curriculum development committees
Vietnam	<ul style="list-style-type: none"> • The participatory approach to curriculum development was shared with others

Influence on curriculum content

In summary, SEANAFE’s influence on curriculum content was reported as follows (Table 32):

- Lecture notes and reference books provided had a positive influence
- Research and development results and ‘new knowledge’ became available to member institutions
- Socioeconomics content was added
- Improved field visits were reported

Institutions in Thailand and two institutions in the Philippines reported no or limited influence. Data from Laos were not available.

Table 32. SEANAFE’s influence on curriculum content

Country	Influence
Indonesia	<ul style="list-style-type: none">• Lecture notes (2 institutions)• Reference books• Inclusion of R&D results in agroforestry courses
Laos	(data not provided)
Philippines	<ul style="list-style-type: none">• Integration of knowledge gained from SEANAFE training courses and seminars into existing subjects• Improvement of course contents and agroforestry curriculum• Not much influence (2 institutions)
Thailand	<ul style="list-style-type: none">• No influence reported
Vietnam	<ul style="list-style-type: none">• Addition of new knowledge in agroforestry to the programmes/courses• Provision of agroforestry reference books• Addition of social and economics related subjects to the programme• Improvement of field visits in agroforestry courses

Influence on teaching methods

Many respondents reported that the availability of enhanced teaching materials and references have enriched their teaching methods and enabled them to make their teaching more interactive. Moreover, practical learning improved in several institutions (agroforestry village, agroforestry ‘field complex’).

Details on SEANAFE’s influence on the teaching and learning methods are given in Table 33.

In Thailand, no influence on teaching methods was reported. As in the other sections, data on Laos were not available.

Table 33. SEANAFE influence on teaching methods

Country	Influence
Indonesia	<ul style="list-style-type: none"> • Preparation of lecture notes • An agroforestry village supported and used in teaching • More interactive teaching
Laos	(data not provided)
Philippines	<ul style="list-style-type: none"> • Enriched teaching materials • Enabled teachers to focus on specific subjects and widen their capability to deliver the topic. • Improved access to references • Established an Agroforestry Field Complex, which became the venue for practical classes • The availability of teaching materials and references have enriched the teaching methods
Thailand	<ul style="list-style-type: none"> • No influence reported
Vietnam	<ul style="list-style-type: none"> • Sharing agroforestry books and teaching materials to others • Improved training skills and use of teaching aids, case studies and handouts • Used interactive methods of teaching; increased discussion with students

Evidence of improved curricula and teaching methods

Institutions were asked to give evidence (examples of results and outcomes) supporting the perception of improved curricula and teaching methods. The responses (Table 34) cited evidence involving the following:

- more participatory, interactive agroforestry teaching methods
- increased emphasis on field classes
- choice of thesis research topics related to agroforestry
- gradual acceptance of an inter-disciplinary approach.

Table 34. Evidence supporting perception of improved curricula and teaching methods

Country	Influence
Indonesia	<ul style="list-style-type: none"> • Participatory teaching, and facilitation and communication skills in the lecture • Choice of topics of thesis research • Increased student interest in the agroforestry course
Laos	(data not provided)
Philippines	<ul style="list-style-type: none"> • Availability of visual aids and other teaching materials for instruction • Availability of manuals for use by students • Gradual acceptance of the interdisciplinary approach by faculty members teaching agroforestry • More hands-on field activities for the students • Improved sequencing and integration of courses • Faculty members' improved ability to design and conceptualize field classes for agroforestry courses
Thailand	No data reported
Vietnam	<ul style="list-style-type: none"> • Increased time for field practice • Lecturers became familiar with active learning methods • New teaching methods used by increasing numbers of lecturers • Good students' feedback to the lecturers • Changed approach to agroforestry research • Increased use of teaching aids and teaching materials

Other external influences on agroforestry curricula

In general, the respondents indicated government's education policies, development projects and demands of industry as external influences (non-SEANAFE) on the institutions' development of agroforestry curricula. Detailed responses are given in Table 35.

Table 35. Other (non-SEANAFE) external influences on agroforestry curricula

Country	Influence
Indonesia	<ul style="list-style-type: none"> • Policies of the Ministry of Education • Teaching staff development; most recent agroforestry literature/ journals • Requirements of the mining sector
Laos	(data not provided)
Philippines	<ul style="list-style-type: none"> • The Commission on Higher Education's (CHED) National Policy Standards and Guidelines for Curricular Programs (3 institutions) • Requirements of prospective employers • ICRAF
Thailand	<ul style="list-style-type: none"> • The Commission for Higher Education/Ministry of Education regulation that all curricula should be reviewed every 5 years (2 responses) • Upgrading of a school to a university, which requires curriculum review and development
Vietnam	<ul style="list-style-type: none"> • Social Forestry Support Programme impact on usage of PCD and active teaching methods (3 responses) • A GTZ Project • The 'Renovation of Curriculum' Project of the Ministry of Environment and Technology

No direct SEANAFE influence on content or teaching methods was reported by the three Thai institutions.

Agroforestry teaching staff

The number of agroforestry teaching staff per institution in 2006 was reported by gender and qualification. The change in staff number and qualification between 1999 and 2006 was assessed using a three-step scale: increased, stable and decreased.

The specialization of teachers was determined to trace the availability of multi-disciplinary competencies needed to teach agroforestry.

The study also assessed the extent to which the institutions invited external agroforestry lecturers.

Number of teaching staff

The following observations were made:

- The 18 faculties and colleges listed 54 male and 24 female agroforestry teachers, a total of 78 (Table 36).
- While some institutions had only one agroforestry teacher (the Lao institutions and Rajamangala University of Technology, Tawan-ok in Thailand), one had as many as 14 (Benguet State University, Philippines).

Using the data on agroforestry students in 2005-2006, the student/teacher ratio was calculated by institution. However, as these figures were not adjusted for the number of credit hours of agroforestry courses and programmes, one should be cautious about comparing institutions. Nevertheless, the following general observations were made:

- The student-teacher ratio varied greatly among the countries.
- The Philippines had the lowest student-teacher ratio, although with a large variation among institutions, from 2.9 to 20.9 students per agroforestry lecturer. It is to be noted, however, that the Philippine institutions offer full programmes or majors in agroforestry.
- In Vietnam, one agroforestry teacher handled on average 92-246 students.
- In Indonesia, one agroforestry teacher had 19-104 students.

The student-teacher ratio for Laos and Thailand could not be calculated for lack of data.

Table 36. Teaching staff, agroforestry, 2006

Country	Institution	Faculty	AF teachers male	AF teachers female	AF teachers total	AF students 2005 - 2006	Student/teacher ratio
Indonesia	Brawijaya University	Faculty of Agriculture	3	1	4	170	42.5
Indonesia	Gadjah Mada University	Faculty of Forestry	3	0	3	313	104.3
Indonesia	Gadjah Mada University	Faculty of Agriculture	2	2	4	78	19.5
Indonesia	Mulawarman University	Faculty of Agriculture	4	0	4	167	41.8
Indonesia	Mulawarman University	Faculty of Forestry	3	0	3	62	20.7
Laos	National University of Laos	Faculty of Agriculture	1	0	1		
Laos	Luang Prabang Agriculture and Forestry College	Agriculture and forestry	1	0	1		
Philippines	Benguet State University	College of Forestry	3	11	14	86	6.1
Philippines	Benguet State University	College of Agriculture	7	2	9	50	5.6
Philippines	Leyte State University	College of Forestry and Natural Resources	4	3	7	20	2.9
Philippines	Misamis Oriental State College of Agriculture and Technology	Institute of Agriculture	2	1	3	61	20.3
Philippines	University of Rizal System	College of Agriculture	6	0	6	22	3.7
Thailand	Khon Kaen University	Agriculture	1	2	3	n/a	
Thailand	Rajamangala University of Technology Tawan-ok	Agriculture and Natural Resources	1	0	1	n/a	
Thailand	Sukhothai Thammathirat Open University	Agricultural Extension and Cooperatives	3	0	3	n/a	
Vietnam	Forestry University of Vietnam	Social Forestry Training Center	6	2	8	733	91.6
Vietnam	Nong Lam University	Faculty of Forestry	2	0	2	496	248.0
Vietnam	Tay Nguyen University	Faculty of Agriculture and Forestry	2	0	2	380	190.0

Change in numbers and qualification of agroforestry staff 1999-2006

Both the number and qualification of agroforestry teaching staff increased between 1999 and 2006. The number of teachers increased in six faculties and was stable in 12. Teachers' qualification increased in 16 faculties/colleges and remained stable in two (Table 37).

Table 37. Change in number and qualification of agroforestry teaching staff, 1999-2006 (institutions by country)

	Number of staff		Qualification of staff	
	Increased	Stable	Increased	Stable
Indonesia	3	2	4	1
Laos		2	1	1
Philippines	1	4	5	0
Thailand	1	2	3	0
Vietnam	1	2	3	0

Both biophysical and socioeconomic competencies are needed in the teaching of agroforestry. Seven (39%) of the 18 faculties/colleges reported competence in both areas, while in 11 (61%) of the institutions all agroforestry teachers had formal competence in the biophysical aspect only. Overall, of the 78 agroforestry teachers, only 18% were reported to have formal competence in the socioeconomic aspect.

SEANAFE's influence on staff capacity was specifically mentioned by institutions in Laos and the Philippines. For example, Luang Prabang Agroforestry and Forestry College reported that 'there was no change in number of staff, but the staff gained more knowledge and experiences through activities organized by SEANAFE/LaoNAFEC.'

Gaps in competencies could be compensated by using external lecturers. Eight (44%) of the 18 faculties reported using such external resources, particularly other faculties in the same university (5), other universities (1), extension service (3) and research organizations (5). However, most did not specify what kind of competence they acquired from others.

SEANAFE's influence on the teaching staff

Participation of the institutions, their teaching staff and institutional leaders in SEANAFE activities was determined, as well as SEANAFE's perceive influence on teaching staff.

Among the 18 faculties/colleges surveyed, a total of 101 teachers and institutional leaders were reported to have participated in SEANAFE activities from 1999 to 2006, an average of 5.6 persons per institution. Of these 81.2% were male and 18.8% female (Figure 10).

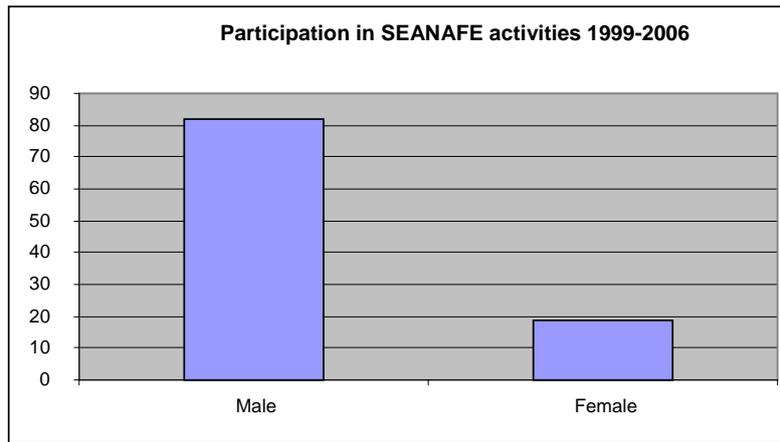


Figure 10. Participation of teachers and institutional leaders in SEANAFE activities, 1999-2006, by gender.

In 3 of the 18 faculties/colleges, participation in SEANAFE activities was restricted to the same one or two individuals during the seven-year period. Five institutions had 3-4 persons participating. On the other hand, 10 institutions had at least five different individuals participating in SEANAFE activities. The Forestry University of Vietnam had as many as 16 different staff and leaders participating in the activities (Figure 11).

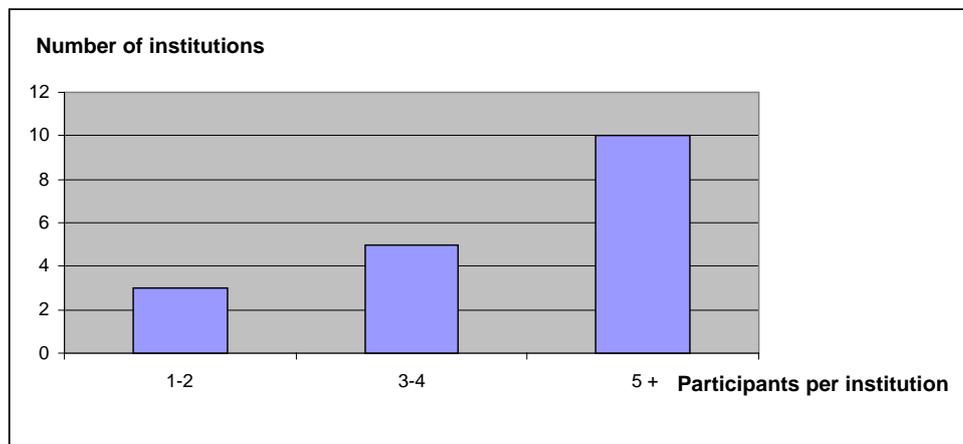


Figure 11. Number of participants per institution in SEANAFE activities, 1999-2006.

The majority (77.8%) of the faculties/colleges had hosted a regional or national/local SEANAFE event during the seven-year period. Of these, 4 institutions had hosted a regional event and 10 a national/local event (Figure 12).

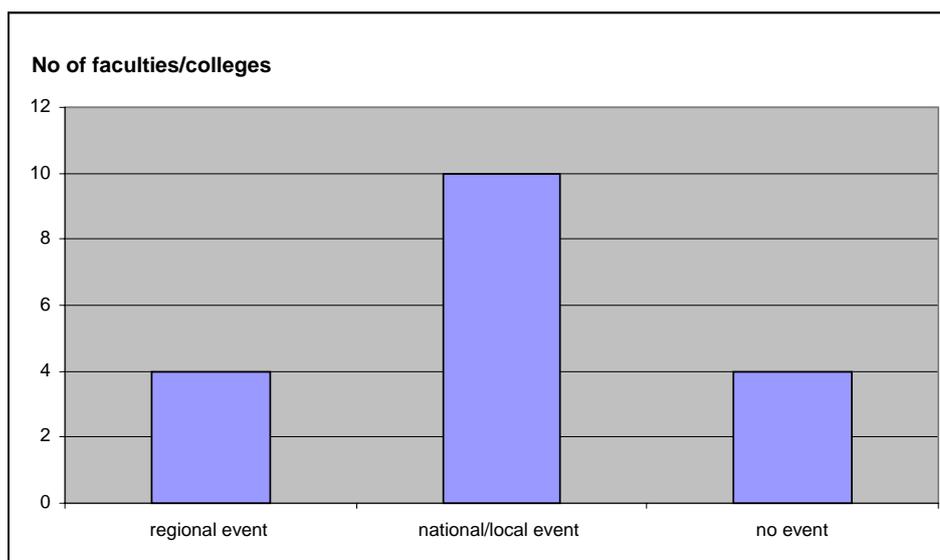


Figure 12. Number of faculties/colleges hosting SEANAFE regional or national/local events, 1999-2006.

Institutions' comments on SEANAFE's influence on staff capacity

Asked to describe how membership in SEANAFE has influenced staff capacity for agroforestry education, the following responses were given:

Indonesia

Three Indonesian faculties confirmed SEANAFE's influence on teachers' capacity. They made the following comments:

- SEANAFE influenced mostly the leaders and contact persons and not directly the teaching staff of the agroforestry course.
- Lecture notes from SEANAFE influenced the development of teachers' lecture notes.
- SEANAFE contributed to the enrichment of teaching materials and research involvement of the junior staff.

Such increase in capacity was evidenced by:

- increased ability to supervise agroforestry research
- improved lecture notes written by a teaching team in 2005 (downloadable on-line)
- conduct of doctoral study on agroforestry

Two Faculties reported that SEANAFE did not influence staff capacity. In both cases, only one person in the institution had participated in SEANAFE activities. Moreover, another Faculty of the same university participated more intensively in SEANAFE, indicating that cross-faculty participation is an issue.

Laos

Both institutions in Laos reported SEANAFE's positive influence on individual capacity, which is reflected in the improved teaching method and content. One respondent mentioned increased personal confidence to teach agroforestry subject using knowledge gained from SEANAFE.

The national policy on poverty eradication was also cited as an important external influence on agroforestry education.

Philippines

All institutions surveyed in the Philippines confirmed SEANAFE's positive influence on staff capacity, as follows:

- Staff capacity for agroforestry education significantly improved.
- Through participation in SEANAFE/PAFERN activities, the faculty members gained additional information and experiences, which are used in their teaching.
- The staff's and institutional leaders' attendance to various training, seminars, workshops and conferences had resulted in their strengthened technical capabilities and enhanced knowledge of agroforestry.
- The teaching materials provided and the establishment of an 'agroforestry 'field complex' contributed to better teaching.

Evidence for the increase capacity of agroforestry teachers in the Philippines included:

- Faculty members are invited as resource persons and lecturers by the local government units, NGOs and other organizations. (3 respondents)
- Faculty members are invited to present papers in workshops.
- Learnings from the training courses and seminars have been integrated in the agroforestry courses.
- The number of staff who can competently handle agroforestry and related courses had increased.
- The faculty members have established credibility in the delivery of agroforestry education programmes.
- The faculty members were able to conceptualize the 'agroforestry laboratory' (field/practical) classes.
- The faculty members became involved in research and extension projects related to agroforestry.

Non-SEANAFE influences on agroforestry teaching capacity in the Philippines included:

- ASPECTS Project – an agroforestry development project focused on training human resources in agroforestry (2 respondents).
- staff development activities of a smallholder forestry project funded by ACIAR.
- linkage with the GTZ community-based forestry project, where agroforestry is a major technical development strategy.

- opportunity to conduct research via ICRAF
- involvement in other multi-sectoral projects at the local level.

Thailand

All three institutions in Thailand reported enhanced individual capacity, which is reflected in the teaching method and content. However, the gains in individual capacity seemed not to be echoed as gains at the institutional level. There seems to be a lack of mechanism to echo and create impact on the other staff members apart from the team or those who participate in the National Agroforestry Education Committee (NAFEC). It was noted that the same person mostly attended this activity.

Respondents mentioned personal interest and participation in other networks as other important influences.

Vietnam

All surveyed institutions in Vietnam reported SEANAFE's influence on agroforestry teachers. This came about through:

- sharing experiences and knowledge, and making agroforestry materials and books available; (2 respondents)
- introducing a method and forming a group for curriculum development; (2)
- enhancing methods for agroforestry research

Evidence of the positive influence on staff capacity included:

- use of the same approach to PCD and teaching methods by all staff members
- application of integrated resource management in most study programmes
- improved English language skills of staff
- application of new teaching methods
- improved quality of textbook

The following were cited as non-SEANAFE influences in Vietnam:

- Social Forestry Support Programme (3 respondents)
- other international projects that the university is involved in (3)
- policies and guidelines from the Ministry of Agriculture and Rural Development (MARD)
- policies and guidelines from Ministry of Environment and Technology (MOET) regarding 'renovation' of the curriculum
- GTZ projects.

