

Trends in forestry education in Southeast Asia and Africa, 1993 to 2002: preliminary results of two surveys

Surveys of forestry education institutions help prioritize regional forestry education needs.



Reforestation course, Viet Nam

In 2002, FAO, in collaboration with two regional education networks, the Southeast Asian Network for Agroforestry Education (SEANAFE) and the African Network for Agroforestry Education (ANAFE), initiated regional surveys to establish trends in forestry education and training over the preceding ten years. The surveys were intended as a contribution to the prioritizing of regional forestry education needs. In addition to establishing trends in enrolment and graduation,

they also sought to identify changes in the roles of the forester and to relate them to curriculum developments; and to examine the funding situation over the same period.

The surveys were carried out by regional networks, with funding from FAO. Participating institutions responded to a questionnaire survey (see Box); the responses were supplemented by interviews and scrutiny of records and reports. The following articles summarize the results.

Information requested in the surveys of forestry education

Number of forestry graduates in the past ten years

Year of establishment of the forestry programme

Number of forestry graduates in the past ten years, separated by: certificate, diploma, first degree, masters, Ph.D. or equivalent; each of these categories separated by gender

Any other records considered important

Enrolment

Has enrolment been increasing or decreasing, and why (by degree programme level)?

Any additional information that may be useful in interpreting the data

Employment

Identify the ten most important organizations employing graduates in the country, briefly describing the type of work assigned to forestry graduates (by category, e.g. certificate, first degree, etc.)

Any comments on employment conditions

Roles of foresters

List the changes in the roles of foresters in the country over the past ten years, and indicate whether or not curricula have changed accordingly. If so, how? If not, why not?

Comments on resources, facilities and funding for the institution (adequate/inadequate, comments)

Comments requested on the following items: teaching staff; support staff; lecture rooms; library and teaching materials/books; current publications; laboratories and laboratory equipment; teaching aids (computers, projectors, etc.); field training sites; transport facilities for staff and students; financial support (national); donor support (please qualify); communication facilities (e-mail, phone, fax); other

Priority needs

List and explain the five most important needs for the institution.

Southeast Asia

P.G. Rudebjer and I. Siregar

In Southeast Asia, the survey covered 35 institutions in six countries: Indonesia, the Lao People's Democratic Republic (Lao PDR), Malaysia, the Philippines, Thailand and Viet Nam (see Table 1). The study was carried out during May and June 2003 by the Southeast Asian Network for Agroforestry Education (SEANAFE). In each country a national study was carried out by a national study coordinator identified through SEANAFE member institutions.

The six countries vary greatly in terms of size, population, forest cover, history, economic development, etc. These differences are reflected in forestry education. For example, over the ten-year study period, Lao PDR had only 222 bachelor's degree forestry graduates, while the Indonesian institutions had 8 490. Trends valid throughout the region were few. Rather, national trends sometimes moved in opposite directions. Regional averages may therefore be misleading. They were heavily influenced by the Philippines and Indonesia, which have many forestry institutions. Therefore this analysis includes specific national examples whenever relevant.

The 35 institutions surveyed offered among them 63 forestry programmes (professional and technical). Bachelor's degree programmes accounted for 39 percent of the programmes analysed, followed by certificate (23 percent), master's degree (18

percent), diploma (11 percent) and Ph.D. (8 percent) (Table 1).

The sample size per country varied. Indonesia and the Philippines had a larger offering of forestry education programmes than the other countries. In Lao PDR and Viet Nam, most of the important forestry institutions were included in the study. In Malaysia only three institutions were included, but the main university did not respond, which biases the results for that country. In Thailand, only one institution, Kasetsart University, offers formal forestry education.

FORESTRY GRADUATES

A total of 31 325 graduates was reported in the period 1993 to 2002 from the 35 institutions surveyed. Among the sampled institutions, the certificate was not offered in Thailand or Viet Nam. The diploma was not offered in the institutions surveyed in Malaysia, the Philippines or Thailand, while the master's degree and Ph.D. were not offered in Lao PDR (Table 2).

