

BOLOGNA CYCLES 1 TO 3
AND HIGHER FOREST EDUCATION –
OBJECTIVES AND REALITY

Proceedings of the SILVA Network Conference
held at the Saint Petersburg State Forest Academy
Saint Petersburg, Russian Federation
September 14th - 16th, 2011



SILVA Publications 9
2014

Editors

P. Schmidt, G. Müller-Starck, A. Chubinsky, S. Lewark

This book is published at the
University of Freiburg
Freiburg im Breisgau
Germany

Key words: Forestry education, Bologna Declaration, students' mobility,
funding of students' mobility, skills and labour market, status of forestry and
education

ISBN 978-3-00-045046-4

PREFACE

The 2011 SILVA Network annual conference was organised by the Forest Faculty of the Saint Petersburg State Forest Technical Academy, Russian Federation, today Saint Petersburg State Forest Technical University.

We greatly appreciated the highly efficient support of the local organisers of the 2011 SILVA Network annual conference. Dr. Olga Shaytarova, Director of the Congress Department, and Prof. Dr. Alexander Alekseev, Vice-Rector, in close cooperation with Prof. Dr. Andrey Selikhovkin, Rector, did a splendid job. The excursion to the *Larix sibirica* forest, planted 275 years ago in the age of Tsar Peter the Great, was impressive.

The Bologna cycles 1, 2, and 3 stand for the Bachelor of Science (BSc), the Master of Science (MSc), and the doctoral qualification (PhD). The reorganisation of the traditional one cycle curricula, i.e. the reformulation of higher education into BSc and MSc, opened the door for a new dimension of education and corresponding qualification. However, the problems concerning the change from the traditional one cycle curricula to those of BSc and MSc were underestimated considerably. The way higher education institutions in Europe had structured both cycles deviated strongly from each other; BSc graduates in the fields of forestry were not accepted adequately by the job market; and student mobility, which was quite substantial earlier especially with forestry students, did not meet the Bologna targets. Some universities refused even to establish the Bologna cycles 1 and 2 or returned on their steps. Furthermore, regarding the third cycle, i.e. the doctoral qualification, the transition from the first two cycles evidently was not well organised either.

Such developments demand for cooperation between universities themselves and between universities and students in order to take advantage of the educational potential of the Bologna cycles. The SILVA Network is engaged in the improvement of learning and teaching processes in forestry education in its broadest sense and greatly appreciates the participation of students in identifying problems and suggesting solutions here.

Thanks to the authors who submitted their papers and improved them during the reviewing process initiated by the editors. Without the efforts of these authors, no proceedings would exist.

The Editors



Participants of the SILVA Network conference in Saint Petersburg 2011

CONTENT

Summary	Pieter Schmidt	1
Introduction	Gerhard Müller-Starck and Olga Shaytarova	6
A Russian view on the Bologna process	Anatoly Chubinsky and Maxim Chubinsky	8
Forestry education in Turkey and steps towards the Bologna process	Yusuf Serengil and Ahmet Yeşil	14
Effect of the Bologna process on the Hungarian forestry education	András Náhlik	22
Higher education in forestry and the way a PhD track at Wageningen University is organised	Jim van Laar	28
The Bologna process and challenges for students' mobility: Some ideas for progress	Martin Ziesak and Gerhard Müller-Starck	38
The importance of finances for European student mobility – Evidence from the ESNSurvey 2010	Emanuel Alfranseder	44
Employability skills for forestry graduates: Exploring the challenges and prospects for forestry graduates who seek jobs outside the forestry/forest based sector	Desiana Barianti Ahlberg and Siegfried Lewark	50
Learning outcomes and working life: A study in progress	Mika Rekola	58
The present society's point of view on forestry and its impact on the needs of university educated foresters	Jiří Viewegh	67
The SILVA Network embedded in the development of forestry science education in Europe, 1987 – 2011	Pieter Schmidt and Siegfried Lewark	71
Concluding remarks	Siegfried Lewark, Gerhard Müller-Starck and Pieter Schmidt	87
Participants		89

SUMMARY

BOLOGNA CYCLES 1 TO 3 AND HIGHER FOREST EDUCATION – OBJECTIVES AND REALITY

PIETER SCHMIDT

Implementation of the Bologna Declaration and some consequences

In the Bologna Declaration from 1999, the European Council of Ministers of Education formulated the future objectives of the university education and countries and universities started the heavy work to adopt their curricula to the directives formulated in this document. According to Gerhard Müller-Starck and Olga Shaytarova in their introduction to these proceedings, the high expectations after 1999 were not in all aspects fulfilled. For instance student mobility proved to be difficult due to strict regulations in recognition and due to limited course free time periods. Moreover in many countries is the acceptance of the new bachelor degree on the labour market weak or even not existent. During the conference, experiences from a number of countries in Europe were presented, trying to pinpoint according to Müller-Starck and Shaytarova, problems and to suggest solutions. Four papers concern developments in specific countries (Russian Federation, Turkey and Hungary; PhD education in the Netherlands), and two others concern specific subjects (students' mobility).