Resources

Library and teaching materials

The institutions were asked to assess their status regarding library and teaching materials for agroforestry, using a simple scale of ‘adequate’ or ‘inadequate’ in six categories, namely: books, journals, lecture notes, audio-visuals, off-campus field site, and on-campus field site (Figure 13).

The Lao institutions reported having inadequate resources in all categories. Responses from Indonesia, Philippines, Thailand and Vietnam greatly varied. Some institutions had generally adequate resources, while others had inadequate access to library and teaching materials. The following general findings were obtained:

- Four (22%) institutions had ‘adequate’ access in 5- 6 of the categories. In addition, Sukhothai Thammathirat Open University had adequate access in all categories, except those on field sites, which were not applicable to this institution.
- Six (33%) institutions, including the two in Laos, had inadequate access in five or six of the categories.
- Overall, journals and on-campus field sites were the most cited needs; only 5 (28%) and 4 (22%) institutions, respectively, had adequate resources in these categories.

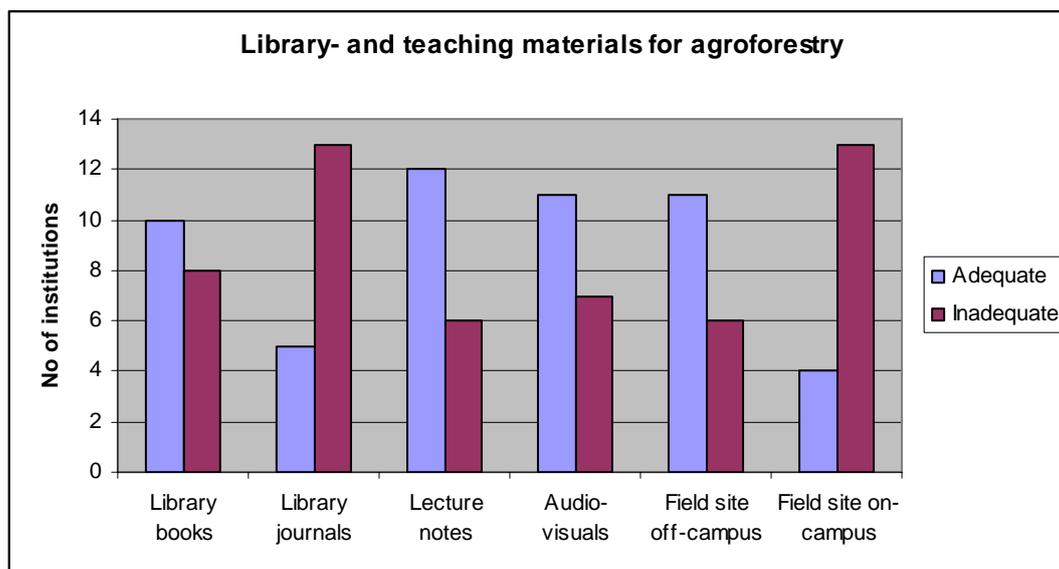


Figure 13. Access to library and teaching materials on agroforestry.

Compared with the six non-member institutions, SEANAFE members had better access to books, lecture notes and audio-visual materials. Only one of the six non-member institutions had adequate access in five or six categories (Figure 14).

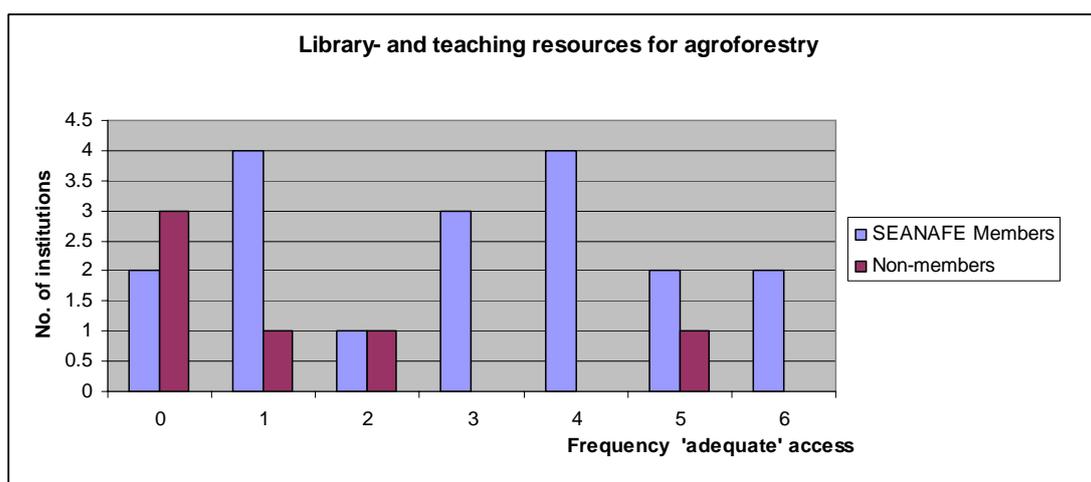


Figure 14. Adequate access to teaching materials, SEANAFE members vs. non-members.

The following comments were received regarding the library resources of SEANAFE members:

- New books are always on display
- Students can access the library at the faculty
- Books are collected in a special room/shelves
- Good enough references and teaching materials are available
- Library resources are readily available
- Agroforestry references are now available in the library and are accessible to the students and faculty members.

There were also negative comments:

- The number of book on agroforestry is not enough for the number of students (2 respondents)
- Books are available and enough only for staff and students who could read in English. Similarly, students have a problem in reading agroforestry books that are in English. (2 respondents)
- Agroforestry books are not available in Vietnamese versions
- No specific record system [for agroforestry books]
- There is no IT system for accessing the library
- Students can access the library, but its collection of books and teaching materials on agroforestry is inadequate.
- Books and similar references are difficult to acquire
- There are adequate agroforestry textbooks in the main library in Bangkok and provincial centres. But most of students cannot access the library because of the distance and teaching methods [of an open university].

Comments on access to field study sites

Asked to comment on their access to areas for field practicum, the respondents gave the following positive observations:

- Examples of different land-use system are available around campus or close to the campus
- Students and visitors can always be accommodated in the ‘Field complex’
- The JICA-sponsored research area and other *barangays* in Tanay were used as venues for the laboratory classes
- Fields for practicum are available, students have got more practicum time in schedules
- Self-funded field practicum is available
- Daklak, Vietnam, is very rich and diverse for the agroforestry field practicum.

The negative comments include:

- Some on-campus field sites were established through other subjects but there is no field practice on agroforestry
- There is a need to establish on-campus demonstration plots
- There is a need for further links and collaboration for the off-campus training sites
- A well-developed off- or on-campus agroforestry demonstration area is not available
- There is no practical class, except for a field trip
- Not relevant because STOU does not emphasize practical courses
- There are many ‘agroforestry models’ outside campus but students find it hard to reach them because university funds for practicum is limited
- The budget is not enough to establish a field site for practical exercises on agroforestry.

SEANAFE’s influence on access to teaching materials

All institutions, except the Faculty of Agriculture, Gadjah Mada University, reported SEANAFE’s positive influence on their access to teaching materials, as follows:

- Membership in SEANAFE enabled access to agroforestry information through books, publications and teaching materials. (5 institutions)
- Publications in agroforestry became available through SEANAFE. (2 institutions)
- Books are put in the university library, and lecture notes are also accessible via websites.
- Book grants, ICRAF website, e-mails are used to access information.
- New information and updates on agroforestry events are available.
- Most of the publications and agroforestry information are provided by SEANAFE/PAFERN.
- SEANAFE provided opportunities for Leyte State University to have a good number of agroforestry publications and information.
- The volume of library resources in agroforestry has increased because of the publications provided by SEANAFE.

- Institutions used effectively the materials SEANAFE supported and introduced books and references to other faculty members and students.
- SEANAFE funded the acquisition of some video and teaching materials.
- Some references were translated into Vietnamese.
- There are slides series and videos for staff and students to serve as learning materials.

The institutions gave the following evidence supporting the perception of improved access to publications and information:

- A good number of publications and materials in agroforestry are available in staff offices and library and can be used by the faculty as references. (5 responses)
- The laboratory has a special collection of agroforestry books.
- Other staff members benefit from the books provided (e.g., environmental economics).
- Photocopies of the reference books were provided to the staff.
- An MSc student applied for an agroforestry research grant.
- A staff member was able to participate in the World IUFRO Congress.
- The books were used in curriculum development.
- Equipment, including a camera, and other teaching aids were used effectively in teaching.
- The number of books and reference material increased year after year.

Other resources and facilities for agroforestry education

To determine the institutions' other resources for agroforestry education, a simple scale of 'adequate' or 'inadequate' was used to rate six categories, namely: lecture rooms, laboratories, teaching aids, transport, financial support, and donors' support (Figure 15). The following are the highlights of the findings:

- All institutions except those in Laos had adequate lecture rooms.
- Teaching aids and transport were adequate in the majority of the institutions, but still inadequate in 5 (28%) and 7 (39%) of the faculties/colleges, respectively.
- Laboratories, financial support and donor support were the most frequently cited constraints.

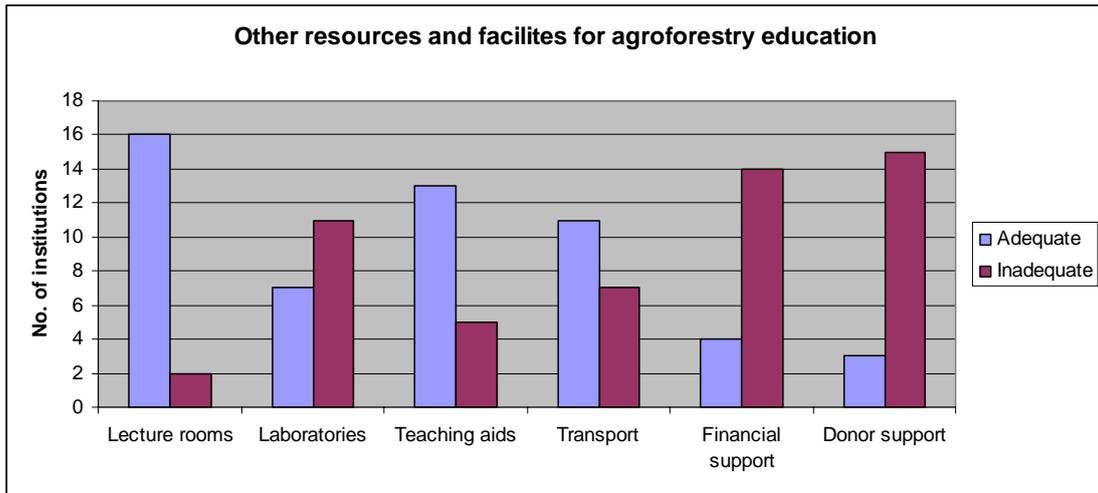


Figure 15. Access to other resources and facilities for agroforestry education.

As in access to library and teaching materials, there was a wide variation in the status of ‘other resources’ among institutions within a country. Three institutions had adequate access in at least five categories, while five institutions had inadequate access generally. A comparison between SEANAFE members and non-members showed little difference (Figure 16).

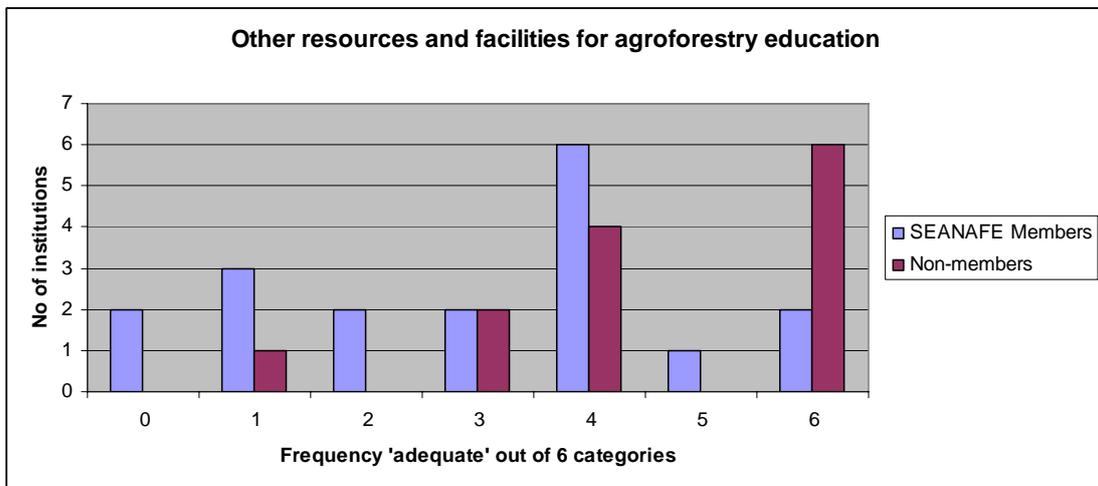


Figure 16. Adequate access to other resources and facilities, SEANAFE members vs. non-members.

Computer access

The staff’s and students’ computer access was assessed. In the case of the staff, 67 percent (12 faculties/colleges) of the institutions had good access; 27 percent (5) had some access. Only one institution, Luang Prabang Agriculture and Forestry College in Laos, did not have computers for the staff.

The situation was rather similar for students, although the number of institutions with good computer access for students dropped from 12 to 8 (Figure 17).

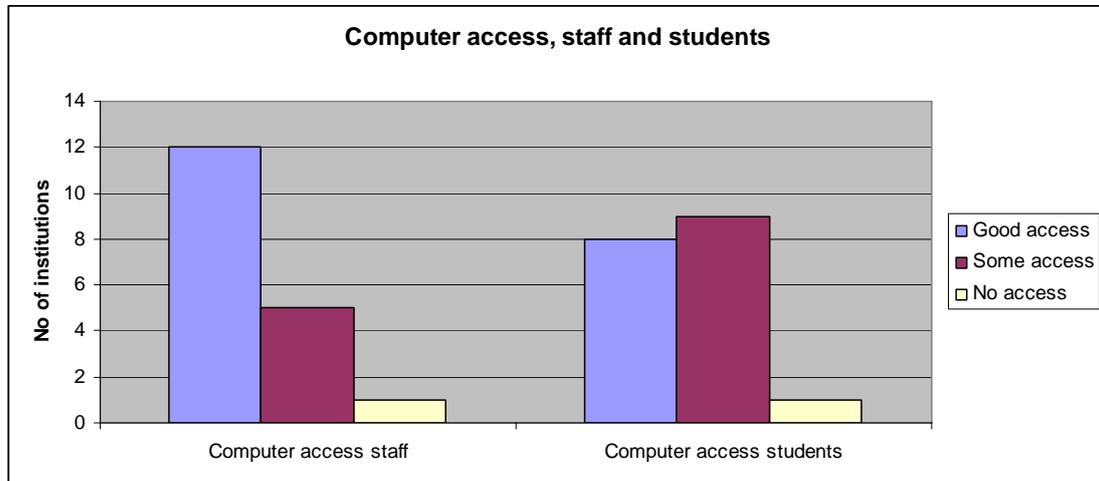


Figure 17. Computer access of staff and students.

Internet access and connectivity

Similarly, the staff's and students' Internet access and connectivity were studied.

Sixteen (89%) faculties/colleges had Internet access for the staff; 14 (78%) had access for students. Two institutions, University of Rizal Systems in the Philippines and Luang Prabang College in Laos, had no access (Figure 18).

In terms of quality and speed of the Internet connection, 8 (44%) faculties/colleges used a high-speed broadband, six (33%) had a slow broadband, and 2 relied on dial-up connection (Figure 19).

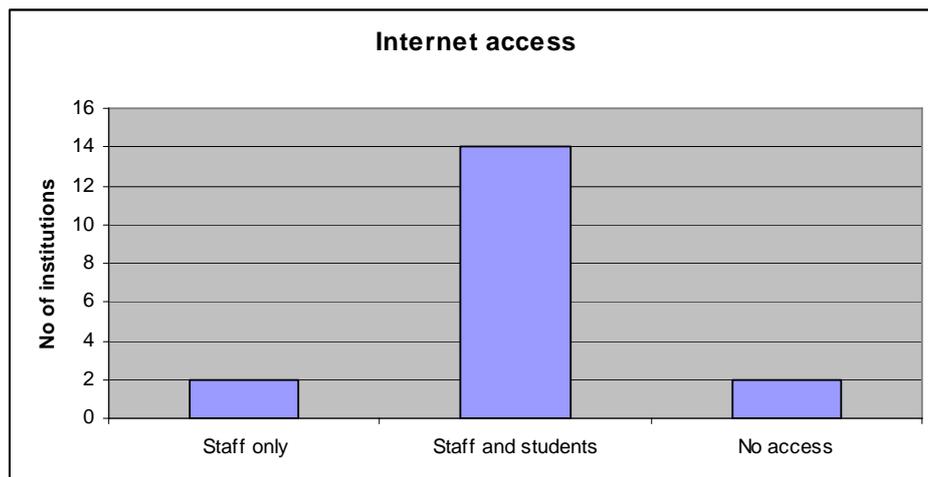


Figure 18. Internet access of staff and students.

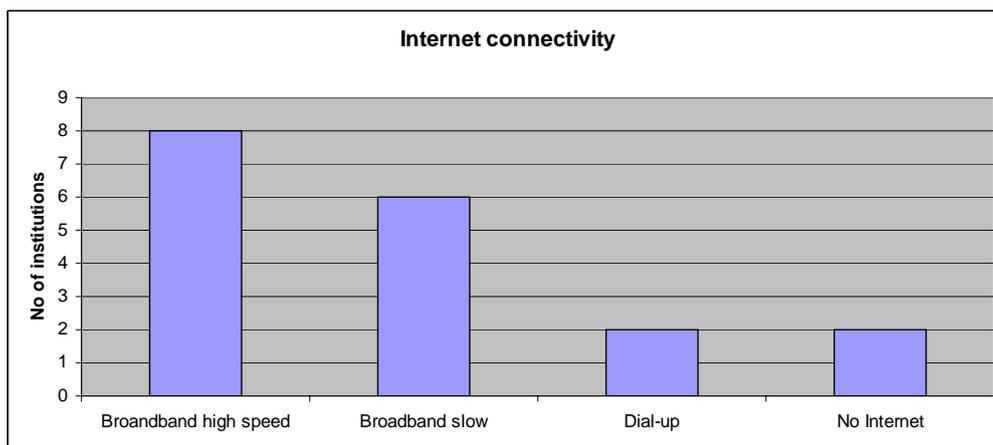


Figure 19. Internet connectivity.

Agroforestry extension

The respondents were asked to describe the mechanisms by which the institution reaches out to farmers and communities, in relation to scaling up agroforestry innovations.