The study indicated that graduation from lower levels – certificate and diploma – is decreasing, while the completion of bachelor's and master's degrees, and to some extent Ph.D.s, is increasing. An exception is Lao PDR, where a national policy to increase admissions to higher education has steeply increased graduation at the certificate and diploma levels. Only in the Philippines is graduation decreasing at all levels.

TABLE 1. Number of institutions and sample size for the study by programme

| Country | Number of institutions | Sample size of programmes | | | | |
|--------------|------------------------|---------------------------|----------|-----------|-----------|----------|
| | | Certificate | Diploma | Bachelor | Master | Ph.D. |
| Indonesia | 11 | 2 | 5 | 7 | 2 | 1 |
| Lao PDR | 5 | 4 | 1 | 1 | 0 | 0 |
| Malaysia | 3 | 3 | 0 | 1 | 1 | 1 |
| Philippines | 10 | 6 | 0 | 9 | 4 | 1 |
| Thailand | 1 | 0 | 0 | 1 | 1 | 1 |
| Viet Nam | 5 | 0 | 1 | 5 | 2 | 1 |
| Total | 35 | 15 | 7 | 24 | 10 | 5 |

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TABLE 2. Forestry graduates 1993-2002 by country, educational level and gender

| Level | Indonesia (n=11) | | Lao PDR (n=5) | | Malaysia (n=3) | | Philippines (n=10) | | Thailand (n=1) | | Viet Nam (n=5) | | Total (n=35) | | |
|--------------|------------------|--------------|---------------|------------|----------------|------------|--------------------|--------------|----------------|------------|----------------|--------------|---------------|--------------|---------------|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M+F |
| Certificate | 713 | 53 | 1 409 | 269 | 500 | 27 | 696 | 810 | 0 | 0 | 0 | 0 | 3 318 | 1 159 | 4 477 |
| Diploma | 2 520 | 894 | 1 346 | 192 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 5 | 3 901 | 1 091 | 4 992 |
| B.Sc. | 6 085 | 2 405 | 191 | 31 | 207 | 218 | 1 394 | 1 226 | 890 | 500 | 5 847 | 1 365 | 14 614 | 5 745 | 20 359 |
| M.Sc. | 248 | 104 | 0 | 0 | 16 | 0 | 148 | 58 | 372 | 131 | 223 | 52 | 1 007 | 345 | 1 352 |
| Ph.D. | 11 | 1 | 0 | 0 | 4 | 0 | 66 | 18 | 16 | 10 | 15 | 4 | 112 | 33 | 145 |
| Total | 9 577 | 3 457 | 2 946 | 492 | 727 | 245 | 2 304 | 2 112 | 1 278 | 641 | 6 120 | 1 426 | 22 952 | 8 373 | 31 325 |