Around 1995, the Russian universities started to cooperate with universities in Western and Northern Europe, the St. Petersburg State Forest Technical Academy (now University) among the front runners. Anatoly and Maxim Chubinsky stated that in this framework this university experimented already in that time with the implementation of a two-cycle education system. In 2003, the Russian Federation signed the Bologna declaration, with the intention to change to the Bachelor/Master two cycle system before 2010. Universities reformulating their curricula met difficulties, funding proved difficult and the interest in the business community to study the content of the curricula was low as was the willingness to cooperate in practical training. The attitude of university personnel toward changes due to Bologna can be according to the Chubinsky's distinguished into groups: Changes are positive and are coming just in time, changes are positive but are coming too early or changes are negative. Supporters however, succeeded in embedding their views in the 2011 educational standards.

Turkey signed the Bologna Declaration in 2001. According to Yusuf Serengil and Ahmet Yeşil have since then many laws been accepted to adapt to the European Higher Education Area. Technical adjustments have been made by the Higher Education Institutes including the ECTS credit system. Students' participation has been achieved in various levels of administration but quality assurance and

2 Summary

accreditation issues have not been solved at many of the universities. Mobility of the students inside the country is realized by native programmes and ERASMUS and SOCRATES programmes are used widely for international exchange. However, the mobilization of forestry students between forestry faculties in Turkey and European institutes is still a concern due to the fact that on the one hand no undergraduate courses in English are offered at Turkey's forestry faculties and on the other hand the command of English of the Turkish forestry students is also lower than it should be.

Describing the situation in Hungary, András Náhlik stated that due to the historical development of both forestry education at university and at technical level in the field, it is nearly impossible for graduates with a BSc in Forestry to replace the traditionally educated foresters in Hungary, or to find a job in related fields. As the traditional university forestry education did not meet the demands of the Bologna declaration in a sufficient way, the Faculty of Forestry of the University of Western Hungary returned to the former curricula. Analysing five main aspects of the Bologna declaration points, Náhlik comes to the conclusion that these curricula release graduates with easily readable and comparable degrees, that their two cycle system (five years MSc followed by PhD cycle) is relevant for the labour market, that their ETCS system is according to the Bologna requirements, that the same holds for their quality assurance system and that students' mobility and cooperation with other institutes are not hampered by their two cycle system. Hence, their education system concurs with the Bologna Declaration.

PhD education at Wageningen University has expanded substantially in the past decades. According to Jim Van Laar at present five categories of PhD tracks can be distinguished: 1) as research assistant who is a temporary employee of Wageningen University and Research (WUR); 2) as permanent staff member of the WUR is a mid-career step; 3) as Guest PhD candidate with an scholarship, doing their research mainly at WUR; 4) as sandwich PhD candidate doing their research mainly in their home country and 5) as external PhD candidate doing his/her research somewhere, supervised by WUR staff members. Both WUR forestry groups, Forest ecology & forest management and Forest & nature conservation policy, are participating in all of them.

PhD education and research at Wageningen University is organised in six Graduate Schools or Research Schools. Two of them, as Van Laar tells us, are relevant for both forestry chairs: Wageningen School of Social Sciences (WASS) and Production Ecology and Resource Conservation (PE&RC). Both graduate schools have the task to develop and co-ordinate education of PhD candidates, to improve and safeguard the quality of academic research, to stimulate the development of a coherent academic research programme and to act as a national platform within its area. Moreover, both institutions stimulate the development of the candidate's own academic profile, and the necessary skills and competences to successfully conclude their projects.

The Sorbonne Joint Declaration (1998) and the Bologna Declaration (1999) raised expectations of an increase of the mobility of students. According to Martin Ziesak and Gerhard Müller-Starck, studying abroad is very important, especially for forestry students. The ERASMUS student mobility in the EU is an important tool here. However, there are not many cases in which the objectives of these declarations (20% of the students of a curriculum involved in mobility) were fulfilled. Students studying mathematics at the Technische Universität München are a positive exception. Forestry students of this university do not meet this objective. The reasons for this unsatisfactory development are manifold. Incompatible module structures, including large and composed, complex modules, untransferable ECTS credits and no teaching free periods in jam-packed curricula seem to play major roles. Ziesak and Müller-Starck propose maximum flexibility to be integrated in a curriculum, for instance the set-up of a compulsory mobility semester, or of a semester free of obligatory courses. Summer schools can stimulate students' mobility. Moreover permanent partnerships between two universities can help too.