Nine institutions cited their graduates' employment as a mechanism for scaling up agroforestry innovations. In general, institutions employed several strategies simultaneously. Farmers' training and direct collaboration with extension organizations were the two most common strategies; production of extension materials and bulletins targeting farmers was the least common (Figure 20).

Four institutions (the three institutions in Thailand and Gadjah Mada University's Faculty of Agriculture in Indonesia) reported not being involved in agroforestry-related extension.

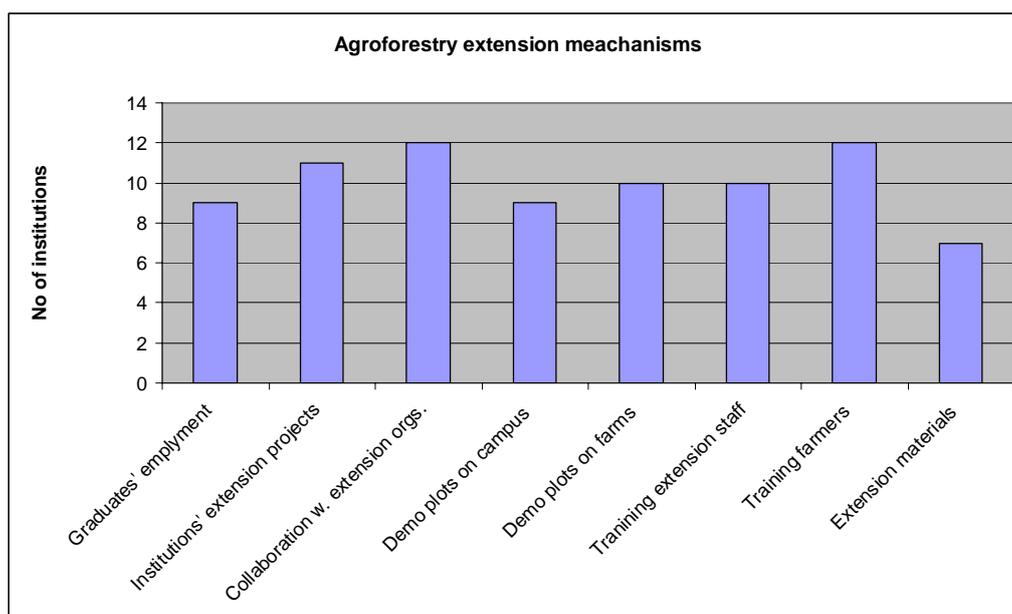


Figure 20. Institutions' strategies to reach out to farmers and communities, in relation to scaling up agroforestry innovations.

SEANAFE's influence on extension

The study aimed to find out also SEANAFE's influence on the institutions' ability to reach out to farmers and communities.

Indonesia

Two of five institutions indicated that membership in SEANAFE had influenced their extension work, through:

- Improvement in teaching methodology, which enabled better training of students as facilitators
- Influence on the institutions' outreach to surrounding communities
- The institutions' research and outreach were enhanced

Laos

Both institutions reported using the knowledge gained in their activities to train farmers.

They also reported non-SEANAFE influences, such as the national policy on poverty eradication.

Philippines

Four of the five institutions confirmed SEANAFE's influence on their capacity in agroforestry extension, while one did not see much influence of SEANAFE on the agroforestry extension programme of the college. More specifically, the following comments were given:

- Faculty members were able to extend technical assistance to different local organizations. They got invited as lecturers or resource persons.
- Staff capacity on agroforestry extension was significantly improved. Likewise, the number of staff that can competently serve as resource persons in training activities and seminars in agroforestry increased.
- MOSCAT established a collaborative research and extension project called ‘Agroforestry sa Barangay’ with funding from SEANAFE. Three barangays have started to adopt agroforestry technologies.
- MOSCAT’s faculty members were tapped as lecturers and resource persons in agroforestry by local and national organizations.
- Exposure of the URS faculty members to the different learning experiences organized by SEANAFE has helped establish the university’s credibility to implement agroforestry-related extension programmes.

Vietnam

All three institutions in Vietnam reported increased extension capacity as a result of membership in SEANAFE, although one university felt that agroforestry extension capacity was influenced by other projects more than by SEANAFE.

Other comments included:

- Some staff members were trained in agroforestry extension, which enabled them to carry out extension work.
- The participatory approach has been increasingly applied in research, education and extension.
- Extension experiences were shared with staff members, and more staff members use a participatory approach to carryout extension work.

The external influences cited were the agroforestry extension programme of MARD, the Social Forestry Support Programme, and the agroforestry fund of the local government. The Participatory Technology Development method was introduced by SFSP as a main method in working with farmers.

Thailand

No data from Thai institutions were obtained because they did not report agroforestry extension activities.

Agroforestry research

Institutions were asked to describe their capacity to conduct agroforestry research, assessed via the following variables:

- involvement of faculty members in agroforestry research
- active agroforestry research projects
- agroforestry theses in 2005
- journal articles on agroforestry published in 2005
- papers on agroforestry presented at conferences in 2005.

Involvement of faculty members in agroforestry research

Agroforestry research capacity among institutions varied greatly. Five institutions, including those in Laos and two in Thailand, said their staff members were not involved in agroforestry research. No data were available from STOU; agroforestry research is not the prime aim of this institution, although some teaching staff members carry out such research based on their own capacity and connection.

The remaining 12 institutions had altogether 65 faculty members involved in agroforestry research, ranging from 3 to 10 persons in each institution, or almost 6 persons per institution on the average.

The number of staff involved in agroforestry research increased between 1999 and 2006 in eight institutions, was stable in four and decreased in one.

Active agroforestry research projects

Thirty-two agroforestry research projects in 11 institutions were active at the time of the survey. There was no such research in Laos and only one project in Thailand. The remaining 31 projects were fairly well spread among the other three countries, with 1-5 projects per institution.

The number of active research projects increased between 1999 and 2006 in seven institutions, remained stable in five and decreased in two.

Agroforestry theses

Eight (44%) faculties and colleges reported a total of 61 agroforestry theses conducted in 2005, including all surveyed faculties in Indonesia and Vietnam and one college in the Philippines. Notably, the Forestry University of Vietnam reported 25 theses in 2005 (Table 38).

The number of students doing thesis research in agroforestry increased between 1999 and 2006 in seven of the eight institutions. It decreased in one case.

Journal articles

Six (33%) of the 18 faculties/colleges published 21 agroforestry journal articles in 2005. Of these, 12 came from Leyte State University's College of Forestry and Natural Resources. Laos and Thailand did not report having published agroforestry research papers (Table 38). There was no clear trend regarding publication of journal articles from 1999 to 2006.

Papers on agroforestry presented at conferences

Six (33%) faculties/colleges presented 21 conference papers on agroforestry in 2005. There was no clear trend regarding paper presentations from 1999 to 2006 (Table 38).

Table 38. Thesis research, journal articles and conference papers in 2005, and changes in 1999-2006

Institution	Country	Agro-forestry theses		Journal articles		Conference papers	
		No. in 2005	Changes in 1999-2006	No. in 2005	Changes in 1999-2006	No. in 2005	Changes in 1999-2006
Brawijaya University (UNIBRAW), Faculty of Agriculture	Indonesia	4	Increased	1	Decreased	0	Stable
Gadjah Mada University(UGM), Faculty of Forestry	Indonesia	11	Increased	2	Increased	6	Increased
Mulawarman University(UNMUL), Faculty of Agriculture	Indonesia	5	Increased	0	0	0	Stable
Mulawarman University(UNMUL), Faculty of Forestry	Indonesia	3	Stable	0	0	0	Stable
Benguet State University, College of Forestry	Philippines	no data	Stable	1	Stable	0	Decreased
Benguet State University, College of Agriculture	Philippines	no data	Stable	no data	Decreased	no data	Decreased
Leyte State University, College of Forestry and Natural Resources	Philippines	3	Increased	12	Increased	5	Increased
Misamis Oriental State College of Agriculture and Technology, Institute of Agriculture	Philippines	0	0	0	0	4	Increased
University of Rizal System, College of Agriculture	Philippines	no data	Decreased	0	Decreased	1	Stable
Forestry University of Vietnam, Social Forestry Training Center	Vietnam	25	Increased	no data	Decreased	no data	Decreased
Nong Lam University, Faculty of Forestry	Vietnam	5	Increased	3	Stable	2	Stable
Tay Nguyen University, Faculty of Agriculture and Forestry	Vietnam	5	Increased	2	Increased	3	Increased
Total		61		21		21	

Change in agroforestry research capacity

Commenting on the changes in agroforestry research capacity, the institutions noted the following:

Philippines

- Faculty members of BSU College of Forestry had limited opportunities to conduct research because of their teaching load and lack of research funds. (2 respondents in the Philippines)
- The increased capacity to conduct agroforestry research can be attributed to ICRAF, which has given opportunities to MOSCAT faculty members to conduct research jointly with ICRAF researchers.

- The limited school funds for research encouraged the faculty members to collaborate with other institutions to implement joint research.

Indonesia

- A first Memorandum of Understanding was signed with a water management consultant for soil and water conservation.
- There were fewer staff members because several were overseas for further studies.
- Research sites belong to farmers.

Thailand

- One ongoing research on natural resource management through people's participation can be considered as an agroforestry research because it deals with aqua-silviculture.

Vietnam

- There is increased research capacity of the staff
- Equipment for research was still poor; there were not enough funds from the government for agroforestry research.
- The research approach had changed to become more participatory. Also, students conducted agroforestry research jointly with the staff.

SEANAFE's impact on the Institutions' agroforestry research capacity

Information on SEANAFE's influence on the institutional capacity for agroforestry research was obtained from only four countries because no research was reported in the surveyed institutions in Laos.

Indonesia

- Research capacity is already strong in UNIBRAW. There had been improved staff capacity; some staff members served as keynote speakers in international conferences.
- Through the SEANAFE-supported demonstration plot and community field research, students were able to carry out agroforestry research.
- Research methodologies were improved.

Philippines

Three of the institutions in the Philippines commented on SEANAFE's influence on research capacity:

- SEANAFE did not have much influence on the research aspect, except for providing support for an undergraduate thesis research.
- The university staff capacity improved; the number of staff doing agroforestry research and advising students doing agroforestry thesis research increased.

- The participation of one faculty member in a training course on agroforestry research design and management helped develop the capacity of the institution to implement agroforestry research.
- Collaborative agroforestry research has been implemented with JICA, CHED and local organizations.

Thailand

In Thailand, the three institutions indicated that SEANAFE had influenced individual capacity and connections.

Vietnam

- SEANAFE shared reference books and studies on agroforestry. SEANAFE also supported some fund for research to student and staff.
- A new approach was applied to agroforestry research, leading to research based on the needs of farmers.
- Sharing the agroforestry research result among staff.
- The number of research projects on agroforestry increased year after year; students conducted joint agroforestry research with the staff.
- Papers on agroforestry were published.

Results - Part 2: Status of and changes in institutional capacity

The second part of the impact study sought to answer two broad questions: Did the institutions' capacity for agroforestry education change from 1999 to 2006 during their SEANAFE membership? If so, could the change be attributed to SEANAFE?

As mentioned in the Methods section, the study used a modified Horton model for organizational capacity to assess five elements of an institution's organizational capacity for agroforestry education. The elements are:

- staff (teaching agroforestry)
- infrastructure, technical and financial resources for agroforestry education
- leadership
- programmes and process management, especially agroforestry curricula
- networks and linkages

For each category, the **status in 2006** was rated on a three-grade scale (very good, adequate, inadequate).

The **change in capacity from 1999 to 2006** was rated on a four-grade scale (much improved, slightly improved, no change, reduced capacity).

For each element, the respondents were first asked to assess the status in 1998 and 2006, and to assess the change in the six-year period prior to SEANAFE membership (1993-1998) and the first seven years of their SEANAFE membership (1999-2006). In the analysis, only the latter period was considered.⁵

Secondly, the respondents were asked to describe the **change process** from 1999 to 2006 for each of the five elements, as follows:

- key change events
- underlying causes and influences
- description of the change process
- examples of results and outcomes

In general, the respondents had considerable difficulties in separating these steps. For this reason it was not always possible to clearly map the change process sequentially.

⁵ The study intended to compare both periods (change before and after SEANAFE), however, due to inconsistencies in the responses for the two periods, the attempt was abandoned.

For each category, a regional summary of the status in 2006 and changes from 1999 to 2006 is presented. This is followed by a report by country of the perceived change process.

Staff capacity

Regional summary

Staff capacity in 2006 for agroforestry education was rated as ‘very good’ by 90 percent of the responding institutions in Indonesia, Philippines and Vietnam. One respondent in Vietnam rated staff capacity as ‘adequate’ (Figure 21). It should be noted that this variable was not assessed in Laos and Thailand because of a partially incomplete dataset.

Staff capacity had improved since 1999; there was ‘slight improvement’ in three institutions, and ‘much improved’ staff capacity for agroforestry education in 10 institutions (one institution in Laos and one in Thailand did not respond to this question) (Figure 22).

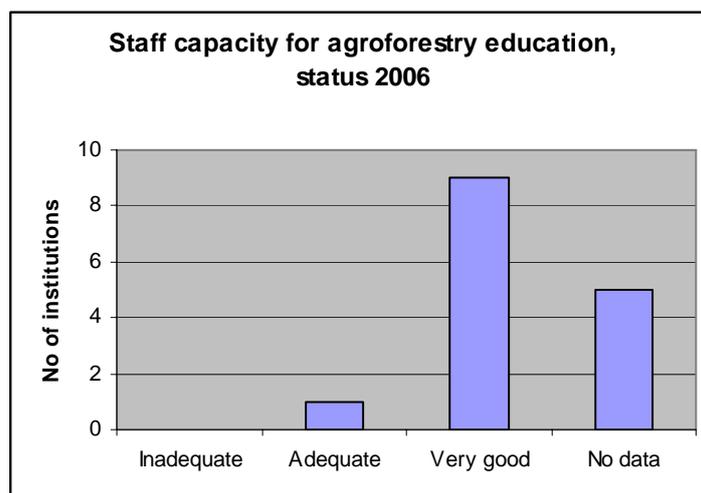


Figure 21. Status of staff capacity for agroforestry education, 2006.

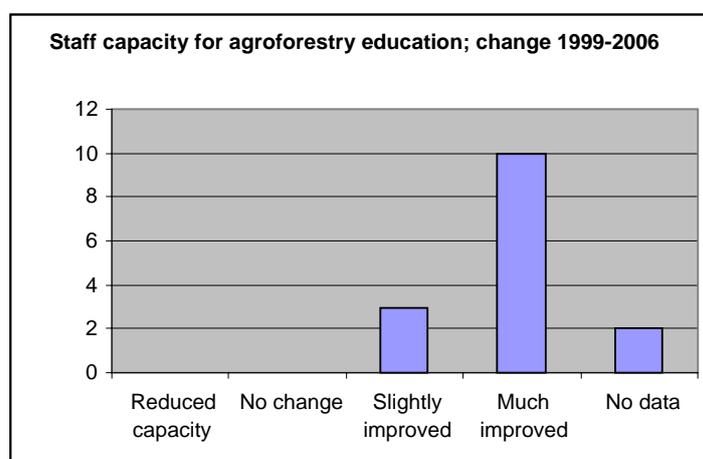


Figure 22. Changes in staff capacity for agroforestry education, 1999-2006.

Indonesia

The three Indonesian institutions reported that science development and research cooperation with ICRAF enhanced staff capacity. Competitive research grants from the Ministry of Education and funds from various external sources (international and national) also contributed to staff capacity.

The underlying influences behind the changes included:

- science development in agroforestry
- silvicultural systems in private and state lands and forests
- staff promotion to professor level
- enhanced activities in teaching, research and outreach of agroforestry.

In terms of the change process, the institutions reported staff development (increased from 2 to 4 agroforestry teaching staff), involvement of students in research, and enrichment of agroforestry course content through research-based learning processes. Mulawarman University reported to have established a Centre for Agroforestry in 2002.

Evidence for increased staff capacity include:

- increase in number of agroforestry publications
- increase in number of staff, including staff from other departments
- increase in number of PhD holders
- lecture notes and books on agroforestry written by the teaching staff.

Laos

Respondents at the Faculty of Agriculture, National University of Laos reported that prior to 1999 agroforestry education was not adequate. There was only one lecturer, who had been trained at Maejo University, Thailand. During 1999-2006, as a member of SEANAFE, the university started offering an agroforestry subject first as an optional subject in the BSc in Agriculture programme and later as a compulsory subject. The national policy on poverty eradication and additional knowledge gained from being the member of SEANAFE were reported to have influenced these changes. Moreover, an agroforestry demonstration plot was established with financial support from SEANAFE.

The Luang Prabang Agriculture and Forestry College reported that its staff's agroforestry knowledge improved after the College became a SEANAFE member. Knowledge gained was used in teaching the agroforestry subject. The training of trainers course organized by SEANAFE was very useful and could be directly applied to the agroforestry subject. With their improved knowledge and capacity, the staff members exhibited more confidence to teach and develop agroforestry content and teaching methods.

Philippines

The four institutions in the Philippines unanimously reported improvement in staff capacity. Teaching capacity of the core faculty members in agroforestry had increased, leading to enhanced delivery of

agroforestry education programme. The institutions also provided agroforestry extension services. Lecturers presented papers in various agroforestry conferences. The capacity to develop project proposals was likewise enhanced.

The respondents identified the following reasons for the changes, in order of frequency:

- participation in congresses, conferences and workshops on agroforestry (3 respondents)
- attendance to short-term training courses on agroforestry organized by the Institute of Agroforestry (IAF)/ASPECTS⁶, PAFERN⁷ and SEANAFE (3 respondents)
- attendance of faculty members in a one-year post-baccalaureate Diploma in Agroforestry at UPLB (2)
- active membership in PAFERN and SEANAFE (2)
- short-term training courses for faculty members (especially junior faculty) organized/sponsored by PAFERN and SEANAFE (2)
- attendance in curriculum development workshops
- availability of teaching materials.

They reported the following processes that contributed to improved staff capacity:

- staff development programmes, especially for junior faculty members (4)
- collaboration with various organizations at the local and national levels
- active participation in PAFERN/SEANAFE activities
- collaboration with international donors on agroforestry research and extension.

A large number of results and outcomes supported the perception of improved capacity in the Philippines. These include the following:

- Course curricula had been revised based on the experiences and lessons gained from training courses. (3 respondents)
- Faculty members provided technical assistance to local government units, served as resource persons and lecturers in local training programmes, and supported other units of the institution. (3)
- Faculty members served as speakers and presented papers on agroforestry in conferences. (2)
- Involvement of the faculty members in the collaborative agroforestry research increased. (2)
- Proposal writing ability was enhanced; project proposals prepared by the faculty members were funded by SEANAFE.

⁶ ASPECTS was an agroforestry development programme linking universities/colleges and communities in the Philippines. The project ended around 1998.