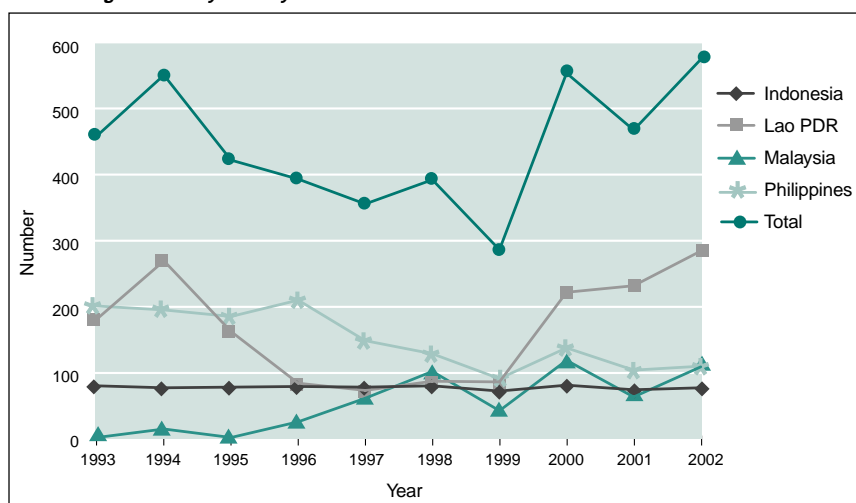
Trends by degree programme

Certificate. In the Philippines, graduation decreased substantially between 1993 and 2002 (Figure 1). Graduation in Indonesia remained stable. In Lao PDR, graduation fluctuated greatly over the past ten years, with a sharp increase in the past three years. Certificate graduation in Malaysia increased with the opening of new forestry programmes. However, the educational level of a certificate in forestry differs among countries, and they cannot be directly compared.

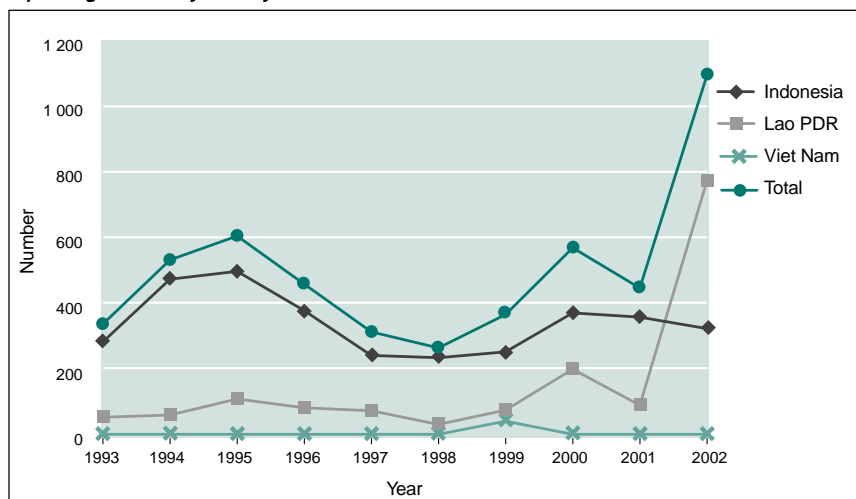
Diploma. After a peak in 1995, the total number of diploma graduates decreased sharply because of a reduction in the number of graduates in Indonesia (Figure 2). An increase was again observed from 1998. The high figure for 2002 is explained by a huge increase in graduates from one single institution, the National University of the Lao People's Democratic Republic.

Bachelor's degree. Overall, the number of B.Sc. graduates doubled from 1993 to 2002, but trends differed among countries (Figure 3). The Philippines and Thailand had a fairly stable output of graduates over the ten-year period. Graduation increased in Indonesia, Viet Nam and Lao PDR. In Viet Nam, a sharp increase in the output of B.Sc. graduates was observed after 1999. In Lao PDR, the first batch of B.Sc. students in forestry graduated as late as 2000.

1
Certificate graduates by country



2
Diploma graduates by country



Master's degree. The largest increase in graduation occurred at the M.Sc. level; graduation almost tripled from 1997 to 2002 (Figure 4). With the exception of the Philippines, all countries offering the degree increased their output of M.Sc. graduates. Again the variation among countries was significant, with Kasetsart University, Thailand accounting for a large proportion of the total increase – having increased from around 20 to 120 M.Sc. graduates per year. The responding institutions in Viet Nam bestowed their first M.Sc. degrees in forestry in 1995.

Considering the large number of B.Sc. graduates in Indonesia and the Philippines, the number of M.Sc. graduates in these two countries was fairly small. In 2002, for example, the Philippines granted 213 bachelor's degrees in forestry versus 17 masters. Indonesia had 947 B.Sc. and 55 M.Sc. graduates.