Is students' mobility hampered by lack of funding for students? Emanuel Alfranseder presents results from the ESNSurvey 2010, a European survey conducted annually by the Erasmus Student Network (ESN). Financial support to students' mobility influences the fulfilment of some aims of the Bologna Declaration. More than 8,000 respondents have voiced their opinions on the impact of financial support on their studies. Additional topics cover general satisfaction with the stay and study abroad and the main factors connected with higher satisfaction levels. The findings show that the grant amount influences students' choices of study abroad destinations. Around 10% of the responding students have to worry often or very often about basic living expenses. About one third of respondents would definitively not have studied abroad without financial support while another third is unsure whether they would have opted for studying abroad without financial support. The most important factors correlated with satisfaction with studies abroad are the evaluation of "courses at the host university", "improvements in academic knowledge" and "quality of teaching".

Relation between education and labour market

The relation between the education at university and the demands of the labour market are a traditional subject of the SILVA Network conferences. Two papers address this subject.

Based on a review of relevant literature on employability skills of new forestry graduates through the eyes of recruiters, job markets and employers, Desiana Barianti Ahlberg and Siegfried Lewark focus on the skills which are thought to better promote forestry graduates' employability outside forestry/forest based sector. Their findings in the literature highlight that recruiters, job markets and employers not only expect graduates to have the technical and disciplinary competences from their degrees but also require graduates to demonstrate a range of

4 Summary

broader skills, i.e. the so called generic employability skills. For the graduates, in order to possess these skills, this paper highlights the need for an alternative to the traditional curricula and education. Forestry faculties are encouraged to promote investigative skills and to lay greater emphasis on employability skills like problem solving, leadership and teamwork. Future graduates, according to Barianti Ahlberg and Lewark, need to be able to manage and communicate with a broad range of people with conflicting views and different backgrounds, and to ensure that Higher Education Institutions are providing valuable human resources where they are most needed.

Mika Rekola presents another approach to the relation between education and labour market. Increasing complexity and rapid technical and social changes call for qualified and productive professionals in working life. Human capital theory has stressed the role of education as a productivity enhancing investment. In Finland public policy has emphasized the education not only as a source of economic benefit but also a backbone of social welfare. It is evident that not all education has equal outcomes in terms of increasing knowledge and skills and finally economic productivity. This can be analysed, for instance, using individual level data on education and earnings, which is typically seen as a valid measure for productivity. Rekola presents a productivity model of individuals that consists of four main elements: learning outcomes, working experience during the studies, working experience after the studies, and the relatedness of studies and job. The data collection is to be done later on and empirical results thus not yet available. It is expected that results will provide insight into the relationship of education and later career and thus provide information into university curriculum design.

Status of forestry in societies and the academic forestry education

The 1998 annual conference of the SILVA Network, titled ‘Forestry in changing societies in Europe’, resulted in a book aimed at a teaching module (see Pelkonen *et al.*, 1999). ‘New requirements for university education in forestry’ was discussed during SILVA Network conferences regularly before and after 1998. This indicates that the SILVA Network did not and does not consider education in forestry or in forest sciences as standing alone but as an integral part of society. In these proceedings, two papers address this subject, thus continuing this tradition.

Reporting from the 3rd (annual) Conference of Deans and Directors of European Forestry Faculties and Schools (ConDDEFFS), held in Prague earlier in 2011, Jiří Viewegh summed up their four conclusions: 1) Governments should have a clear forestry policy; 2) Consultations on all curricula with the professional forestry organizations or forest companies; 3) Forest Pedagogy has to be an obligatory subject in MSc curricula; and 4) Try to have Forestry under one EU commission only. Viewegh did not explicitly indicate which actions will be taken by ConDDEFFS members, nor if the SILVA Network should take some action.

In the last paper, Pieter Schmidt and Siegfried Lewark discussed the development of the SILVA Network since its foundation in 1987 till 2011 against the background of the status of forestry in societies and at universities. The SILVA Network has provided and still provides a platform to discuss all aspects of teaching and learning forestry and forest sciences at universities in Europe. Mobility of students and teachers, development of courses and curricula (the joint international MSc programme European Forestry for instance), relation with the labour market, positive and negative aspects of the movement from a one cycle education till MSc level to a two cycle education (BSc and MSc), cooperation between curricula, E-teaching and E-learning, gender issues and the relation between science and practice in the educative aims at universities were discussed more than once during it's conferences.

In the same period, forestry aimed at timber production diminished in importance whereas nature conservation and attention for recreation in forests grew. Not only in countries, where forestry was traditionally less important (Netherlands) but also in countries where forestry was economically really important (Finland, Germany), this phenomenon could be found.

Did curricula change in this period? Schmidt and Lewark say yes. Due to the political decision of the European Council (Bologna declaration) nearly all Western, Northern and Central European universities with a forestry education offered a Bachelor/Master system of curricula. Moreover, quite often forestry was replaced by forest sciences, probably due to a general movement of universities toward science. And words like nature conservation or more often nature management were included in the curricula titles. Here one can see a reflection for the changes in society.