⁷ The national sub-network of SEANAFE in the Philippines.

Thailand

STOU reported that being a member institution of SEANAFE had created awareness of up-to-date knowledge and technologies of agroforestry. These could be directly used to prepare teaching materials.

Respondents at Khon Kaen University confirmed that knowledge had been gained as a result of membership in SEANAFE /ThaiNAFE⁸. This knowledge had been used to update teaching methods and content of the agroforestry course (an optional course of the Master's degree at the Department of Land Resource and Environment (LRE). The agroforestry course is taught by a team of four lecturers from two departments (LRE and Agronomy). In general, the students were satisfied with the current course content. Students also said that the course's field visits provided them better understanding of real agroforestry practices. Field practical exercises facilitated the learning process.

Rajamangala University of Technology Tawan-ok also confirmed that agroforestry education in 2006 was better than prior to 1999. The knowledge gained from being a SEANAFE/ThaiNAFE member institution had contributed to the introduction of an agroforestry subject in 2000. The teaching of agroforestry was based on available textbooks and some other publications in Thai. SEANAFE/ThaiNAFE provided knowledge, which was used to update the content and teaching methods of the agroforestry subject. The number of registered students in the agroforestry subject had increased.

Vietnam

There were six agroforestry lecturers at Forestry University of Vietnam, which founded a centre for agroforestry in 1999. The BSc in Agroforestry programme was introduced in 2003. The teaching staff had been trained in agroforestry-related subjects. Staff conducted research and extension activities, besides training, and consultancies on agroforestry for the government and NGOs.

Nong Lam University assumed the facilitating role in VNAFE. One junior staff member underwent training in the social aspect of agroforestry systems. However, the institution's capacity in agroforestry suffered when a leading staff member passed away. The programmes at NLU are diversifying to meet new demands for professionals.

Lecturers at Tay Nguyen University were trained in participatory curriculum development locally and abroad, which contributed to the curriculum review of the major in forest management. Teaching methods changed and interactive teaching methods were encouraged. Teaching materials became available for lecturers, including agroforestry books in English. Textbooks were regularly updated. Linkages between research, teaching and extension increased, and as well as thesis research on agroforestry.

⁸ Thai Network for Agroforestry Education (ThaiNAFE) is SEANAFE's national sub-network.

Facilities and resources for agroforestry education

Regional summary

Institutions were asked to assess their facilities and resources that support agroforestry education, including infrastructure, technology and financial resources, information and communication facilities, library, teaching materials, laboratories, field plots, etc. No data were obtained from Laos and Vietnam.

Ninety percent of the respondents in Indonesia, Philippines and Vietnam reported adequate or very good facilities and resources for agroforestry education in 2006. One institution in the Philippines reported inadequate status (Figure 23).

Seven institutions reported a 'slight improvement' in their facilities and resources from 1999 to 2006. The situation was 'much improved' in four institutions (two in Vietnam and one each in Indonesia and the Philippines). Three institutions reported no change (Figure 24).

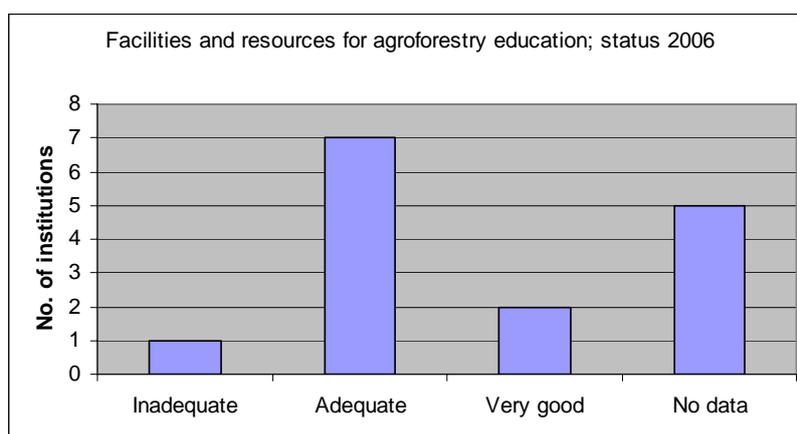


Figure 23. Status of facilities and resources for agroforestry education, 2006.

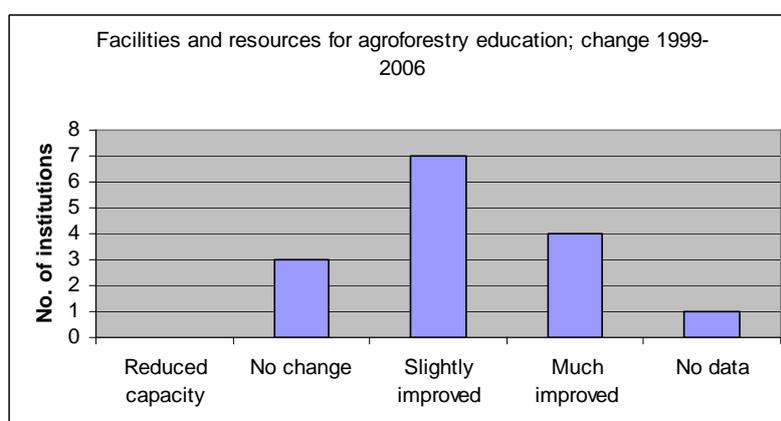


Figure 24. Change in facilities and resources for agroforestry education, 1999-2006.

Indonesia

Indonesian universities reported the following changes in facilities and resources for agroforestry education from 1999 to 2006:

- improvement of facilities including library and references, field plots, Internet connection and research equipment
- increased funding for research through a competitive grant programme at the Ministry of Education, and internal funding sources
- availability of lecture notes from SEANAFE.

External influences included the regional autonomy in Indonesia and changes in the job markets. One university reported enhanced cooperation with the private sector.

Leadership (support from Rector and the project leader) were important internal influences.

The change process included:

- improvement of information systems in the university
- book donation from the forestry service, staff etc.
- development of proposals
- expanded cooperation with local government units and mining companies

These led to outcomes such as:

- research topics in agroforestry
- research demonstration plots
- computer facilities and LCDs in classrooms
- availability of references on agroforestry
- support for an 'Agroforestry village' in Gunung Kidul district
- modified lecture notes
- demonstration plot off-campus
- involvement in a land reclamation project in coal mining companies (Kaltim Prima Coal)

Laos

The two surveyed institutions in Laos reported that their basic institutional infrastructure had not changed since pre-1999 and that government support was insufficient. On the other hand, access to teaching materials had improved from 1999 to 2006 because faculty/college libraries received new agroforestry teaching materials, books and publications from SEANAFE/LaoNAFE⁹. However, teaching materials, books and journals were still not enough for the students. Some teaching materials that were translated into Lao language were distributed in limited copies; the lecturers preferred to keep them for their own reference.

⁹ Lao Network for Agroforestry Education (LaoNAFE) is a national sub-network of SEANAFE.

There was no reported agroforestry field practice either on or outside campus. Most practical exercises were done with poultry, fishpond, pig farm, paddy fields and a vegetable farm.

Philippines

The following changes were reported between 1999 and 2006:

- Agroforestry demonstration plots had been established in three institutions, but in two cases they were difficult to maintain because of lack of funds. Two institutions had set up collaborative agroforestry projects off-campus.
- Laboratory equipment and facilities had been acquired, but they need upgrading and improvement. (2)
- PAFERN and SEANAFE had contributed to better access to agroforestry information and improved library resources in agroforestry.

The changes were attributed to the following:

- Leyte State University was declared as a centre of excellence in forestry education by the Commission on Higher Education (CHED) and received funds to improve facilities.
- Reference materials provided by SEANAFE/PAFERN and other international organizations had improved library resources in agroforestry.
- A 25-hectare 'agroforestry field complex' was established with financial support from SEANAFE.
- An extension project, Agroforestry sa Barangay, was made possible with funding support from SEANAFE.
- At MOSCAT, the local government units and the Department of Science and Technology (DOST) supported the maintenance of the Agroforestry Field Complex.
- Faculty members collaborated with external organizations.
- At University of Rizal Systems, the lack of financial resources constrained the school from upgrading and acquiring laboratory facilities and equipment.

The change process included:

- collaboration with outside organizations regarding the use of agroforestry projects as field laboratories for the students
- subscription to references from various sources
- networking
- proactive submission of project proposals to institutions known to provide fund support to agroforestry
- active response to calls for proposals by SEANAFE and PAFERN
- acquisition of references and publications through the initiative of the faculty members.

The above led to results and outcomes, such as:

- availability and accessibility of agroforestry references to the students and faculty members
- increased number of off-campus learning laboratories

- the ‘agroforestry field complex’ serving as a learning laboratory for agroforestry students of MOSCAT, as well as for other state colleges in Mindanao. Training participants and visitors from ICRAF, DENR and LGUs also frequently used it. It also serves as a research and production area, generating income for the school.

Thailand

Khon Kaen University reported that its basic infrastructure did not change much since becoming a SEANAFE member in 1999, adding that basic infrastructure and technologies are not the main factors in teaching the agroforestry subject. However, access to teaching materials improved. SEANAFE and ThaiNAFE provided books and other publications to the library. Some publications had been shared among the lecturers within the department, but may not have reached all lecturers due the limited number of copies received.

Rajamangala University of Technology Tawan-ok reported that its infrastructure, technology and financial resources were better in 2006 than prior to 1999. This improvement was due to more financial support from the government. Evidence of the changes included having more connections to other organizations and more teaching materials, books and journals, especially materials distributed by SEANAFE/ThaiNAFE.

Vietnam

SEANAFE member universities in Vietnam reported a significant improvement in infrastructure and facilities for agroforestry education from 1999 to 2006, as follows:

- One university provided a new work room for the agroforestry staff
- Many agroforestry-related books became available in the reading room for staff and students
- An Internet system was established on campus
- The number of agroforestry documents and agroforestry fieldwork increased.
- New classrooms were built
- Teaching aids were supplied and an ‘e-library’ was established.

Such changes were due to support from the university and its leadership (e.g., support in the review of curricula and renovation of teaching facilities) as well as from other projects including ICRAF, SEANAFE, and Social Forestry Support Programme (SFSP). Better networking also contributed to the changes. One institution reported getting funding from the local government of the Tay Nguyen region.

The universities reported improvements in terms of:

- funding for teaching facilities, books, teaching materials and research
- book donation from the forestry service, staff etc.; materials and books were also exchanged with other universities
- networking
- field-based learning
- Improvement of information condition including establishment of an electronic library.

These changes had resulted in:

- availability of a reading room
- broadband Internet access
- availability of many books and textbooks for staff and students
- increased number of thesis related to agroforestry
- increased number of students enrolled in the new agroforestry programme
- increased number of classrooms and facilities for teaching, including computers and LCD projector
- increased facilities and equipment for fieldwork and funds for research.

Leadership

Regional summary

Leadership related to agroforestry development in 2006 was seen as ‘adequate’ in five institutions and ‘very good’ in another five. Key informants in two institutions felt that leadership was inadequate. Data were lacking in three cases (Figure 25).

Leadership improved in 10 (83%) institutions from 1999 to 2006 (Figure 26).

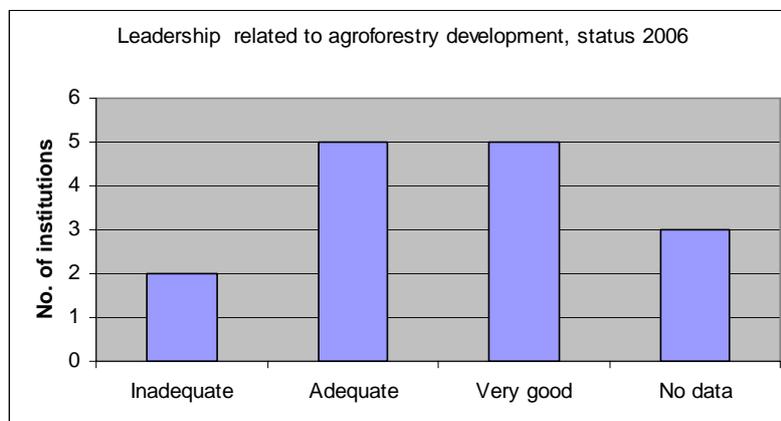


Figure 25. Status of leadership related to agroforestry development, 2006.

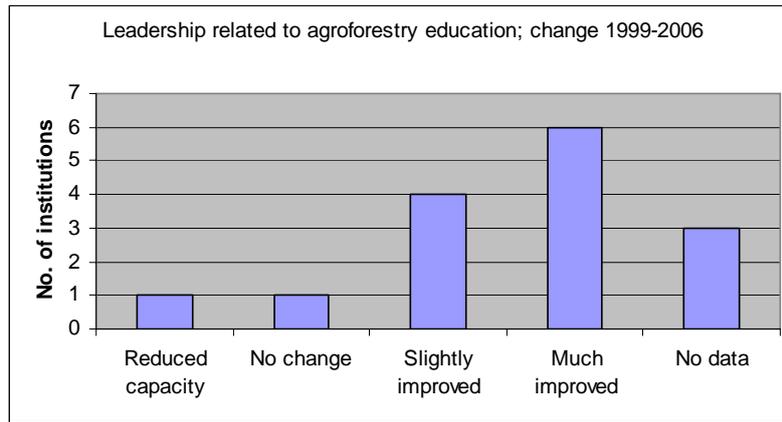


Figure 26. Change in level of leadership related to agroforestry development, 1999-2006.

Indonesia

From 1999 to 2006, Brawijaya University respondents noted an improvement in the academic affairs processes; the study programme linked well with the laboratory and vice versa. There was full support from institutional leaders.

Gadjah Mada University had been offering an agroforestry course since 2002. To support the course, teaching staff had been trained, and staff from other departments had been involved.

In Mulawarman University, the Vice Rector was the contact person for SEANAFE.

Laos

National University of Laos respondents rated the university's strategic leadership in 1999-2006 as inadequate and similar to the period prior to 1999. The Faculty of Agriculture (FOA) did not have a lecturer trained in agroforestry. The person teaching the subject was a recently recruited lecturer, just graduated from the FOA. The assignment of the agroforestry subject has changed from person to person, without continuity. But the situation in 2006 was perceived to be better than that prior to 1999.

At the college in Luang Prabang, respondents rated the strategic leadership as very good. In addition, the national policy on poverty eradication had created awareness and influenced the application of agroforestry education in the college.

Philippines

Benguet State University maintained links with several organizations engaged in agroforestry, including PAFERN, SEANAFE and DENR¹⁰. The university supported a staff development programme (training and further education) and participation in agroforestry congresses. The leaders

¹⁰ Department of Environment and Natural Resources

supported partnership with a private company in agroforestry research, and the university provided technical assistance to the local government unit.

Administrators and key officials at Leyte State University (LSU) strongly supported agroforestry. LSU participated in various agroforestry initiatives at the local, national and international levels. It has a staff development programme for junior faculty members. A revision to the curriculum was being proposed to include agroforestry as a major in the Bachelor of Science in Forestry programme. LSU had also hosted PAFERN/SEANAFE activities and was represented on the PAFERN Board.

MOSCAT had a strong partnership with ICRAF, not only as a host of the latter's Mindanao office, but also through the involvement of its faculty members as co-researchers in ICRAF projects. The College President has served as a Board Member of PAFERN and SEANAFE. The College also acquired more funding support from SEANAFE and PAFERN, which enabled the school to improve field facilities and institutionalize an agroforestry extension programme. It likewise had a staff development programme and was actively networking with the local government units and national government agencies.

At University of Rizal Systems, the administrators strongly supported agroforestry development during 1999-2002. Activities such as agroforestry promotion in- and off-campus, staff development, and a scholarship programme for agroforestry students were supported. However, the lack of financial resources slowed down these developments from 2003 to 2006. One faculty member currently serves on the Board of PAFERN.

Thailand

At Khon Kaen University, awareness had increased in the Department of Land Resources and Environment regarding the importance of environmental management and forestry science. This was due to the expansion of the scope of teaching from soil science to land resources and environmental management. The university observed that strategic leadership depended both on the background of the leader and on other external factors. The need to expand knowledge of environmental management and forest management in the north-eastern part of Thailand was mentioned as the driving force for curriculum development.

Leaders of Rajamangala University of Technology Tawan-ok had given more attention to subjects dealing with integrated natural resource management, including agroforestry. The professional background of the administrator of the university also influenced having agroforestry as a new direction of forestry science. Respondents observed that there were opportunities to expand and develop the subject, but this was constrained by a regulation of the Ministry of Education's Commission for Higher Education that any curriculum has to have a committee of five lecturers and that the same person is not allowed to sit in another curriculum committee of the same institute.

Vietnam

Agroforestry research annually received funds from Vietnam Forestry University and the Ministry of Agriculture and Rural Development. The capacity of agroforestry research and extension staff had

improved because of the human recourse development policy of the university. The number of staff had also increased. The university was involved in consultancies for agroforestry projects.

Nong Lam University had adopted a new agroforestry major programme, in recognition of the need to diversify programme offerings. The university also facilitated the formation of a group of lecturers working on agroforestry development projects. This had led to the recognition of agroforestry as a major field of studies.

Tay Nguyen University had adopted a multi-stakeholder approach to sustainable forest management. It offered forest management as a new major. Agroforestry is a core subject of the BSc programme. In 2006, research and training focused on sustainability of land and forest management. There has been a change in curriculum and teaching methods. The university also conducted field research in natural resource management in Tay Nguyen.

Curricula

Regional summary

The status of agroforestry curricula in 2006 was rated as ‘adequate’ in five institutions and ‘very good’ in five. Institutions in Laos and Thailand did not rate their status (Figure 27).

All institutions in Indonesia, Philippines and Vietnam reported ‘slightly improved’ or ‘much improved’ agroforestry curricula during their SEANAFE membership between 1999 and 2006 (Figure 28).

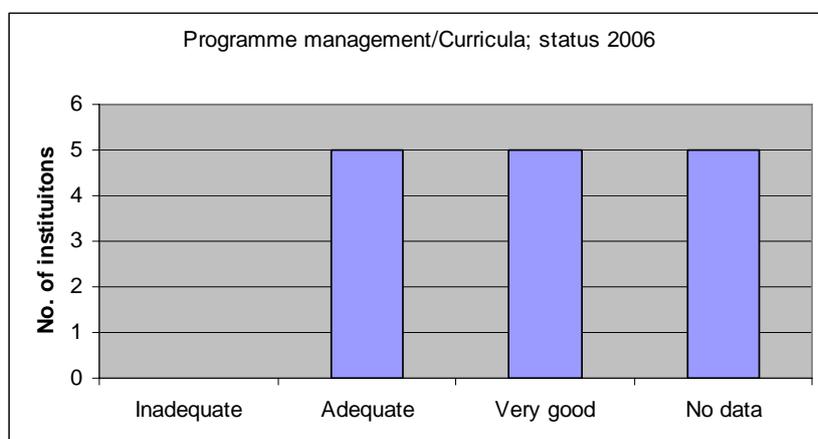


Figure 27. Status of programme management/curricula, 2006.