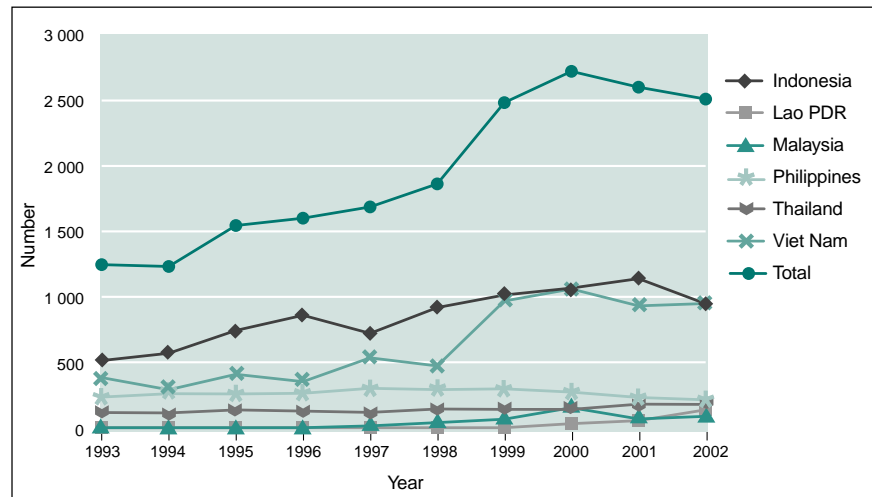
Ph.D. The five institutions granting Ph.D.s (one institution per country, Lao PDR excepted) had a combined total output of 145 graduates during the ten-year period (Figure 5). Some 60 percent of them graduated in the Philippines. Notably, only 12 Ph.D.s graduated in Indonesia during the ten-year period. Overall, the number of Ph.D.s increased, but there were large fluctuations from year to year. Only in Thailand could a clear upward trend be seen. The survey did not cover the many Ph.D.s obtained abroad, so Figure 5 is not an accurate indicator of the availability of Ph.D.-level personnel in the region.

Gender

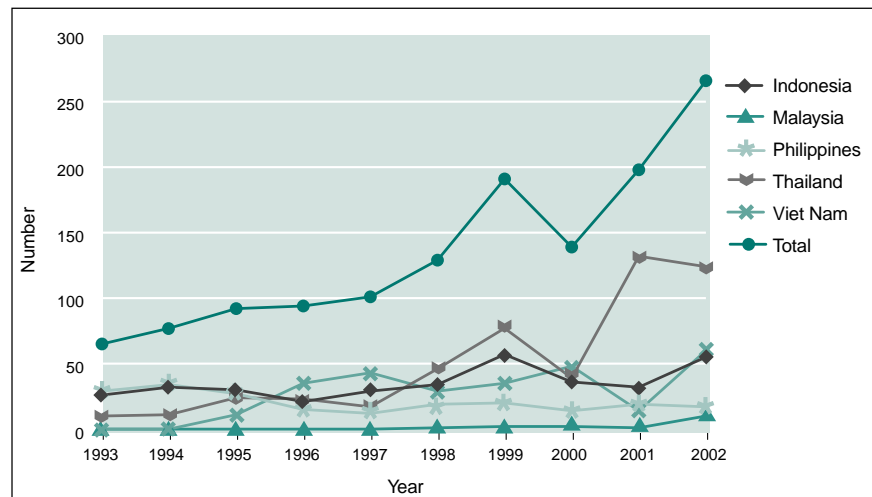
The male/female ratio of graduates varied little among the levels of education, and changed little over the ten-year period. Regionally the study showed roughly between 20 and 30 percent female graduates at the various levels (Table 3).

However, the variation between countries was very significant. The high ratio of fe-

3
Bachelor's degree graduates by country



4
Master's degree graduates by country



male graduates in the Philippines biased the regional average. The Philippines had an almost 50/50 ratio of male and female graduates at the certificate and bachelor's degree levels. Malaysia also had a fairly balanced number of male and female bachelor's degree graduates. Lao PDR and Viet Nam had less than 20 percent female graduates in all their programmes. At the M.Sc. and Ph.D. levels there was less difference among countries, Malaysia being the exception with no female M.Sc. graduates.