The response of the SILVA Network will be an inclusion of nature conservation and related fields in the topics of one of the next annual conferences.

Conclusion

The Bologna Declaration and the following Bologna Process led to far-reaching changes in the European Higher Education system and hence also for the higher education in forestry and forest sciences. According Gerhard Müller-Starck, Siegfried Lewark and Pieter Schmidt, universities struggled to implement these changes and quite a lot of these were presented during the successive annual conferences of the SILVA Network, including both the advantages and the disadvantages and proposed solutions. The annual conference in 2011 in Saint Petersburg was no exception, helping forestry higher education a bit forward. However, enough subjects remain available to be discussed during coming annual conferences of the SILVA Network.

INTRODUCTION

GERHARD MÜLLER-STARCK AND OLGA SHAYTAROVA

In 1999, the “Bologna Declaration” aimed to establish a new structure of curricula and hence, within the European higher education system, in most universities the traditional diploma was replaced by the Bachelor degree as the first cycle (BSc) and the Master degree as the second one (MSc). Some universities already introduced these two cycles before 1999. This reorganisation of higher education supported greater diversification of curricula and thus offered more specific qualifications as compared to the traditional diploma. At the same time it provided a new dimension to student mobility, because firstly, it allowed to study a BSc at one and the following MSc at another university, and secondly, parts of the BSc or the MSc curricula, respectively, can be studied at another university, and its results be integrated in the transcript of records of the home university.

The necessity for student mobility and for the corresponding recognition of external course achievements has been underlined already two years prior to the “Bologna Declaration”: In 1997, the EU and the UNESCO initiated in Lisbon the “Convention on the Recognition of Qualifications concerning Higher Education in the European Region”. This convention could have been a powerful tool in improving the quality of higher education in Europe via student mobility within each of the two Bologna cycles mentioned above and the third one, i.e. the doctoral qualification.

Unfortunately, the expectations which went with the “Bologna Declaration” were often not met or suffered from substantial delay or dilution. In most cases, Bachelor curricula were not established as an own independent category of higher education but derived from the traditional diploma by means of compression of its curricula and corresponding regimentation. The academic flexibility was cut down in two ways:

- Firstly, with respect to the variety of subjects and modules, respectively, which were offered within the curricula, and
- Secondly, concerning the degrees of freedom in the individual selection of subject/module combinations by the students. As a consequence, the options for student mobility became drastically restricted unless students risked an

involuntary prolongation of their studies up to one year in case they want to spend a term abroad, trying to follow the EU recommendations and targets, respectively.

Other problems arose from the fact that BSc graduates were not accepted by the job market as expected. The hesitant and non-conform development of BSc curricula by the higher education institutions might have increased the critical attitude of the labour market, as formed by employers, looking for top employees. That most of the new BSc curricula were aimed only to prepare students for the follow-up MSc programmes and the refusal of some universities to adopt the two Bologna cycles surely increased scepticism.

Generally, higher education institutions in Europe needed an unexpectedly long time period for adopting the “Bologna Declaration” and offering BSc and MSc curricula. Moreover, the development varied substantially between European countries with respect to the duration of each of the Bologna cycles and its module structure. Already in 2005 (annual meeting in Wageningen) the SILVA Network stressed the possibility that an university can specialize and focus its attention on one or two subjects, and that in this way universities can offer students from all over Europe a palette of subjects each taught by experts.

The 2011 SILVA Network conference tries to identify the most crucial problems and to propose solutions. For instance, why do the BSc curricula suffer from lacking clear profiles in many cases? Why are qualifications of graduates, especially of BSc graduates, not well coordinated with the demands of the job market? Why is students’ mobility not sufficiently supported - although it would help to diversify qualifications and to increase acceptance by the employers, having also in mind small job market niches?

The authors of contributions to this conference addressed cases of non-professional procedures, non-necessary delays and frustrating acceptance by the job market, also from the students’ point of view. Among the problems to be solved, excesses of the portion of traditional lectures are a crucial point. All such topics fit well to the claim of the SILVA Network to improve learning and teaching procedures in the higher education in forestry, and to have in mind the changing demands of the labour market.

The St. Petersburg State Forest Technical Academy (now University) represents well the high quality education standards of several Eastern European countries. Like other higher education institutions in the Russian Federation, the “Bologna Declaration” is approached in a remarkable own way, e.g. by extending the BSc curricula to four years and thus by improving the acceptance of graduates by employers. This is one more good reason for selecting St. Petersburg as location for the 2011 SILVA Network meeting.