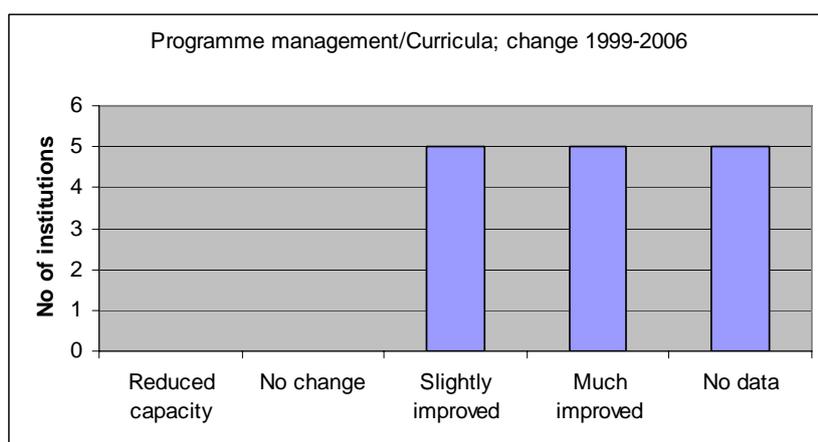


Figure 28. Change in quality of programme management/curricula, 1999-2006.

Indonesia

From 1999 to 2006, there was a shift to competence-based curricula and student-based learning in Indonesian universities. Participatory Curriculum Development (PCD) was used. A tracer study helped identify external factors, i.e. how to match graduates with the job markets. One institution established a Centre for Ecosystem of Agricultural Resources and Agroforestry. In one university, agroforestry was adopted by another department in its revised curriculum. Another university reported having agroforestry as a compulsory course in two departments.

A number of external factors influenced curricula, including regional autonomy, adaptation to increasing economic activities in East Borneo and problems of forestry in Java. The policy dimensions were frequently said to have played a role, including Guidelines from the Directorate General of Higher Education and the Department of Agronomy. Universities had been responding also to the needs of the private sector, including crop estates and mining companies.

Outcomes reported include:

- increase in research topics in agroforestry
- improvement in communication capacity and learning methods
- inclusion of a chapter on reclamation of ex-mining sites in the agroforestry course.

Laos

At the National University of Laos, the process of managing the agroforestry course depended on the personal interest of the lecturer. Most information from SEANAFE/LaoNAFE was in English; this was seen as a barrier due to the lack of proficiency in the language.

At the Luang Prabang college, the course content and field practical exercise had been discussed at LaoNAFE meetings. Results had been applied in the theoretical part of the course. However, the college was unable to conduct the practical part of the course due to the lack of a field site. Practical agroforestry education was restricted to planting trees on the farm around the college

Philippines

The Philippines differs from the other countries in the network in that agroforestry is taught as a full programme or a major in all SEANAFE member institutions. This sets a different scene for curriculum development compared with other countries where agroforestry typically is a course of a few credit hours.

Institutions in the Philippines reported many activities on agroforestry curricula during the period 1999-2006:

- Approval of a new BS Agroforestry programme by the Commission on Higher Education (CHED), and a phasing out of the old agroforestry technology curriculum. (2 institutions)
- Review and revision of the Agroforestry Technology curriculum using a participatory approach via the ASPECTS project in 1999. (2 institutions)
- Formation of review bodies and committees that review curricular proposals
- Curricular revision in 2004 (e.g., realigning and sequencing of courses)
- Preparation of a proposal to unify the agroforestry curricula of the university
- Setting up of a ‘ladderized’ Diploma in Agroforestry, leading to BSc in Forestry, major in agroforestry.
- Creation of an Institute of Forestry and Environmental Management to handle agroforestry and environmental science programmes.

In the Philippines, the work of SEANAFE and PAFERN built on earlier work under the ‘ASPECTS’ project. Three of the four institutions mentioned this earlier influence. A new BSc in Agroforestry curriculum was formulated by CHED’s National Task Force on Agroforestry Education. Two institutions reported having approved the new curriculum. On the other hand, one institution mentioned that two separate programmes still existed in the colleges of agriculture and forestry. They had not yet been unified, and the approval of a proposed a new BSc in Agroforestry programme was pending.

In terms of process, curriculum development workshops were held at the college level. Faculty members prepared curriculum proposals. There were collaboration and consultation with the PAFERN Secretariat and member institutions and with the Task Force on Agroforestry Education. In one institution, a proposal for curriculum revision emanated from the Department of Forestry. The proposal was reviewed by the College Curriculum Committee and the University Academic Council. There were also inputs from the Department of Environment and Natural Resources.

The outcomes reported include:

- A new BSc in Agroforestry curriculum (approved by CHED) is available. (2 respondents)
- In University of Rizal Systems, the general BSc in Forestry curriculum was revised, including majors in forest resources management, forest biological sciences, and agroforestry. In the same institution, six units of agroforestry courses were integrated in the BSc in Agriculture curriculum; a three-unit agroforestry course was likewise integrated in the BSc in Agricultural Engineering programme.

Thailand

Sukhothai Thammathirat Open University (STOU) indicated that agroforestry is an important subject in its School of Agricultural Extension and Cooperatives. Currently, agroforestry is an optional course, but in the new curriculum to be used in the next three years, agroforestry will be made a compulsory subject.

Agroforestry education at Khon Kaen University was influenced by the expansion of the scope of teaching from soil science orientation to a focus on land resources and environment. Knowledge of integrated resource management, including agroforestry, is needed. There was no clear evidence of a specific agroforestry education development process, but a new curriculum on resources and environment was developed.

Rajamangala University of Technology Tawan-ok reported an increase in the number of registered students taking agroforestry. Although there was no evidence of formal curriculum development on agroforestry, the subject still had developed in terms of updated content, new teaching materials and conduct of field visits. The field trips had made the student understand better the theories taught in the class. It also promoted the subject to other students.

Vietnam

All three universities in Vietnam reported positive changes in agroforestry curricula and programmes:

- Forestry University of Vietnam offered a BSc Agroforestry programme starting in 2003.
- Nong Lam University adopted a new programme and obtained teaching materials.
- Tay Nguyen University revised its curriculum and textbook on agroforestry. Also, training and research were combined and field practice was enhanced.

These changes were a response to the need for agroforestry personnel and professionals working in the forest margin areas. The need for training in sustainable resource management was also mentioned.

Both SFSP and SEANAFE were reported to have had an influence on the agroforestry curricula. Both organizations supported workshops on Participatory Curriculum Development for agroforestry, and on developing materials and textbooks. The universities also mentioned SEANAFE's funding support for staff to do research and fieldwork. There were more events for sharing perspectives with other stakeholders. SEANAFE also provided materials.

Outcomes of these changes include:

- University staff conducted a short training course on agroforestry at the grassroots level (district and commune-level extension staff)
- The staff members were in demand as consultants in agroforestry projects
- Curricula and textbooks were updated
- Linkages had been strengthened among training, fieldwork and research.

Networking and linkages on agroforestry education

Regional summary

The status of networking and linkages related to agroforestry education was ‘very good’ in 75 percent of the responding institutions and ‘adequate’ in 25 percent (Figure 29).

Networking and linkages from 1999 to 2006 were rated as ‘much improved’ in 61 percent of the responding institutions and ‘slightly improved’ in the remaining 38 percent. Data were incomplete for Laos and Thailand (Figure 30).

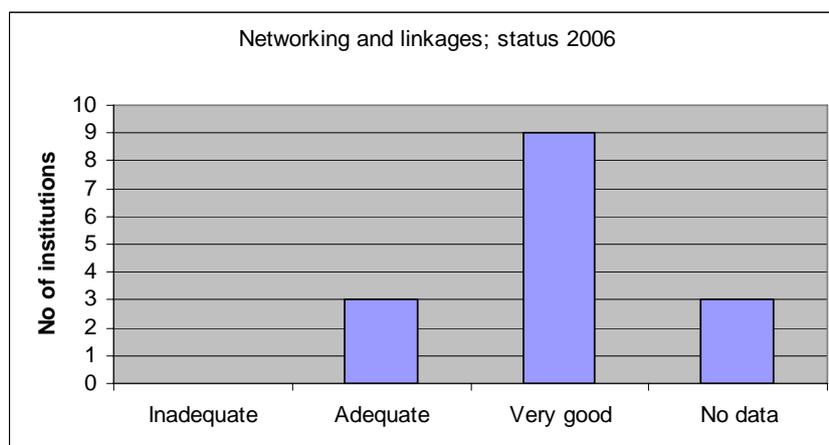


Figure 29. Status of networking and linkages on agroforestry education, 2006.

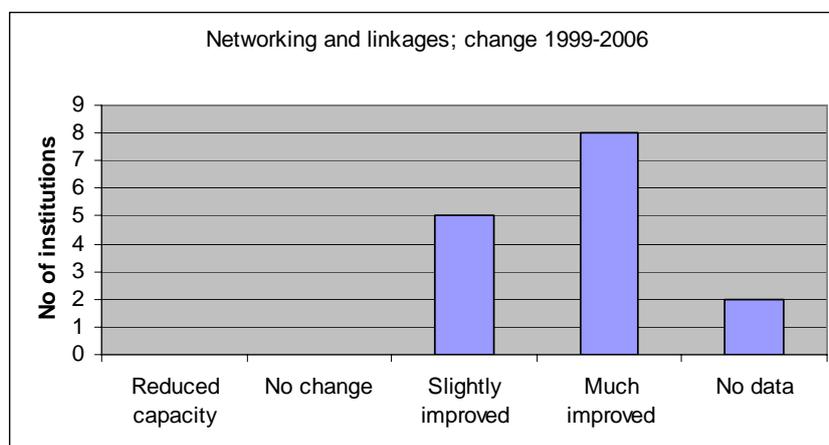


Figure 30. Changes in the status of networking and linkages on agroforestry education, 1999- 2006.

Indonesia

All three Indonesian universities reported a demand for their services in various development projects. One institution had an agreement with NGOs for carrying out activities in the biophysical aspects of agroforestry. Others collaborated with local government units and the private sector (crop estates and

mining companies). University lecturers worked as consultants for rehabilitation projects and nursery establishments.

There was also enhanced cooperation with international organizations, including international research projects funded by ICRAF and the European Union.

Laos

Respondents reported that the status of networking in 2006 was very good and better than the period prior to 1999. SEANAFE and LaoNAFE were seen as a good platform to allow people to get together and share knowledge and experiences. Links had been established with institutions offering agroforestry at the different levels of education. Internally, information and related experiences gained from SEANAFE/LaoNAFE meetings were echoed and shared to all members of the institution.

Philippines

All four institutions in the Philippines described in detail the networks established with colleges and universities in the Philippines and Southeast Asia engaged in agroforestry education programmes. They also reported strengthened linkages with local government units, DENR and people's organizations. Linkages with international organizations such as ICRAF and ACIAR had increased. As one member put it: 'Membership in PAFERN and SEANAFE had widened the networking opportunities of the school. Experiences and exposures of the teaching staff in natural resources management enabled the school to be recognized at the local level.'

Thailand

At Khon Kaen University, the respondents who had participated in ThaiNAFE's activities mentioned that the network was very useful for their career as a source of both knowledge and connections.

Respondents at Rajamangala University of Technology Tawan-ok reported that being a member of SEANAFE/ThaiNAFE was positively correlated to changes in agroforestry education. The exchange of information and collaboration among contact persons of each member institution had created an impact on the development of agroforestry education. The institution also mentioned other connections that influenced the development of the agroforestry subject, such as the network for medicinal plants, local government organization, and the city council.

STOU indicated that the connections established via SEANAFE would be utilized to invite outstanding persons to contribute their knowledge in the revision of a textbook on agroforestry.

Vietnam

In Vietnam, the network enabled the exchange of materials and textbooks as well as of staff among the universities. Universities collaborated in textbook writing, as well as in training, research and information sharing. The role of the national network was recognized, as well as the support from international programmes, including SEANAFE and SFSP.

Results - Part 3: Self-assessment workshop

The third and final step of the impact study was a self-assessment workshop, the objective of which was ‘to assess the institution’s capacity to deliver and develop agroforestry and integrated natural resources management (NRM) programmes.’

The specific objectives were:

- to validate findings from questionnaire survey and interviews with key informants
- to draw lessons learned from SEANAFE’s networking initiatives
- to seek advice on SEANAFE’s future direction.

The study team members facilitated the self-assessment workshops as planned in Indonesia, Philippines and Vietnam,. However, the workshops were not held in Laos and Thailand because of scheduling difficulties. Instead, the consultants interviewed key informants individually and compiled the information obtained accordingly.

Indonesia

Validation of findings from the questionnaire and interviews

The following observations were validated by the self-assessments:

- Networking on agroforestry had grown stronger among universities.
- UNIBRAW and UNUL reported that SEANAFE was not well communicated to the staff within the university. Information mostly reached the faculty leader and the SEANAFE contact person only. Communication between the faculty of agriculture and faculty of forestry was also weak.
- Coordination of agroforestry education within the universities was insufficient. At UGM, there was still a wall among and within faculties, hindering the internal management of agroforestry education. Agroforestry courses at UNMUL were not yet coordinated; instead they continued to be taught independently between faculties.
- Curricula were influenced by a range of external factors. For example, the Directorate of Higher Education (DIKTI) did not provide a ‘slot’ for the development of agroforestry curricula. At UNIBRAW, the contents of curricula were based on ‘Sustainable Agriculture 2003’. Activities to revise or fine-tune the curricula were mostly triggered by other programmes at UNIBRAW, rather than by SEANAFE, e.g., competitive grant programme PHK A2 in soil science department (Year 3) and agronomy department (Year 1).
- Job market for graduates with agroforestry knowledge was not defined at the Ministry of Agriculture (MoA) and the Ministry of Forestry (MoF).
- UNIBRAW said that research grants from SEANAFE were small compared with other opportunities, and therefore not attractive. Human resource capacity at UNMUL was

significantly influenced by long-term projects such as GTZ, Japan International Cooperation Agency (JICA), and Japan Society for the Promotion of Science (JSPS).

SWOT analysis

Strengths

The Indonesian institutions reported the following strengths regarding their agroforestry teaching:

- availability of competent teaching staff members, including PhD holders (all institutions)
- library and field laboratory (UNIBRAW)
- laboratory and a centre for tropical forest rehabilitation (UNMUL)
- textbooks and an ‘agroforestry village’ for education and research on agroforestry (UGM)
- internationally published agroforestry research, which contributed to agroforestry teaching (a long-term research cooperation had been established with other institutions such as ICRAF) (UNIBRAW).

The strengths of the agroforestry curricula include:

- compulsory agroforestry course in the agronomy and silviculture study programmes (UNMUL)
- Introduction of a course already taught in the Faculty of Forestry in the ‘integrated agriculture’ programme; and interest from other faculties to open an agroforestry programme at the graduate school (UGM).
- Increase in the number of agroforestry thesis, indicating growing students’ interest in the subject (UGM).

Several universities observed that agroforestry has been increasingly recognized in the external environment:

- UNMUL has conducted action agroforestry research to rehabilitate ex-mining sites.
- At UGM, local farmer plant forest trees with fodder grass; there is a belief that agroforestry can solve problems related to wood and food demands.

Weakness

- Weak coordination of agroforestry education between faculties, departments and among study programmes, which the university tried to address by establishing a university-level unit for agroforestry (UNMUL)
- Limited funding for research on agroforestry (e.g., no available scholarship for PhD research at UGM) (all institutions)
- Limited facilities for teaching agroforestry, e.g., agroforestry demonstration plots (UNIBRAW), equipment (UNMUL) and access to international journals (UGM).
- Significantly varied educational backgrounds of graduate students taking agroforestry (UNMUL)

- Weak agroforestry curricula; (e.g., only one 3-credit agroforestry course for bachelor's students at UGM; only an elective agroforestry course at UNIBRAW). The reasons behind curriculum issues can be traced to educational policy. Existing curricula in agricultural education are already filled up, so that developing agroforestry education is not flexible. The 'legal aspects for development of agroforestry education' are not yet available either from the Ministry of Education, Ministry of Forestry or Ministry of Agriculture. (UNIBRAW) There is an opinion that agroforestry belongs to the forestry domain, and not to agriculture. This has led to low participation and cooperation of other 'agro-complex' sectors.
- Issues on the actual practice of agroforestry . For example, highly productive agroforestry has not been established and a multi-disciplinary management has not been optimal (UNMUL); planting food crops under the forest stands is not so popular. (UGM); there are policy disincentives regarding agroforestry, and government does not play a significant role in developing agroforestry for communities (UGM).

Opportunities

- Several policy initiatives related to agroforestry development. For example, Community Based Forest Management with agroforestry is being implemented by the Indonesian forest company, *Perhutani*. A programme on 'National Movement for Forest and Land Rehabilitation' has been launched by the government. Also, the move regarding regional autonomy is creating a role for agroforestry, as pointed out by UNMUL. Further, the Directorate of Higher Education has suggested the reduction of the number of programme studies in agriculture, leading to agroforestry curriculum development opportunities.
- Job opportunities related to NRM in the private sector, NGOs, etc. (UNIBRAW).
- UNIBRAW's Faculty of Agriculture is regarded as a 'centre of excellence' in agroforestry education particularly in East Java. UGM saw opportunities to develop cooperation on agroforestry involving the academe and the business and government sectors.
- Increased annual budgets at the province and district levels in East Borneo (UNMUL).
- Environmental benefits from agroforestry through reduction of soil erosion and land degradation and enhancement of the micro-climate.
- Application of agroforestry in unproductive lands (e.g., reclamation of mining sites in East Borneo) and to address frequent occurrence of landslides and flooding (UNIBRAW).
- Enhanced learning of traditional practices and indigenous knowledge from local communities (UNMUL). In Yogyakarta, community forests bring significant benefits to the people and the society. However, internalizing agroforestry at the community level has not yet been successful (UGM). There are local needs for building capacity for natural resource management or agroforestry (UNMUL). At UGM, a staff member commented that the extension service needs better understanding of benefits from agroforestry. Research shows that economic and ecological benefits from agroforestry practices are promising.

Threats

Universities in Indonesia identified the following threats regarding their capacity to develop and deliver agroforestry and integrated natural resource management (INRM) programmes:

A formal job career in agroforestry is not yet identified, particularly in government institutions. Graduates with special skills and knowledge of agroforestry are not yet specifically demanded by employers.

There is competition for students, both among universities with agroforestry education and universities that proactively recruit the best students for their programmes in engineering and medicine, etc. Agroforestry education is not yet on the priority list.

In general, there is a declining interest and quality of students in agriculture and forestry education. The passing grade has been lowered, and competitiveness in agricultural sciences has decreased in general compared with the other sciences.