ENROLMENT

The survey indicated variation in enrolment trends at the different levels and among countries. Forestry education enrolment was decreasing at all educational levels in the Philippines, while it was increasing in Lao PDR, Viet Nam, Thailand and Indonesia. The sample for Malaysia may have been too small to draw conclusions about enrolment. In Lao PDR and Viet Nam, the increases were linked to government education policies. The recent

dramatic increase in the number of students in Lao PDR is putting great pressure on the limited resources of the country's educational institutions.

The survey showed a trend towards increased enrolment at bachelor's and master's levels and a trend towards decreasing enrolment at the lower levels. Enrolment data per programme indicated the following trends:

- certificate level: sharply decreasing in the Philippines but increasing in Lao PDR;
- diploma: increasing in Indonesia and Lao PDR, decreasing in Viet Nam;
- B.Sc.: decreasing in the Philippines, increasing in all other countries except Indonesia;

- M.Sc.: decreasing in the Philippines, increasing in all other countries;
- Ph.D.: decreasing in the Philippines and Viet Nam, stagnant in Malaysia, increasing in Indonesia and Thailand.

EMPLOYMENT

The survey indicated that forestry employment in Southeast Asia is largely dominated by the public sector. Although the structure of the job market varies among countries, graduates in the subregion generally find employment in various government agencies at the central, district or provincial level. Especially in Lao PDR and Viet Nam, the public sector is the predominant employer. Traditional forestry jobs dominate, such as positions in forest

departments, forest enterprises, research and education. Non-traditional jobs in the public sector – dealing, for example, with environmental issues, national parks, community development, agroforestry – are also available to foresters, and seem to be increasing in importance. In the Philippines, forestry graduates frequently find jobs as “community organizers” under a people-centred development model used in the Philippine extension system.

The private sector is still a small employer of forestry graduates, especially in countries with a relatively low level of economic development. Private-sector employment in forest industries and enterprises is most important in Indonesia, Thailand and Malaysia. Non-governmental organizations (NGOs) were reported to be important employers of foresters in the Philippines and Viet Nam. Self-employment was only reported in the Philippines.

The education level was seen to be important for employability. For example, it was reported that diploma graduates in Lao PDR had difficulties obtaining jobs because employers preferred graduates with higher education.

Although the survey did not quantify employment, anecdotal evidence suggests that unemployment and underemployment in the forestry sector may be high and that many graduates may enter a non-forestry segment of the labour market.

ROLES OF FORESTERS

The roles of foresters were reported to have changed substantially in Southeast Asia over the ten-year period. All countries reported an ongoing shift from traditional forestry towards social and community forestry, agroforestry and environmental conservation. These changes demand competence among foresters in dealing with human aspects of forestry and multidisciplinary and participatory approaches. Most of the responses