A RUSSIAN VIEW ON THE BOLOGNA PROCESS

ANATOLY CHUBINSKY AND MAXIM CHUBINSKY

Abstract

Around 1995, the Russian universities started to cooperate with universities in Western and Northern Europe, the St. Petersburg State Forest Technical University among the front runners. In this framework this university experimented already in that time with the implementation of a two-cycle education system. In 2003, the Russian Federation signed the Bologna declaration, with the intention to change over to the Bachelor – Master two cycle system before 2010. The positive and negative results from a survey among universities, authorities and employers in 2010 are discussed.

Keywords: Higher education, Bologna process, educational standards, Russia

Introduction

The principles of organizing higher education in Europe were laid down in the end of 19th century and confirmed by the middle of 20th century, reflecting the level of the societal development of the time. Tremendous growth of economy, its globalization, scientific-technical progress and creation of information technologies required changes both of the content and organization of higher education, distance learning as an example. This was reflected in the Bologna Declaration aimed at creation of a common education space and elimination of barriers to mobility of both students and teachers. This is also promoted by a number of other factors: development of interstate relations, simplification of the procedure for obtaining permits to study in universities abroad, higher accessibility and speed of receiving information, knowledge of foreign languages, development of the Internet and its use for educational purposes, development of international collaboration of higher education institutions, and creation of networks of universities training students in the same field of expertise (Alekseev, 2010; Shalajev *et al.*, 2010; Kritskaya and Kritskaya, 2010)

Political and socio-economic changes which occurred in the last decade of the past century in the former Soviet Union, have also led to significant changes in the higher education system.

In 1994, 50 Russian universities participated in an experiment of introducing a two-level system of education: Bachelor - Master, while maintaining the existing form of education of engineers. At that time, these changes did not cause a serious adverse reaction in the educational community in universities, especially because it focused on the convergence of Russian and foreign educational systems, active exchange of students and teachers of higher education, teaching methods and

scientific cooperation. These reforms did not anticipate the rejection of education of engineers. The economic situation inside the country was very difficult and changes in education were perceived as a chance for a better life in institutions of higher education of Russia.

Many Russian universities are now beginning to actively participate in international programs and projects, including the programs funded by the European Union.

In 1994, The St. Petersburg State Forest Technical University (former St. Petersburg State Forest Technical Academy, SPbFTA) was among the first 50 Russian universities which transferred to the two level system of education.

At the same time, at SPbFTA, the International Center of Forestry and Forest Industry (ICFFI) was created, based on the order of the Ministry of Education, to promote international cooperation between the Russian forest education system and that of universities of other countries.

Integration of European forestry higher education institutions started with the organization of the SILVA Network in the second half of the 1980s. It should be noted that the history of international collaboration of universities in the forestry area is longer: it existed both in the prerevolutionary Russia and during the Soviet period. St. Petersburg State Forest Technical University named after S.M. Kirov has been an active participant of collaboration with forestry universities around the globe, mainly with Scandinavian Universities, first of all SLU and Joensuu University, Baltic Agricultural Universities, Technical University Dresden, but also universities of USA, Canada, China, Vietnam and so on.

Since 1995 SPbFTA has been taking an active part in the events organized by the SILVA Network and in cooperation based on bilateral and multilateral agreements.

The next stage of international cooperation was the participation of academy projects under TEMPUS-TACIS, coinciding with the active transition on a multilevel system of education in accordance with the principles of the Bologna Declaration. Sequential execution of three EU-funded projects [Continuing Education in Economics for the St. Petersburg Forest Technical Academy (1998-2000); North-West Forest Trainer (2002-2005) and Developing MSc Curriculum in Forest Policy and Economics (2007-2010)] allowed not only to adapt quickly to a two-level system of higher education, but also to create, and to initiate an Innovative Master programme in Forest Policy and Economics (FORPEC), jointly developed by universities from Germany (Technical University Dresden), Sweden (Swedish University of Agriculture Sciences) and Estonia (Tartu University of Life Sciences) and SPbFTA.

In 1999 in Italy, the Bologna Declaration was signed, aimed at creating a common European educational space, which proclaimed a number of principles also important for the Russian higher education system, including the need to increase the mobility of students and teaching staff and to improve the qualification of graduates with respect to the labour market requirements. In September 2003, at the Berlin Conference of Education Ministers of the member states, the Russian Federation joined the Bologna process, committing themselves to the changes to be

made till 2010 in the higher education system in Russia in accordance with the basic principles of the Bologna Declaration (see: bologna.spbu. 2010).

In 2010, the leading Russian universities have developed Federal State Educational Standards. Their creation took into account the principles of the Bologna Declaration, including the competence-based approach of higher education, increased academic freedom of universities for curriculum development, the presence in the educational programme of disciplines at the student's choice, increasing role of self-study, taking into account the workload for credit points and on curriculum level the numbers of credits. On September 1st 2011, all Russian universities changed to a two level system of education: Bachelor - Master.