Policy makers and media lack awareness of agroforestry: For example, decision makers have a poor understanding of agroforestry concepts. Media, on the other hand, portray mostly negative news on the prospects of forestry and agriculture sectors, and tend to describe the success of monoculture plantations rather than agroforestry. The agricultural sector is not yet ready to accept agroforestry concepts, and some people are against agroforestry (UNIBRAW). The long-term sustainable natural resource management needs to be integrated in the policies (UNMUL). The 'revitalization' of agriculture and forestry sectors in Indonesia is not yet realized.

The government's policy to keep importing subsidised food may have a negative impact on agroforestry production. Agroforestry development is hindered by a poor understanding of agroforestry concepts, weak networking, internal conflicts and low commitment of government. Specific institutions dealing with agroforestry are not available.

Environmental threats, such as degradation of natural resources due to increased coal mining in East Borneo and the short-term orientation of local government units towards cash income by granting licenses for forest conversion for mining.

Lessons learned

The Indonesian universities viewed the following as SEANAFAE's most valuable contributions from 1999 to 2006:

- curriculum development on sustainable agriculture, and workshops for agroforestry curriculum development (2 universities)
- literature (2)
- networking and linkages (2). In one case this led to staff development in another network member university for two PhD students.
- demonstration plot support (2)
- staff development.

On the other hand, SEANAFAE activities that did not work so well were:

- writing of lecture notes, because coordination did not work well (2)
- strategic leadership (2)
- research grants
- limited budget for demonstration plots and curriculum development.

Other factors affecting agroforestry education include:

- lack of government support in terms of policy on agroforestry
- competition from other non-SEANAFE programmes that have more attractive conditions
- past big projects at UNMUL (GTZ, JICA) that enhanced institutional capacity, particularly infrastructure
- increased activities on natural resource management, especially non-renewable resources such as coal mining in East Borneo
- competitive research grants from the Ministry of Education.

The respondents gave the following suggestions on how SEANAFE should focus its future assistance:

- SEANAFE activities should aim for wider participation among the staff in the institutions. Lecturers directly involved in teaching agroforestry courses should be nominated to participate.
- Curriculum content needs further attention. Integrated approaches should be enhanced and the focus broadened from agronomy/silviculture to include harvesting and processing of non-timber forest products (NTFPs).
- SEANAFE should offer research grants for BSc, MSc and PhD research. The grants should have a balance between the bio-physical and socioeconomic aspects.
- SEANAFE should assist in the development of off-campus agroforestry demonstration plots, especially on farmer lands with high agroforestry production. Good agroforestry practices at the community level will serve education and research.
- SEANAFE could get involved in public awareness to address the trend of decreasing quality of students.

Laos

Validation of findings from the questionnaire and interviews

Students from both the Faculty of Agriculture, National University of Laos (NUOL) and the Luang Prabang Agriculture and Forestry College (LPAFC) were satisfied with the content of the agroforestry subject. Respondents at LPAFC said that the practical exercises should be increased; students preferred a more practical course but the college had a limited area for that purpose.

The teaching methods at LPAFC were regarded as good but did not cover information on practices in other parts of the country.

Students in both institutions said that the teaching materials were not sufficient for all students. At LPAFC, there were approximately 65 students per class.

At NUOL, the theoretical learning was complemented with a practical exercise involving planting and managing the agroforestry demonstration plot on the FOA campus. However, the university did not

have funds to pay for labourers to take care of the agroforestry plot during semestral breaks when the students are away.

SWOT analysis

Strengths

- In both Lao institutions, most lecturers had good field experiences in agricultural systems.
- LPAFC had the basic infrastructure and access to a farm land for future development. It is suitably located for extension and training for the northern region of the country.

Weaknesses

- Staff capacity was weak in both institutions. The NUOL Faculty of Agriculture did not have a lecturer permanently responsible for the agroforestry subject. The current agroforestry lecturer was a recently recruited junior lecturer holding a BSc degree in agriculture. In Luang Prabang, none of the lecturers had a higher degree in agroforestry; they were all Diploma holders. In both institutions, lack of English proficiency was a serious constraint.
- Both institutions had poor facilities and basic infrastructure. There were not sufficient areas for practical field exercises in agroforestry. Field equipment was not in proper condition. There were not enough books and teaching materials. Funds were insufficient for infrastructure maintenance and for field trips and training of farmers.

Opportunities

- The current curriculum supports the national policy on poverty eradication through appropriate agricultural systems, including agroforestry.
- Connections are good with other various governmental organizations, such as provincial agriculture technical department, local administration organizations, Northern Agriculture and Forestry Research, NGOs, etc.

Threats

- The budget support from government and international donors is insufficient.
- New education institutions in Laos may affect student enrollment. There is also high competition with schools offering other popular programmes.

Lessons learned

Reflecting on the lessons learned from SEANAFE's national and regional network, the Lao institutions suggested the following:

- The administration and management of LaoNAFE should be reviewed and improved. The roles and functions of SEANAFE member institutions were never identified.
- SEANAFE's communication should improve and not only be done on a per activity basis. To keep the member institutions informed, it would be good to have a summary of the network's activities at least every 3 or 6 months.

- The network should expand. Many other government organizations in Laos deal with agroforestry. Expansion of the network to the National Agriculture and Forestry Institute (NAFRI) and other extension organizations would yield good networking.
- SEANAFE should promote the use of teaching materials produced in the previous phase of SEANAFE. Materials relevant to the Lao context should be translated from English into the Lao language.

Philippines

SWOT analysis

Strengths

- Strength of the teaching staff. The three institutions described their staff as ‘strong, capable, well-trained faculty handling agroforestry and INRM programmes (LSU); committed and competent (URS); and trained in agroforestry and related fields (MOSCAT, LSU).’ Staff development programmes were available at LSU and MOSCAT. Expertise and facilities in research and extension were also cited as strengths by two institutions. URS also identified faculty members’ experience and exposure in agroforestry networking.
- Agroforestry curricula. For example, BSU’s BSc Forestry curriculum, major in agroforestry was ‘over and above CHED’s stipulated minimum standards.’ LSU offered new curricula including MSc Tropical Ecology, BSc Environmental Management and MSc Forestry. It also has a unified research, development and extension programme.
- Availability of learning laboratories or land for agroforestry within the campus, such as the ‘Agroforestry Field Complex’ at MOSCAT.
- Presence of a strong leadership and administrative support for agroforestry (BSU and MOSCAT) and good coordination among the staff/faculty (LSU).
- Links and networks. BSU has maintained its close collaboration with the local government units, line agencies, and the academe in the promotion of agroforestry. URS mentioned its strong linkages with various organizations. At MOSCAT, the Diploma and BSc programmes in agroforestry were strengthened by affiliate faculty members from other institutes and by the presence of ICRAF on campus.

Weaknesses

- Decreasing student enrollment (URS and MOSCAT), lack of quality students (BSU) and declining employment opportunities of the graduates, which has made the agroforestry programme ‘not sellable’ (MOSCAT).
- Insufficient number of core agroforestry faculty members (MOSCAT and BSU). URS indicated that its faculty members are highly specialized. BSU cited its staff high teaching load, as a result of which, they lacked time to conduct research and extension. LSU staff had limited opportunities to get involved in research and extension projects, as these were often given to ‘higher authorities.’
- Old curricula, which are no longer responsive to the requirements of the job market (BSU and LSU).

- Inadequate facilities and insufficient funding were cited by all four institutions. Specifically, LSU and URS mentioned the limited funds for agroforestry research, development and extension. LSU lacked funds for establishing and maintaining an on-campus agroforestry demonstration farm, while URS lacked field and laboratory facilities and equipment to enhance students' learning experiences. At MOSCAT, some laboratory equipment needed repair. The school also lacked information and communication facilities. URS had no Internet connection.
- Lack of involvement of other experts and fields/units in the agroforestry programme, and perception of limited impact on communities of the extension programmes (LSU).

Opportunities

The respondents cited many opportunities for the institutions, such as changes in the external environment. These include:

- The awareness of the destructive nature of traditional agriculture (BSU)
- Institutionalizing agroforestry in the programmes of the local government units, so that the region can become a tourist destination (MOSCAT)
- Promoting and adopting indigenous agroforestry practices (BSU)
- Availability of large areas for agroforestry development in the province (URS)
- The government's promotion of agribusiness
- The national concern on agroforestry curriculum development, linked to global and national efforts for sustainable natural resource management. Seminars and convention on agroforestry are being organized by various groups, and there is increasing interest among farmers and farmer-groups in agroforestry (LSU).
- BSU noted the global opportunities for the graduates.
- The new standardised BSc Agroforestry curriculum (URS)
- DENR project areas serving as learning laboratories for agroforestry students
- Existing linkages with local development organizations (LSU) and collaboration with local government units, such as in developing an agro-tourism village on campus (MOSCAT). Collaboration could be expanded with other agencies or with international agroforestry institutions, programmes and networks worldwide, such as ICRAF and ACIAR projects.

Threats

- Declining student enrollment due to competition from new (and popular) courses by other community colleges and urbanization (4)
- Limited employment opportunities for agroforestry graduates and the lack of 'identity' of agroforestry as a profession (3)
- Limited funds, which constrained agroforestry research, development and extension (LSU), as well as limited logistical support from the government (URS)
- Indifference of the political leadership (BSU)

- Limited knowledge and recognition of agroforestry by the policy makers. The absence of a legal basis or instrument for agroforestry areas is an obstacle to implementing sustainable agroforestry projects at the community level (LSU).
- Environmental degradation, ‘squatting’, and inadequate alternative sources of livelihood for traditional farmers are all issues that influence agroforestry education in the Philippines.

Lessons learned

Respondents from the Philippines cited the following as SEANAFE’s most valuable contributions to the country:

- Funding support for undergraduate thesis (BSU and LSU).
- Staff capacity building through various training courses and workshops at national and regional levels, as well as through SEANAFE’s General Meetings and opportunities for ‘field exposure’. Membership in SEANAFE provided opportunities for faculty and staff to be exposed to international networks (MOSCAT). SEANAFE had strengthened the capacity of the faculty members to conduct research in agroforestry (URS).
- Curriculum development, which (1) enabled the university to recognize agroforestry as a separate, independent programme (BSU); (2) initiated the development of an agroforestry education programme (URS) and (3) facilitated curriculum development (MOSCAT).
- Building up of library resources and teaching materials in agroforestry, which have enhanced the delivery of agroforestry courses; and in the case of MOSCAT, financial assistance towards the establishment of the Agroforestry Field Complex.
- Developed interest of key officials and constituents in the agroforestry programme (LSU).
- Widened networks and linkages of the university, which facilitated the promotion of agroforestry in the region and enabled the teaching staff to observe agroforestry practices employed by other institutions (BSU), as well as enabled the school to serve as a zonal centre in agroforestry education and be a participant in the international agroforestry community (MOSCAT).

The following SEANAFE initiatives in the Philippines did not work so well, according to the respondents:

- Network management, particularly the actual operations at the regional/local levels (BSU); the lack of delegation of responsibilities and accountabilities to the members (LSU) and lack of monitoring and evaluation of the SEANAFE/PAFERN-supported projects (LSU).
- Budget, particularly the spreading of a fixed funding support to many schools in the Philippines (LSU) and, in the case of support to research extension projects, restricting the budget support to a limited number of recipient schools (URS).

Regarding possible assistance that SEANAFE may undertake to develop the institution’s future capacity for agroforestry and integrated NRM education over the next 5 years, the respondents gave a long list of suggestions (Table 39):

Table 39. Suggested future directions for SEANAFE in the Philippines

Area of intervention	SEANAFE role
Facilitate resource mobilization	<ul style="list-style-type: none"> • Provide financial support or link universities with potential funding institutions, to strengthen the capacity to deliver agroforestry education, research and extension programmes. • Link PAFERN with funding institutions and other development organizations to sustain the networking initiatives at the national level
Staff capacity	<ul style="list-style-type: none"> • Allocate/provide training programmes for affiliate faculty members
Extension	<ul style="list-style-type: none"> • Organize short-term training courses on agroforestry for the local government units
Teaching materials	<ul style="list-style-type: none"> • Provide textbooks and other teaching materials on agroforestry
Curricula	<ul style="list-style-type: none"> • Integrate entrepreneurship concepts in the curriculum development initiatives
Scholarships for students	<ul style="list-style-type: none"> • Establish a scholarship programme at the undergraduate level
Network management	<ul style="list-style-type: none"> • Closely monitor compliance of member-institutions with the network's policies (i.e., membership fees, annual dues) and initiate resource generation to sustain the network's operations • Provide technical assistance on various areas of agroforestry
Policy advocacy	<ul style="list-style-type: none"> • Enhance its lobbying activities for agroforestry as a distinct discipline • Continue its policy advocacy programmes • Continuously strengthen PAFERN's capability in influencing policies in forestry and natural resources
Entrepreneurship	<ul style="list-style-type: none"> • Establish a facility for soft loans to students who will go into self-employment or agroforestry entrepreneurship after graduation

Thailand

In Thailand, the SWOT analysis was made based on separate interviews with key informants, rather than through self-assessment workshops. The institutions covered were the Department of Land Resource and Environment, Faculty of Agriculture, Khon Kaen University (KKU); the School of Agricultural Extension and Cooperative, Sukhothai Thammathirat Open University (STOU); and the Department of Agriculture and Natural Resource, Faculty of Agriculture, Rajamangala University of Technology Tawan-ok (RUTTO).

SWOT analysis

Strengths

- Good reputation as higher education institutions for agricultural science in the northeastern (KKU) and the eastern (RUTTO) parts of the country
- Good linkages with both local institutions and farmer groups, and at the international level, including international agriculture centres such as the Mekong Institute (KKU)
- Good integrated media producing unit, which could serve the mass communication activities of the network (STOU)

Weaknesses

- Low number of MSc students as well as students in agroforestry (only about 2-3 persons in each class) (KKU)
- Insufficient number of staff; heavy work load of lecturers; no lecturer with agroforestry degree (KKU and RUTTO)
- Teaching methods did not allow having practical courses; limited flexibility to include current agroforestry issues in the school's distance learning system (STOU)
- No agroforestry research (RUTTO)
- Agroforestry not a priority in research and extension policy (STOU)

Opportunities

- The establishment of new curricula on land resources and environment (KKU) and agriculture and environment (RUTTO), which offers opportunities to develop agroforestry-related subjects.
- Curriculum development activities in the near future and possibility for agroforestry to be made a core course (it is currently an optional course). (STOU)

Threats

The threats to agroforestry education in Thailand were policy-related, according to all three respondents. In particular, KKU and RUTTO cited the new regulation of the Commission of Higher Education, Ministry of Education requiring five lecturers per curriculum obstructs the development of new curricula. STOU mentioned the government's lack of a clear agroforestry policy.

Lessons learned

In Thailand, SEANAFE's most valuable contributions were reported to be the network, which comprises outstanding people in various fields of expertise, and the current linkages covering all regions of the country.

Among SEANAFE's initiatives that did not work so well, the respondents cited the following:

- ThaiNAFE, which has not been so active; most of the activities were meetings and 'not implementing.' An initiative to set up joint research activities and to send proposal for funding support to the National Research Council of Thailand was not implemented. (KKU and STOU)
- Selection of the head of the network, who was normally elected from among the 'high performing persons.' However, such person normally has a heavy work load from his/her office, limiting the way he/she carries out his/her responsibilities in the network.
- Lack of communication with the leaders of the institution. KKU and RUTTO cited that there was no regular communication between the SEANAFE contact person and the administrator, except when an activity was to be implemented.
- SEANAFE administration and management, which was not clear for all member institutions; the need for a transparent approach was suggested. One respondent felt that the SEANAFE

technical advisor was not directly involved in implementation, but rather on the controlling side.

Some suggestions were given on possible SEANAFE's assistance in the future as regards network management and research activities:

- Communication among the member institutions should be regular. To keep the university leaders and administrators informed, the respondents would like to have a summary of the situation at least every 3 or 6 months. Through SEANAFE e-News, network communication should be promoted and expanded to include other lecturers within the same department or other departments and faculties.
- RUTTO would like the network to be expanded to other Rajamangala University of Technology campuses. The network should also be promoted to other potential organizations through public relation activities.
- STOU would like to have more meetings per year too facilitate network activities. It was also suggested that ThaiNAFE should conduct a self-assessment.
- ThaiNAFE should pay more attention to joint research activities among the member institutions. The SEANAFE/ThaiNAFE funds for agroforestry research should not be limited to MSc students.

Vietnam

Three self-assessment workshops were held at Forestry University of Vietnam (FUV), Nong Lam University, Faculty of Forestry (NLU) and Tay Nguyen University, Faculty of Agriculture and Forestry (TNU).

Validation of findings from the questionnaire and interviews

Forestry University of Vietnam (FUV) briefly described its history of agroforestry education, as follows:

- In 1992, agroforestry was developed into a subject, having been taught earlier as a part of silviculture.
- The agroforestry subject was revised in 1994.
- In 2003, agroforestry became a major of the BSc programme. An agroforestry department was established in the Social Forestry Training Center; lecturers were recruited and a reading room was set up.

In Nong Lam University, Faculty of Forestry (NLU), most of the teachers were not familiar with SEANAFE, except those who joined VNAFE activities, although scholarships, books supported by SEANAFE, etc. were announced by the faculty leaders. The agroforestry curricula (with 2-unit credits) had not changed for many years. The support from SEANAFE was considered small compared with the support provided by other projects.

In Tay Nguyen University (TNU), the faculty had integrated agriculture and forestry for the past 10 years, but not all forestry staff members had joined VNAFE and other staff members were not familiar with the network, which had a forestry bias. The BSc Forestry programme had only one

agroforestry subject; the faculty plans to develop a BSc Agroforestry programme if there is need for it.

SWOT analysis

Strengths

- Sufficient number of teaching staff at the Social Forestry Training Centre (SFTC). FUV had an SFSP programme on staff capacity building and most lecturers there were young and well-trained. As early as 1993, the NLU Faculty of Forestry had one teacher with agroforestry specialization (MSc level).
- Long-running offering of an agroforestry subject at TNU (since 1992); staff members from multiple disciplines contributed to the Faculty's curriculum development. At NLU, agroforestry is a core subject of the BSc in Forestry programme and a subject of the MSc programme. A new method of curriculum development was introduced to the FUV staff by the SFSP.
- Availability of some funds for agroforestry research at FUV. At TNU, the number of students doing thesis in agroforestry had increased; students and staff conducted joint research.
- Availability of SEANAFE supported books and materials at FUV and Internet connection at TNU, which had increased teachers and students' access to information.
- Leadership support for a change in teaching methods, teaching material development and facilities (TNU).
- Links with international organizations (NLU).