5
Ph.D. degree graduates by country

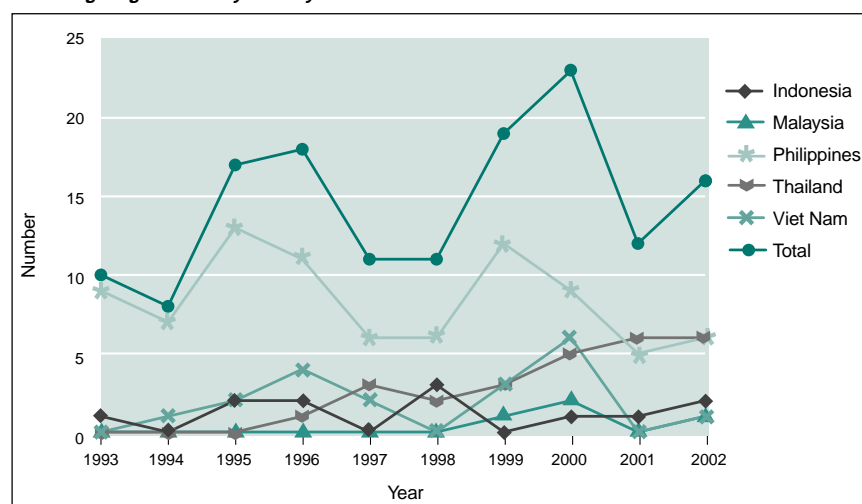


TABLE 3. Graduates by gender, 1993-2002

| Level | Number of graduates | Male (%) | Female (%) |
|-------------|---------------------|----------|------------|
| Certificate | 4 477 | 74.1 | 25.9 |
| Diploma | 4 992 | 78.1 | 21.9 |
| B.Sc. | 20 359 | 71.8 | 28.2 |
| M.Sc. | 1 352 | 74.5 | 25.5 |
| Ph.D. | 145 | 77.2 | 22.8 |

indicated that these changing roles are being included in curricula, both through new courses and programmes and through the revision of existing ones. New directions reported in forestry education include economics, entrepreneurship, wood technology and ecotourism. Indeed, forestry education was found to be in a stage of change throughout the region. Further qualitative studies of curricula and of graduates' competence would be needed to confirm how thoroughly and effectively these changes are being implemented.

RESOURCES, FACILITIES AND FUNDING

The availability of resources, facilities and funding was found to vary a great deal among countries and among institutions. Malaysia reported adequate resources in most areas of the teaching infrastructure. In contrast, Lao institutions reported inadequate resources, facilities and funding in almost every aspect of forestry education.

Institutions in Thailand, Malaysia and Indonesia reported adequate teaching aids. All countries except Malaysia reported needs for library and teaching materials, current publications, laboratory facilities and equipment, transport facilities for staff and students, and financial resources. Only institutions in Viet Nam reported sufficient donor support. All countries except Lao PDR reported adequate support staff, lecture rooms and field sites; all except Lao PDR and Viet Nam reported adequate teaching staff and communication facilities.

PRIORITY NEEDS

The priority needs most frequently reported were:

- curriculum development;
- improvement of teaching and support staff;
- improvement of facilities;
- budget improvement.



Dialogue with farmers: the shift from traditional forestry towards social and community forestry, agroforestry and environmental conservation demands competence in dealing with human aspects of forestry and multidisciplinary and participatory approaches

Forestry or agriculture? Roles of foresters are changing as boundaries blur



CONCLUSIONS

At a time when the forest cover in South-east Asia continues to decrease, enrolment is increasing in most forestry education programmes in most countries except for the Philippines, particularly at the bachelor's and master's degree levels. This raises questions about job opportunities for forestry graduates in a job market strongly dominated by the public sector. Universi-

ties and education policy-makers need to carry out further studies on job markets in order to adapt both the extent and content of forestry education to prevailing and future needs.

Especially noticeable increases in graduation were reported in Lao PDR (certificate and diploma), Viet Nam (bachelor's degree) and Thailand (master's degree). In Lao PDR, this increase



Non-traditional jobs in the public sector – for example, positions as community organizers in the Philippines – seem to be increasing in importance for forestry graduates

is putting great pressure on the limited resources of its educational institutions, raising serious concerns about education quality as well as employment opportunities for graduates. International development cooperation agencies should take note and assist the educational development in the country.

Employment of foresters in Southeast Asia is largely in the public sector, in line with most governments' policies to keep forests and forest land within the State's domain. However, non-traditional jobs, still mostly in the public sector, are growing in importance in a context of dwindling forest resources, increased attention to environmental services and increased importance of trees outside forests in various agroforestry and community forestry arrangements. Other alternative jobs are also appearing in such fields as wood processing, ecotourism, economics and marketing. However, there seems to be an untapped potential to increase the presence of foresters in other private-sector job niches – including non-traditional ones – where competence in natural resource management is an asset.

The roles of foresters are changing in all countries in the region, and these changes are being incorporated in curricula. Yet curriculum development remains the highest priority for forestry education institutions and demands further support from governments, donors and education specialists.

Forestry education institutions in Southeast Asia, and in particular in Lao PDR, suffer from an insufficiency of teaching materials and resources which impairs the quality of education. Government and donor support as well as national, regional and international collaboration could help mitigate these problems. ♦