Different responses of Russian universities

However, today the views in the society related to the Bologna process have undergone several changes, partly because most teachers do not see improvements in the situation at the universities, which have moved in the mid 90s of the last century to a new system of education. Funding was not enough for successful development, let alone for the introduction of modern methods and teaching aids, including IT. Moreover, employers are not interested in bachelors who have a lower competence level than the traditional engineers because of the reduced period of study.

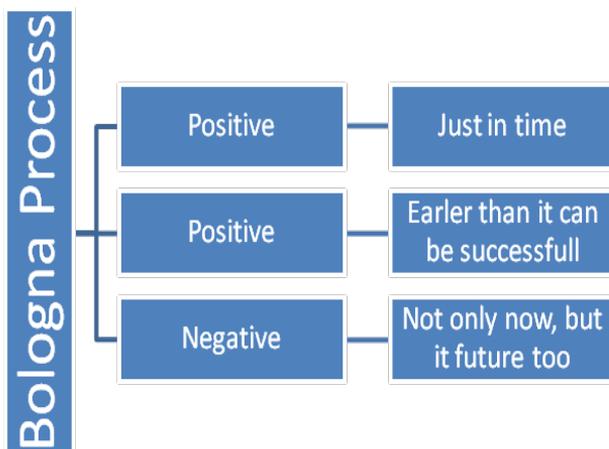


Figure 1: Three main reactions in a survey among personnel of higher education institutes and authorities and employers to the Bologna process in Russia.

The minimal interest in the business community to promote education shows in:

- Low interest of employers in the educational contents of bachelor's and master's study programmes and the included practical training in the field, office, laboratory or factory;
- Virtually no sponsorship of institutions of higher education;

- No acceptance of the system of continuing professional education, including adult education.

An analysis of the views of employees of higher education institutions, public authorities and employers, shows a large spectrum of views on the Bologna process - from excellent to negative. It seems possible to combine these views into three groups (Figure 1).

Positive and just in time

Supporters of the positive evaluation of "just in time", based on the experience of Russian universities with the implementation of the principles of Bologna Declaration, stress the benefits of new forms of organization for the educational process and student learning, stressing also the timeliness of their implementation.

A key issue of the Magna Charta Universitatum (2102) is a list showing how to improve the quality of education by a number of activities, including a competence-based approach, the use of an effective quality management system for education and teachers' research activities.

A competence-based approach aims at developing the students' permanent self-education ability and their ability to use knowledge and skills in all situations in working life. Its application aims at the development of skills of students at three levels (Baidenko, 2009):

- Not only professional but also instrumental level: the ability to analyze and synthesize, decision making, communication in the native and foreign languages, etc.
- Interpersonal level: the ability to work in a team, including the international, the ability to criticism and self-criticism, etc.
- Task related level: the ability to self-education, application of knowledge in practice, initiative, creativity, etc.

These competences are developed through modern forms of education as business games, presentations by students, independently studied sections of the discipline, the use of other interactive forms of learning. An important element of Magna Charta is international cooperation, including both exchange of students (training included) and teachers (to deliver lectures).

Experiences with the implementation of the FORPEC MSc programme show that the use of a competence-based approach for the formulation and implementation of the study programmes increases the students' interest in learning and stimulates acquiring of new knowledge, which in turn positively affects the quality of development of the single disciplines included. This also contributes to the organization for FORPEC students including education in various universities in EU.

12 Bologna Process

Positive, but too early to be successful

Partly their view coincides with that of the supporters of a second look at the Bologna process - «positive, but earlier than it can be successful», who believe that the current level of development of university education in Russia does not allow to implement the principles of the Bologna Declaration. In higher education in forest sciences many elements are poorly developed: information technology training including distance learning, electronic books.

Moreover, low wages for and high average age of university teachers do not encourage the creation and application of innovative training techniques.

The small amount of public funding does not allow upgrading laboratory facilities, so that their technical level is below the level of processing tools used in the industry. One of the major barriers for the implementation of a multi-level system of education is the lack of understanding or unwillingness to understand by the employers (the “consumers” of university graduates) which is the level of the BSc and MSc graduates. With other words: the employers do not trust their ability to implement their knowledge and skills in the workplace. This is the reason why graduates have sometimes problems to find a job.

For enhanced implementation of key elements of the Bologna process, strict government control over the activities of public educational institutions needs to be developed by the Ministry of Education and Science, including a series of documents on international student mobility. Awarding students two diplomas of partner universities does not involve many difficulties when the student is enrolled for some time at a Russian university (not less than 90 credits for a Bachelor degree and 30 for a Master degree) and in one non-Russian European university for the other part of time. In this case there is no problem of studying obligatory subjects within the Bachelor or Master curriculum. The situation gets complicated when Russian and/or foreign students who participated in the master curriculum of one university, want to receive a diploma on the grounds of preparation and presentation of Master's thesis in two partners Universities. This problem has not been reflected in regulatory acts of the Russian Ministry of Education and Science.