Weaknesses

- Low number of agroforestry teaching staff at NLU; no increase in number of staff at TNU.
- Theoretical approach only to teaching agroforestry and other forestry subjects; agroforestry is biased towards forestry (NLU).
- Lack of agroforestry research experience by the junior staff (FUV); Limited number of teaching staff with experience in agroforestry research (NLU).
- Lack of or outdated teaching and reference materials, especially agroforestry books in Vietnamese; staff and students had English problems, which limited their access to materials; lack of facilities for agroforestry training and field practice and for agroforestry impact assessment.
- Weak sharing of experiences among VNAFE members (FUV) as well as lack of systematic, synthesized data on agroforestry 'models' in Vietnam (NLU).

Opportunities

- Many chances for further staff training (FUV)
- Ability to provide field practice to students and teachers because of location in a forest highland area; some agroforestry books and materials were supported by SEANAFE (TNU).
- The university is on the way to becoming a multidisciplinary university (NLU)

- Addition of an agroforestry subject in the BSc programmes of other faculties (NLU); linkages among VNAFE members for sharing experiences in agroforestry training and research.
- Government's policy support for agroforestry programmes through the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Education and Training (MOET); both ministries have a number of policies and support programmes for agroforestry extension and rural development.
- Community-based forest management with agroforestry and social forestry is also promoted by the government. NLU noted that there is agroforestry development in Vietnam and the region.

Threats

- Lack of an identified career in agroforestry, particularly in government institutions, hence agroforestry graduates have little chance to get formal jobs.
- Because students normally choose courses that lead to modern industry jobs, the number and quality of students who chose forestry programmes have decreased. In addition, other universities have also developed agroforestry programmes.
- Lack of a big government programme on agroforestry research. Agroforestry education is not yet a priority. Many high-ranking leaders in agriculture and other sectors are not yet aware of agroforestry concepts (FUV). Moreover, the monoculture perspective in land-use planning makes agroforestry development difficult (TNU). Forestland-use systems in the mountain areas have changed from household scale to landscape scale (FUV). Also, markets have an impact on agroforestry products. People in the central highland provinces still do not see the effectiveness of agroforestry cultivation (TNU).

Lessons learned

SEANAFE's most valuable contributions

- Improved awareness of agroforestry among staff and students and opportunities for members to attend agroforestry seminars and workshops inside and outside the country (TNU).
- Support to curriculum development (TNU and FUV) and to agroforestry research for teaching staff and students (TNU).
- Improved access to agroforestry literature, by supporting the acquisition and development of agroforestry books and materials.
- Creation of networks and linkages, which has led to increased sharing of experiences among VNAFE members.

SEANAFE's initiatives that did not work so well

Comments on SEANAFE's initiatives that did not work so well focused on specific activities, network strategies and network management.

Regarding activities, the respondents noted the limited budget for literature in Vietnamese, weak support for agroforestry research, some unattractive activities due to limited budget, and limited exchange of staff and students between members.

As regards the national and regional network strategies, they cited the lack of a common strategy on agroforestry among VNAFE partners, weak sharing and linking with other networks, insufficient information sharing among the five participating countries, and the sense of exclusivity of activities to the network members.

In terms of network management, the respondents noted a somewhat weak commitment, obligation and contribution of members towards VNAFE management, the non-participatory nature of some activities and the need to improve the effectiveness and flexibility of management.

External influences

The influence of the Social Forestry Support Programme (SFSP) was acknowledged by all universities. The SFSP programme contributed to Participatory Curriculum Development (PCD) and the development of teaching methods. The other cited influences are:

- non-SEANAFE programmes (e.g., from IDRC, SIDA, GTZ), which competed for the teachers' time
- the new Forest law, approved by the Government in 2005, which affects the universities
- at FUV, the orientation of the agroforestry course was influenced internally by the University and externally by the Ministry of Agriculture and Rural Development (MARD)
- 'the need for agroforestry practice in real situation' (FUV); 'marketing which led to changes in the land use systems' (NLU); and the updated communication facilities at the university (TNU).

SEANAFE's assistance in the future

The Vietnamese respondents identified the following areas for future SEANAFE support, some of which are already being provided by the network:

- staff capacity building activities, particularly for the junior teaching staff (NLU), agroforestry training abroad and regional exchange of staff and students (TNU).
- agroforestry books and materials (NLU).
- sharing and translation to Vietnamese of curricula from other countries in the network;
- agroforestry student theses (NLU).
- information sharing among SEANAFE members, particularly sharing of agroforestry experiences in the region (e.g., through seminars and workshops).
- Increased communication within the network.

Conclusions and recommendations

- There was a positive change in institutional capacity for agroforestry education from 1999 to 2006. But the survey also revealed a huge variation among countries and institutions in the way agroforestry has been taught and curricula had been developed. Access to Internet-based materials and other teaching facilities also varied greatly. National education policies played a key role by either facilitating agroforestry education (Philippines and Vietnam) or constraining it (Thailand). Working at the institutional level only may not be sufficient for change. Country-specific policy advocacy and country-specific objectives and strategies for agroforestry education may be necessary, but should be within the overall umbrella of the regional network objectives.
- Many students in forestry and agriculture faculties took agroforestry courses in 2006. All BSc students in the surveyed faculties in Vietnam (mostly forestry faculties) took an agroforestry course. In the Philippines, Indonesia, Laos and Thailand, and in agriculture faculties in Vietnam, agroforestry has yet to be mainstreamed. The Philippines should determine the agroforestry competencies that general forestry and agriculture students would need, as a complement to the specialized agroforestry programmes offered in the country.
- Bridging disciplines and crossing faculty boundaries remain a challenge, but there are signs that change is under way. For example, the Faculty of Forestry of Nonglam University in Vietnam handles the agroforestry courses for the BSc Business Administration and BSc Resource and Environment Management programmes of the university. In contrast, in some Indonesian members, little collaboration was observed among faculties offering agroforestry courses in the same university. Other SEANAFE members can learn from the experiences of Vietnam in this regard.
- Informal curriculum development – that is, tweaking a course without a formal curriculum review – may be helpful. It can result in rapid introduction of new knowledge, although at a limited scale. For example, informal curriculum development can take place when a teacher, after attending a training event, enriches existing courses using the newly acquired knowledge and methods. This may be a useful approach, particularly in a country like Thailand, which faces policy constraints to developing agroforestry curricula. However, informal curriculum development is hard to measure. On the other hand, if only formal curriculum development is considered, the outcome of SEANAFE’s work would be under-estimated.
- This survey aimed at studying change in institutional capacity as a result of networking. However, in a country like Thailand where policy constraints slowed down the institutional change process, respondents pointed out that SEANAFE’s influence on individual lecturers still was important, for example when they sit in curriculum committees. Such second-level influence, however, is difficult to capture in a study like this one. In such cases, the challenge for member institutions is having mechanisms in place to tap the new knowledge gained by the individuals, and how such mechanisms, if already available, can be improved.
- Working with other partners leveraged the outcome of SEANAFE. In Vietnam, the network’s collaboration with the Social Forestry Support Programme resulted in agroforestry core courses being introduced in all the surveyed institutions. In the Philippines, the earlier ASPECTS project had paved the way for SEANAFE and PAFERN. Such partnerships and

synergies facilitated educational changes in Vietnam and Philippines. In both countries, policies also recognized agroforestry development (as early as the mid-1970s in the case of the Philippines). Building partnerships with like-minded initiatives or organizations can pay a big dividend.

- Competence in both the socioeconomic and bio-physical fields is required in teaching agroforestry. This was not always the case: 39% of the surveyed institutions did not have socioeconomic staff teaching agroforestry. The integration of the different disciplines in agroforestry education requires continued attention by SEANAFE and its member institutions.
- SEANAFE's communication requires attention at several levels. At the regional level, more frequent and regular communication from SEANAFE's Facilitation Unit was requested. Such communication should also be shared much more widely, way beyond the SEANAFE contact persons. Similarly, member institutions need to make or increase efforts to share information on the network within their faculty or department, and with other faculties and departments in the university. Institutions also need to spread or rotate the participation of their staff members in SEANAFE committees and activities: there were three institutions where only 1-2 staff members participated in SEANAFE activities during the seven-year period.
- The impact pathway of a project on educational change has a long time horizon. This study set out to study the impact of SEANAFE seven years after the start of the network. However, the study mostly revealed **outcomes** of SEANAFE. For example, SEANAFE's work on curriculum development generated outputs such as curriculum guides and staff trained in Participatory Curriculum Development. Member institutions used these outputs to review curriculum — this is an outcome. Seven years seems too short a time to be able to assess the entire impact pathway of SEANAFE.
- All institutions, with one exception, indicated SEANAFE's positive influence on their access to teaching materials on agroforestry. Distribution and production of books and teaching materials were a visible and appreciated result of SEANAFE's work. SEANAFE could build on this success to continue influencing its member institutions' access to knowledge. This should be complemented by a strategy to enhance access to Internet-based materials, while paying attention to the needs of institutions with limited Internet access and low band-width.
- The need for more practical, field-based and learner-oriented agroforestry education was consistently expressed by the respondents. Some institutions had taken steps in this direction, but much remain to be done. Innovative approaches to enhancing practical learning of agroforestry should be encouraged, identified, shared and improved.
- Decreasing enrollment and reduced quality of students are serious challenges for the majority of forestry and agriculture faculties in SEANAFE member institutions. Agroforestry students have the additional challenge of not having defined jobs in the government sector. Creative and innovative thinking is necessary to identify new opportunities within a much broader field of integrated natural resource management and the environment. Re-positioning agroforestry education to also cover global and local issues that the young generation cares about could be a way forward.

References

Horton D, Alexaki A, Bennett-Lartey S, Brice KN, Campilan D, Carden F, de Souza Silva J, Le Thanh Duong, Khadar I, Maestrey Boza A, Muniruzzaman IK, Perez J, Somarriba Chang M, Vernooy R and Watts J. 2003. Evaluating Capacity Development. Experiences from Research and Development Organizations around the World. ISNAR/IDRC/CTA. e-ISBN 1-55250-111-6. 188 pp.

Annex 1. Part I Questionnaire

Impacts of the Southeast Asian Network for Agroforestry Education (SEANAFE) on agroforestry education capacity in member institutions

Part 1. Questionnaire on agroforestry education

To the Respondents:

Seven years after its establishment in 1999, the Southeast Asian Network for Agroforestry Education (SEANAFE) is assessing its impacts on member institutions. Have the regional and national networks succeeded in improving the quality and availability of agroforestry education? Have member institutions' capacity to teach agroforestry increased? What indicators can verify such improvement in capacity?

The impact study is carried out during May-June 2006 by a team of four researchers, visiting 15 SEANAFE member universities and colleges in five countries: Indonesia, Laos, Philippines, Thailand and Vietnam. Six non-member institutions will also be asked to participate in the survey, as a 'control'.

The aim of the research is to better understand the process of developing capacity for agroforestry education, and to share this knowledge among academia and policy makers.

The researchers will visit each university/college during two days, to collect data and to meet with staff members for joint reflection on lessons learned.

The Impact Study consists of 3 parts:

Part 1: A questionnaire which would be filled out by a person leading the organization and development of agroforestry education at your Institution, probably the Dean or Vice Dean with responsibility for agroforestry

Part 2: Interview with key informants at the institution, to assess change in institutional capacity related to agroforestry.

Part 3: A self-assessment workshop, facilitated by the SEANAFE researcher, to capture lessons learned and to advise on future directions for the network.

This 3-step method will indicate the impact that **SEANAFE and the national agroforestry education network** has had on the capacity of the member institutions. We ask for your kind assistance to fill out the attached Questionnaire prior to the visit of the SEANAFE researcher to your institution. It will then be further discussed during the visit.

On behalf of SEANAFE we thank you for your contribution to our research.

Sincerely,

Per Rudebjer,
SEANAFE Technical Adviser
Capacity Building Specialist
World Agroforestry Centre (ICRAF), Thailand

Section A. Information on Institution/Faculty

NOTE: Please use a **separate form for each Faculty** offering agroforestry education.

1. Institution/Faculty

Institution:	
Faculty:	
Address:	
Country:	
Tel:	Fax:
Email:	

2. Institutional data

SEANAFE member: <input type="checkbox"/> Yes <input type="checkbox"/> No
Type of Institution (please tick): <input type="checkbox"/> State University <input type="checkbox"/> State College <input type="checkbox"/> Open university <input type="checkbox"/> Technical College
Number of Faculties in University/College:

3. Faculty data

Year of establishment:	Number of Departments:	
Number of Teaching Staff	Male:	Female:
Student population	Male:	Female:

4. Head of Faculty/College

Name:	Title:
Email:	

5. Contact person for agroforestry education

Name:	Title:
Faculty:	Department:
Tel:	Fax:
Email:	

6. Respondent

Name:	Title:
Department:	
Tel:	Email:

Section B. Students

7. Enrollment (refers to all students at the Faculty/College)

Level	Enrollment 2005/2006 academic year, Number	Annual enrollment: Change 1999-2006	Explain reasons for changed enrollment
Certificate/ Diploma	Male: Female:	<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing	
BSc/S1	Male: Female:	<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing	
MSc	Male: Female:	<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing	

8. Graduation (refers to all students at the Faculty/College)

Level	Graduation 2005, Number	Annual graduation: Change 1999-2006	Explain reasons for change in graduation
Certificate/ Diploma	Male: Female:	<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing	
BSc/S1	Male: Female:	<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing	
MSc	Male: Female:	<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing	

Section C. Agroforestry curricula

9. Agroforestry education offered

Type of agroforestry education	Certificate/ Diploma	BSc	MSc
Full agroforestry degree programme	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Agroforestry course/subject	<input type="checkbox"/> Yes, core course <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No	<input type="checkbox"/> Yes, core course <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No	<input type="checkbox"/> Yes, core course <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No
Agroforestry as a topic in other courses	<input type="checkbox"/> Yes, core course <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No	<input type="checkbox"/> Yes, core course <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No	<input type="checkbox"/> Yes, core course <input type="checkbox"/> Yes, optional/ elective course <input type="checkbox"/> No
Thesis in agroforestry	n/a	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

C2 Agroforestry curricula detail

10. Detailed information on agroforestry curricula – CERTIFICATE/DIPLOMA LEVEL

NOTE: for full programmes, do not list individual courses

Name of agroforestry programme or course	Core/ Optional course	Duration (credit hours)	Most recent curriculum review (year)	No of students the past academic year
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:

11. Detailed information on agroforestry curricula – BSc/S1 LEVEL

NOTE: for full programmes, do not list individual courses

Name of agroforestry programme or course	Core/ Optional course	Duration (credit hours)	Most recent curriculum review (year)	No of students the past academic year
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female:

12. Detailed information on agroforestry curricula – MSc LEVEL

NOTE: for full programmes, do not list individual courses

Name of agroforestry programme or course	Core/ Optional course	Duration (credit hours)	Most recent curriculum review (year)	No of students the past academic year
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female: Total:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female: Total:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female: Total:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female: Total:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female: Total:
	<input type="checkbox"/> Core <input type="checkbox"/> Optional	Theory: Practice: Total:		Male: Female: Total:

C3 Curriculum development process

13. Curriculum development process

Did the Faculty review agroforestry curricula after 1999? (please tick)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Year:
Describe the curriculum development method used:		
Which stakeholders participated? (please tick):	<input type="checkbox"/> Employers – private sector <input type="checkbox"/> Employers – NGOs <input type="checkbox"/> Employers – government extension service <input type="checkbox"/> Students <input type="checkbox"/> Former graduates (alumni) <input type="checkbox"/> Farmers/communities <input type="checkbox"/> Policy makers (e.g. ministries of agriculture or education) <input type="checkbox"/> National Research and development organizations <input type="checkbox"/> International/regional R&D organizations <input type="checkbox"/> Others (Specify): _____ _____ _____	
Describe the major changes/innovations in the new agroforestry curriculum in terms of:		
1. Topics (content):		
2. Teaching and learning methods:		

C4 Curricula development influence

14. SEANAFE's influence on curricula

Was SEANAFE's curriculum guide 'A guide to learning agroforestry' used?	<input type="checkbox"/> Yes, the English regional edition <input type="checkbox"/> Yes, the translated national edition <input type="checkbox"/> No
If SEANAFE's curriculum guide was used, please assess it's value:	<input type="checkbox"/> Very useful <input type="checkbox"/> Partly useful <input type="checkbox"/> Not useful
How did membership in SEANAFE influence the curriculum development process ?	
How did membership in SEANAFE influence the curriculum content ?	
How did membership in SEANAFE influence the teaching and learning methods ?	
Please give evidence (examples of results and outcomes) that supports the perception of improved curricula and teaching methods.	

15. Other external influences on curricula

What other external influences (non-SEANAFE) have been important to the Institutions' development of agroforestry curricula 1999-2006?

Section D. Teaching staff

16. Agroforestry teaching staff – number and qualification

Number of Faculty members teaching agroforestry	Change 1999-2006	Qualification (number of staff with respective degree)	Change 1999-2006
Male:	<input type="checkbox"/> Increasing	PhD:	<input type="checkbox"/> Increasing
Female:	<input type="checkbox"/> Stable	MSc:	<input type="checkbox"/> Stable
	<input type="checkbox"/> Decreasing	BSc:	<input type="checkbox"/> Decreasing

17. Agroforestry teaching staff - specialization

Specialization	No. of staff 2006
Agroforestry	
Agriculture	
Forestry	
Rural development	
Sociology/ socio-economics	
Soil science	
Other (describe):	
Explain any major change in agroforestry staff number, qualification and specialization 1999-2006:	

18. Participation of external lecturers in agroforestry courses

Institution providing the lecturer	External lecturer in agroforestry 2005/6
Other Faculty of same University	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other University	<input type="checkbox"/> Yes <input type="checkbox"/> No
Extension organizations (government or non-government)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Research organization (national or international)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other external lecturers (specify):	
Comments (Main provider; Competences provided, etc.):	

D2. Teaching staff influence

19. Participation in SEANAFE activities (lecturers + institutional leaders)

How many lecturers/leaders from the Institution have participated in SEANAFE activities 1999-2006?	Male: Female:
Has the Institution organized/hosted national or regional SEANAFE events?	<input type="checkbox"/> Yes, Regional <input type="checkbox"/> Yes, National/Local <input type="checkbox"/> No

20. SEANAFE's impact on staff capacity

How did membership in SEANAFE influence **staff capacity for agroforestry education**?

Please give **evidence (examples of results and outcomes)** that supports the perception of improved staff capacity:

21. Other external influences on agroforestry staff capacity

What **other external influences** (non-SEANAFE) have been important to the Institutions' development of agroforestry staff capacity 1999-2006?

Section E. Resources: Library and Teaching Materials

22. Library and teaching materials for agroforestry

Aspect	Status
Library resources: reference books on agroforestry	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Library resources: agroforestry journals	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Teaching materials: lecture notes, teaching manuals	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Teaching materials: audio/visual, VCD, slide series, etc	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Field training sites off-campus	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Field training sites on-campus	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Comment on access to library and teaching materials for agroforestry :	
Comment on field practicum access:	

23. SEANAFE impact on library and teaching resources

How did membership in SEANAFE influence the **access to agroforestry publications and information**?

Please give **evidence (examples of results and outcomes)** that supports the perception of improved access to publications and information:

24. Other external influences on library and teaching resources

What **other external influences** (non-SEANFE) have been important to the Institutions' improved access to agroforestry publications and information 1999-2006?

E2. Resources: Others

25. Other resources and facilities for agroforestry education

Aspect	Status
Lecture rooms	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Laboratories and lab equipment	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Teaching aids (OH projectors, slide projects etc.)	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Transport facilities for staff and students	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Financial support (national)	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Donor support (please qualify)	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
Comment on other resources and facilities for agroforestry education:	

26. Information technology and communication facilities

Aspect	Status
Computer access for staff	<input type="checkbox"/> Good <input type="checkbox"/> Some access <input type="checkbox"/> No access
Computer access for students	<input type="checkbox"/> Good <input type="checkbox"/> Some access <input type="checkbox"/> No access
Fax	<input type="checkbox"/> Yes <input type="checkbox"/> No
Internet access	<input type="checkbox"/> Yes, for staff only <input type="checkbox"/> Yes, for staff and students <input type="checkbox"/> No
Type of Internet connection	<input type="checkbox"/> Broadband (high-speed) <input type="checkbox"/> Broadband (slow) <input type="checkbox"/> Dial up
Comment on ITC facilities:	

Section F. Agroforestry extension

27. Agroforestry extension

Describe how the Institution reaches out to farmers and communities (in relation to scaling up agroforestry innovations):

Mechanism for impact on farmers	Yes/No
Graduates' employment	<input type="checkbox"/> Yes <input type="checkbox"/> No
Extension projects under the Institution	<input type="checkbox"/> Yes <input type="checkbox"/> No
Collaboration with/advising extension organizations /projects	<input type="checkbox"/> Yes <input type="checkbox"/> No
Agroforestry demonstration plots/farms on campus	<input type="checkbox"/> Yes <input type="checkbox"/> No
Agroforestry demonstration plots/farms in farmers' fields	<input type="checkbox"/> Yes <input type="checkbox"/> No
Training/short courses for extension staff	<input type="checkbox"/> Yes <input type="checkbox"/> No
Training/short courses for farmers	<input type="checkbox"/> Yes <input type="checkbox"/> No
Extension materials/bulletins targeting farmers	<input type="checkbox"/> Yes <input type="checkbox"/> No
Others (please specify):	
Comment on any change 1999-2006 in institutions ability to reach out to farmers and communities:	

28. SEANAFE impact on Institutions' agroforestry extension work

How did membership in SEANAFE influence the **institutional capacity for agroforestry extension**?

Please give **evidence (examples of results and outcomes)** that supports the perception of improved extension capacity?

29. Other external influences on extension capacity

What **other external influences** (non-SEANAFE) have been important to developing the Institutions' agroforestry extension capacity 1999-2006?

F2. Agroforestry research

30. Agroforestry research

Describe the Institutions' capacity for conducting agroforestry research:

Indicator	Numbers	Change 1999-2006
Faculty members involved in agroforestry research		<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing
Active agroforestry research projects		<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing
Agroforestry theses 2005		<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing
Journal articles on agroforestry published 2005		<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing
Papers on agroforestry presented at conferences 2005		<input type="checkbox"/> Increasing <input type="checkbox"/> Stable <input type="checkbox"/> Decreasing

Comment on any **change 1999-2006** in institutions capacity to conduct agroforestry research.

31. SEANAFE impact on Institutions' agroforestry research capacity

How did membership in SEANAFE influence the **institutional capacity for agroforestry research**?

Please give **evidence (examples of results and outcomes)** that supports the perception of improved research capacity?

32. Other external influences on agroforestry research capacity

What **other external influences** (non - SEANAFE) have been important to developing the Institutions' agroforestry research capacity 1999-2006?

-Thank you for your kind cooperation-

Annex 2. Part II Questionnaire Institutional capacity

Impacts of the Southeast Asian Network for Agroforestry Education (SEANAFE) on agroforestry education capacity in member institutions

Part 2. Organizational capacity for agroforestry education: assessing change 1993-2006

General objective:

To assess change in organizational capacity for agroforestry education during 1993-1998 (before SEANAFE) and during 1999-2006 (being a SEANAFE member institution).

Specific objectives:

- To identify and describe the **key change events** related to the institution's capacity for agroforestry teaching and learning. (What changes occurred?)
- To reflect on and describe the **underlying causes and influences** behind the changes. (Why did it change?)
- To reflect on and describe the **process** used to implement the changes. (How did the institution go about the change?)

Method:

Interview with key informants (e.g. agroforestry lecturer, Head of Academic Affairs).

Background:

The World Agroforestry Centre and University of the Philippines (UPLB), Los Baños conducted a Status and Needs Assessment on agroforestry education in Southeast Asia in 1998. Based on the findings, the Southeast Asian Network for Agroforestry Education (SEANAFE) was formed in 1999. Financial support is provided by the Swedish International Development Cooperation Agency (Sida). How has SEANAFE contributed to change in agroforestry education capacity?

As SEANAFE's founding member institutions already offered agroforestry education in 1999, we are also interested in knowledge about changes during a 6-year period **prior** to SEANAFE.



Figure 1. A model of changes in agroforestry education capacity

Note: 'SEANAFE' refers to **both the regional level of the network and to the national agroforestry education network.**

Conceptual framework:

The interview will be based on a conceptual framework for organizational capacity by Horton et al (2003) (Figure 2).

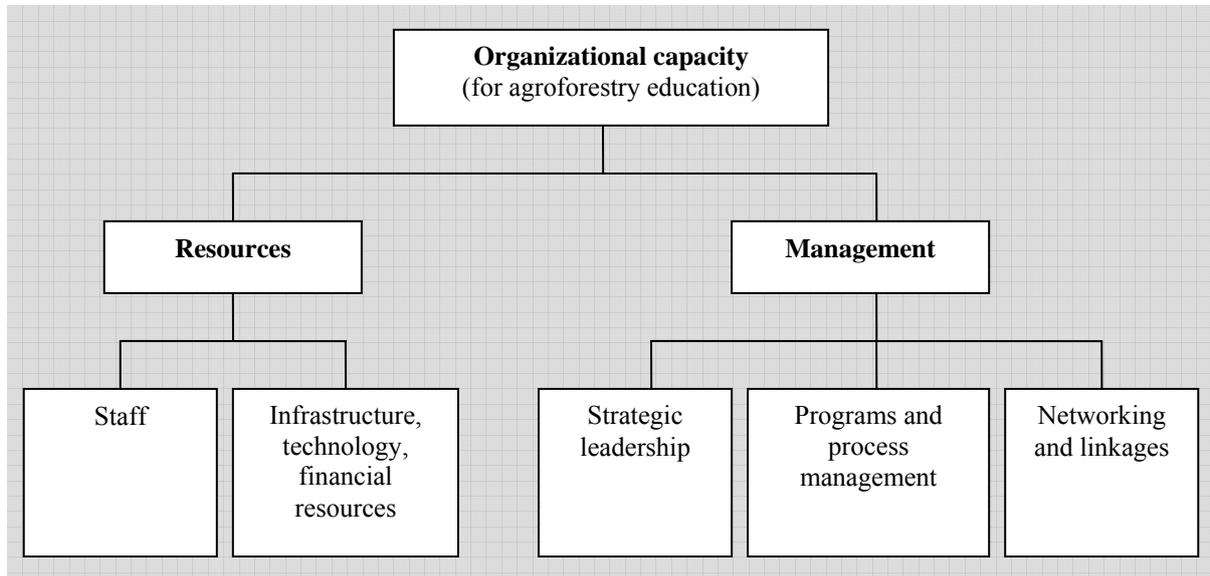


Figure 2. Types of organizational capacity. *(Adapted from Horton et al 2003)*

A. Institution & respondent(s)

Institution:

Faculty:

Date and place for interview:

Key informant 1

Name: Gender: Male Female

Title:

Job position:

Tel:

Email:

Key informant 2

Name: Gender: Male Female

Title:

Job position:

Tel:

Email:

Key informant 3

Name: Gender: Male Female

Title:

Job position:

Tel:

Email:

B. Assessment of change in capacity

I. Staff capacity for agroforestry education

1. Status

Estimated status in 1998 (tick): <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate	Current status in 2006 (tick): <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
---	---

2. Change 1993- 2006

	Change from 1993 to 1998 (before SEANAFE)	Change from 1999 to 2006 (being a SEANAFE member institution)
Change in staff capacity	Change from 1993 to 1998 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity	Change from 1999 to 2006 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly capacity <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity
Describe the key change events related to staff capacity for agroforestry education (<u>What change occurred?</u>)		
Describe underlying causes and influences behind the changes. (<u>Why did it change?</u>)		
Describe the process used to implement the changes. (<u>How did the institution go about the change?</u>)		
Please give evidence (examples of results and outcomes) that supports the perception of improved capacity		

II. Infrastructure, technology and financial resources (supporting agroforestry education) e.g. information and communication facilities, library, teaching materials, laboratories, field plots, etc.

1. Status

<p>Estimated status in 1998 (tick)</p> <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate	<p>Current status 2006 (tick):</p> <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
--	--

2. Change 1993- 2006

	Change from 1993 to 1998 (before SEANAFE)	Change from 1999 to 2006 (being a SEANAFE member institution)
Change in infrastructure, technology & resources	Change from 1993 to 1998 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity	Change from 1999 to 2006 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity
Describe the key change events related to infrastructure, technology and resources (<u>What change occurred?</u>)		
Describe underlying causes and influences behind the changes. (<u>Why did it change?</u>)		
Describe the process used to implement the change. (<u>How did the institution go about the changes?</u>)		
Please give evidence (examples of results and outcomes) that supports the perception of improved capacity		

III. Strategic leadership, related to agroforestry development

1. Status

Estimated status in 1998 (tick) <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate	Current status 2006 (tick): <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
--	--

2. Change 1993- 2006

	Change from 1993 to 1998 (before SEANAFE)	Change from 1999 to 2006 (being a SEANAFE member institution)
Strategic leadership	Change from 1993 to 1998 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity	Change from 1999 to 2006 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity
Describe the key change events related to strategic leadership (<u>What change occurred?</u>)		
Describe underlying causes and influences behind the change. (<u>Why did it change?</u>)		
Describe the process used to implement the changes. (<u>How did the institution go about the change?</u>)		
Please give evidence (examples of results and outcomes) that supports the perception of improved capacity		

IV. Programme and process management for agroforestry education (especially curricula)

1. Status

Estimated status in 1998 (tick) <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate	Current status 2006 (tick): <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
--	--

2. Change 1993- 2006

	Change from 1993 to 1998 (before SEANAFE)	Change from 1999 to 2006 (being a SEANAFE member institution)
Programme and process management for agroforestry education (especially curricula)	Change from 1993 to 1998 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity	Change from 1999 to 2006 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity
Describe the key change events related to agroforestry curricula (<u>What change occurred?</u>)		
Describe underlying causes and influences behind the change. (<u>Why did it change?</u>)		
Describe the process used to implement the changes. (<u>How did the institution go about the change?</u>)		
Please give evidence (examples of results and outcomes) that supports the perception of improved capacity		

V. Networking and linkages with an influence on agroforestry education

1. Status

Estimated status in 1998 (tick) <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate	Current status 2006 (tick): <input type="checkbox"/> Very good <input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
--	--

2. Change 1993- 2006

	Change from 1993 to 1998 (before SEANAPE)	Change from 1999 to 2006 (being a SEANAPE member institution)
Networking and linkages with an influence on agroforestry education	Change from 1993 to 1998 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity	Change from 1999 to 2006 (tick): <input type="checkbox"/> Much improved capacity <input type="checkbox"/> Slightly improved <input type="checkbox"/> No change <input type="checkbox"/> Reduced capacity
Describe the key change events related networking and linkages influencing agroforestry education (<u>What change occurred?</u>)		
Describe underlying causes and influences behind the change. (<u>Why did it change?</u>)		
Describe the process used to implement the changes. (<u>How did the institution go about the change?</u>)		
Please give evidence (examples of results and outcomes) that supports the perception of improved capacity		

Annex 3. Part III. Self Assessment workshop

Impacts of the Southeast Asian Network for Agroforestry Education (SEANAFE) on agroforestry education capacity in member institutions

Part 3. Self-assessment workshop

General objective:

To assess the institution's capacity to deliver and develop agroforestry and integrated natural resources management (NRM) programmes.

Specific objectives:

- To **validate findings** from questionnaire survey and interviews with key informants
- To **draw lessons learned** from SEANAFE's networking initiative
- To **seek advise** on SEANAFE's future direction

Method:

A **self-assessment, facilitated by the researcher**, with key persons in the Institution and with important stakeholders. A conceptual framework for the self-assessment workshop is shown in Figure 1.

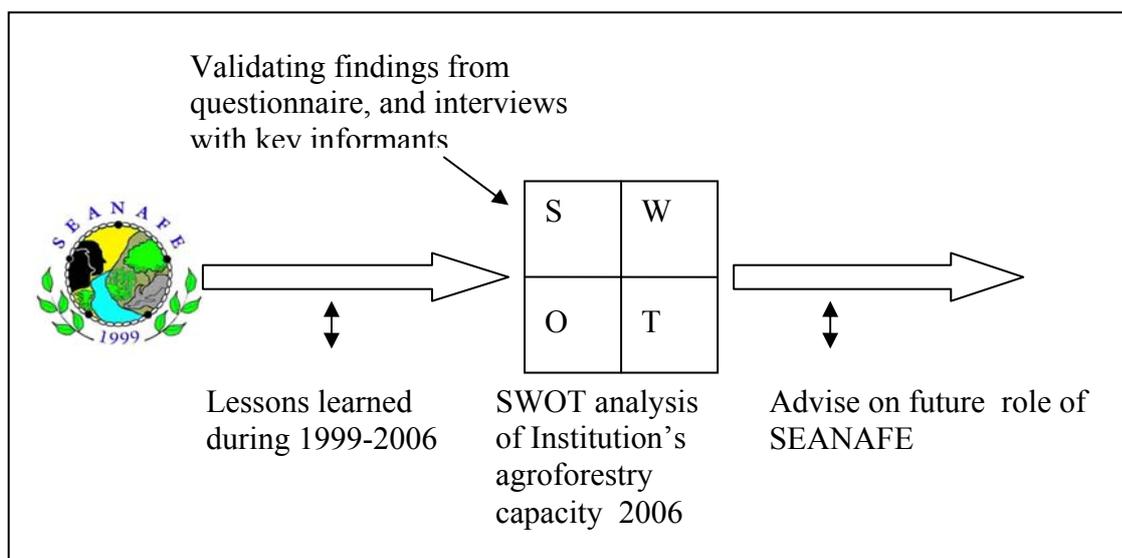


Figure 1. Conceptual framework for self-assessment workshop.

Participants may include:

- Dean + Vice Dean responsible for agroforestry
- Head of Department responsible for agroforestry
- SEANAFE Contact Person
- Students
- Recent graduates (last 5 years)
- Research group on agroforestry

- Lecturers (including social scientists / socio-economists from other university departments/faculties)
- Outside stakeholder (e.g. employer, collaborator in community development activity, local government unit, NGOs, etc.)
(in many institutions, one person will serve several of these functions)

NOTE: Don't forget to prepare list of attendance. Please include list of participants in your report (with information on gender).

The **workshop programme** would include:

1. Introduction
2. Findings from questionnaire and interviews: presentation and discussion
3. SWOT analysis of the institution's capacity to develop and deliver agroforestry and integrated NRM programmes
4. Capturing lessons learned from SEANAFE's national and regional networking efforts
5. Advising SEANAFE on its future direction
6. Closing

Comments on the workshop method

Time: about 3 hours

1. Introduction: (no comments)
2. Findings from questionnaire and interviews: presentation and discussion:

Feedback and validation of results are important part of the impact study. By reporting back to the Institution the findings of the questionnaire and interviews, participants will feel a better 'ownership' of the results. That itself contributes to capacity development!

An open discussion and dialogue on the findings will sharpen the conclusions, thus contributing to validation and 'triangulation' of the results.

Perhaps you could ask the SEANAFE contact person to be the rapporteur in this session?

3. SWOT Analysis:

The SWOT analysis focuses on '**the Institution's capacity to develop and deliver agroforestry and integrated NRM programmes**'.

By 'programmes' we primarily include education. However, research and outreach activities should also be covered if these are part of the institution's mandate.

Strengths and Weaknesses refer to the internal environment, within the institution

Opportunities and Threats refer to the external environment, outside the institution

Use flipchart and cards to first quickly capture participants' views.

S	W
O	T

Discuss the results, clarify any unclear points and add new comments and opinions.

It is a good idea to take a digital photo of the final SWOT analysis.

4. Capturing lessons learned from SEANAFE’s national and regional networking efforts (only for SEANAFE member institutions)

The institution has been a member of SEANAFE since 1999, participating in regional, national and maybe institutional activities. What are the main lessons that the institutions has learned from participation in SEANAFE?

The lessons can be positive or negative. Lessons can deal with products such as materials, curricula and research, or with processes such as policy advocacy, sharing of knowledge and creating new links between institutions and disciplines.

Using cards, ask participants to list:

What are the **most valuable contributions** that SEANAFE has made to the Institution’s quality and delivery of agroforestry education?

What SEANAFE initiatives did not work so well? What should SEANAFE have done differently?

What **other external influences** (non-SEANAFE) have been important to developing the Institutions’ agroforestry capacity?

SEANAFE's most valuable contribution	What SEANAFE initiatives did not work so well?

<p>Other external influences?</p>
--

- Review the responses, clarify unclear points and add new ideas.
 - Try to set priorities, and agree on the 3 most important lessons learned for each category
5. Advising SEANAFE on its future direction (only for SEANAFE member institutions) including best practices and recommendations.

Focusing on outcome of the SWOT analysis, ask the workshop participants:

What are the institutions' **objectives** (in the next 5 years) related to agroforestry and integrated natural resources management programmes? (Use cards to list ideas and set priorities)

What are the institutions' **strategies** to achieve these objectives?

How could **SEANAFE assist** in developing the Institution's future capacity for agroforestry and integrated NRM education, over the next 5 years?

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Who we are

The World Agroforestry Centre is the international leader in the science and practice of integrating 'working trees' on small farms and in rural landscapes. We have invigorated the ancient practice of growing trees on farms, using innovative science for development to transform lives and landscapes.

Our vision

Our Vision is an 'Agroforestry Transformation' in the developing world resulting in a massive increase in the use of working trees on working landscapes by smallholder rural households that helps ensure security in food, nutrition, income, health, shelter and energy and a regenerated environment.

Our mission

Our mission is to advance the science and practice of agroforestry to help realize an 'Agroforestry Transformation' throughout the developing world.



A Future Harvest Centre supported by the CGIAR



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