Negative: not only now but in future too

Proponents of the third point of view "negative: not only now but in future too" believe that there would be much easier and more cost-effective ways to improve the existing system of technical education, which would have many advantages over the two-level "bachelor-master". One way would relate to the fundamental education: the curriculum includes a large number of natural sciences and engineering disciplines. Indeed, the main objective of the Bologna Declaration is the preparation of specialist skills relevant to the labor market. But technical training is always running behind, new knowledge is created not only in universities and in research institutions, but in industry and practice too. Vocational education is delayed as is the training of engineers graduated from Russian universities and in the preparation of bachelors and masters, graduated from foreign universities: So

there is no need to change the form and terms of training, you need to improve education technology.

A strong argument for the third view and thus negative view on the Bologna process is the clear success of the traditional Russian engineering education, which gave the world many talented scientists and engineers.

Conclusion

Higher education in Russia was in need of reform, because such changes in the world and the country, and the transition to the principles of the Bologna process have given new impulses of development. Supporters believe in a positive change of the inadequate pace of reform since, and their views are embedded in the 2011 educational standards. These changes were not directed before at the development of self education, did not allow to increase the level of academic mobility and there was little freedom of choice of subjects by students.

References

- Alekseev, A.S., Chubinsky, A.N. and Chubinsky, M.A., 2010: International cooperation for improving the quality of education: example of FORPEC//. Pp 26-31 in Brukas, V. and Chubinsky, M.A. (Eds.): Higher forestry education towards common European space. Saint Petersburg / Publishing house of Polytechnic University.
- Baidenko, V.I., 2009: Bologna process: methodological problems of the high education quality. Moscow. Research center of specialists' quality training.
- Bologna, spbu. 2010: www.bologna.spbu.ru. (Addressed January 2010)
- Kritskaya, V.V. and Kritskaya, L.M., 2010: Problems of implementing the provisions of the Bologna process of Russian Universities. Pp 134-138 in: Higher forestry education towards common European space –Saint Petersburg / Publishing house of Polytechnic University
- Magna Carta Inuversitatum. 2012: see http://en.wikipedia.org/wiki/Magna_Charta_Universitatum. (Addressed January 2012).
- Shalajev V.S., Samoldin A.N. and Kchutorova N.A., 2010: Bologna process in vocational education and training: foreign and domestic experience. Pp. 129-133 in: Brukas, V. and Chubinsky, M.A. (Eds.): Higher forestry education towards common European space –Saint Petersburg / Publishing house of Polytechnic University.

FORESTRY EDUCATION IN TURKEY AND STEPS TOWARDS THE BOLOGNA PROCESS

YUSUF SERENGIL AND AHMET YEŞİL

Abstract

Forestry education is crucial to achieve sustainable management of natural resources and national sustainable development goals. A dynamic approach in forestry education is needed as forest policies - and hence the role of foresters - evolve in response to increasing demands for forest goods and services. At all levels, curricula need to be updated continuously to include new topics as the ecosystem services, collaborative management, gender equity, access and benefit sharing, the impact of certification schemes, and participatory learning. In parallel to this, foresters must be given the opportunity to acquire skills outside the traditional realm of forestry - in communication, business administration and management sciences. Efforts are also needed to monitor and assess the ability of institutions to respond as demands evolve. The Bologna process is likely to support the evolution of forestry education in Turkey. The Faculty of Forestry of the Istanbul University as the leading forestry education institute of the country has responsibilities to achieve internationally accepted programmes in line with the Bologna process. In this article we provide a vision of higher education in Turkey and of progress in the Bologna process with the emphasis on forestry education.

Keywords: Forestry education, Bologna process, quality improvement, higher education

Introduction

The higher education capacity of Turkey is expanding every year. In 2006, there were in total 93 universities (68 state and 25 non-profit foundations). As of 2008, the number increased to 130 universities (respectively 94 and 36). This number has risen to 175 in 2013. This fast expansion has led to quality concerns as the number of academicians has not increased parallel to this. Therefore quality of the higher education (HE) system in Turkey has been discussed, in particular for recently founded universities.

To overcome this issue, quality control mechanisms have been employed. Regarding developments on quality assurance (QA), internal QA processes in Turkish higher education institutions (HEI) have been established. In 2007 each university in Turkey started preparing their annual strategic plans according to the "Law on Public Financial Management and Control-No. 5018". As for external evaluation, a number of independent national agencies started to acquire the accredited status of an external quality assurance agency. As an example, the "Association for Evaluation and Accreditation of Engineering Programmes"

(MÜDEK) was awarded the licence for external assessment of engineering programmes on 15 November 2007 and acquired an accredited status as an independent external QA agency. MÜDEK accepted the application of Forestry Engineering programme and developed the accreditation procedure to include forestry recently.

The number of Forestry Faculties has risen in parallel with other faculties. The number of forestry faculties is twelve now while it was one before 1971 and two before 1992. The Faculty of Forestry of the Istanbul University is the oldest and largest forestry education institute. Most of the faculties established later are following the basic structure and education system of this Faculty. Therefore the performance of this Faculty within the Bologna process is observed and followed by the younger faculties. In this article we analyse the weaknesses and strengths of the forestry education in Turkey and try to answer the question if the Bologna process will be able to solve the problems we are facing.

Bologna Process and Higher Education in Turkey

The action lines of the Bologna process have many attributes like:

- Adoption of a system of easily readable and comparable degrees;
- Adoption of a system essentially based on two cycles (BSc and MSc);
- Establishment of a system of credits;
- Promotion of mobility;
- Promotion of European co-operation in quality assurance;
- Promotion of the European dimension in higher education.

The following ones have been added with the Prague and Berlin Communiqués:

- Lifelong learning;
- Higher education institutions and students;
- Promoting the attractiveness of the European Higher Education Area (EHEA);
- Doctoral studies and the synergy between the EHEA and European Research Area (ERA).

The improvements in Turkey due to the Bologna process are controlled by the “Council of Higher Education in Turkey” (CoHE). The “Lisbon Recognition Convention” was signed on December 1, 2004, and this convention has come into force on March 1, 2007. Related changes were made on the “Regulation of Foreign Higher Education Qualifications” in line with the “Lisbon Recognition Convention” and its supplementary documents. In 2007, the Turkish ENIC (European Network of Information Centres)/NARIC (National Academic Recognition Information Centre) Centre, together with the French and Finnish ENIC/NARIC Centres, and the ENQA (European Association for Quality Assurance in Higher Education) started a project on DS (Diploma Supplement, financed by the European Commission's Socrates Programme.

Flexible learning pathways have been promoted via distance education programmes in various fields and in different HEIs. A detailed “National Strategy on Social Dimension” is prepared. The outcomes of EUROSTUDENT survey, which Turkey participated in the third round, became a valuable source for the CoHE to plan new strategies in the area of social dimension. The aim of the EUROSTUDENT project was to collate comparable data on the social dimension of European higher education.

In order to get support for developing policy proposals for implementing the Bologna process, and also to expand the diversity of representatives, the Bologna Follow-up Group under the CoHE was established in 2009. Furthermore, in 2008, a "Bologna Coordination Commission (BEK)" has been established in all HEIs in Turkey.

At country level, it is the responsibility of the upper bodies of higher education, CoHE and the “Inter-University Council” (IUC), to oversee the implementation of the Bologna process nationwide. CoHE is a corporate public body responsible for planning, steering, governing and supervising higher education within the provisions set forth in the constitution of the Turkish Republic and the “Higher Education Law”. The Bologna process has been the top priority on the agenda of the CoHE since Turkey's involvement in the process in 2001. Since then the council has continuously enacted several regulations and set up commissions/working groups to ensure that the implementation of the action lines set forth within the Bologna process is well in place.

The IUC, an academic advisory and a decision-making body composed of rectors and one elected professor of each HEI also assists the implementation of the Bologna Process by creating follow-up procedures in the scope of the regulations enacted by the CoHE and making recommendations for further development and implementation of the process.

In order to increase the coordination capacity and efficiency of the implementations, in 2005 the CoHE has established a new permanent office, the “European Union and International Relations Office” (EUIRO). Its experts are primarily responsible for each main action line of the process. Moreover, they provide support to the CoHE commissions and working groups and HEIs in the work they conduct in relation to the Bologna Process. Currently, three subject experts on Bologna action lines (namely "Recognition", "Quality Assurance" and "Qualifications Framework") and a coordinator are working full time in this unit.

At institutional level, all universities have units responsible for acting as a liaison with CoHE regarding the implementation of action lines. The universities are required to establish an "Academic Assessment and Quality Improvement Board" (ADEK), which is responsible for internal and external quality procedures within their institutions. Most universities have International Relations Offices, which are

responsible of student/academic staff mobility issues within Erasmus Programme and also ECTS/DS procedures.

The two-cycle degree structure had been fully implemented in the Turkish higher education system before Bologna. The structure of Turkish higher education degrees is a two-tier system with an undergraduate and graduate level of study, except for Dentistry, Medicine and Veterinary Medicine programmes which have a one-tier system.

The undergraduate level consists of the Associate's Degree and the Bachelor's Degree. The Associate's Degree is awarded after the successful completion of full-time two-year university study. The Bachelor's Degree is awarded after the successful completion of four-year university study. The graduate level consists of the two years Master's Degree and the four years PhD's/Doctorate Degree. There are two types of Master's programmes: with and without a thesis. The first year of the Master's program is composed of mandatory and elective lectures and a thesis is prepared and defended by the student in the second year. The student receives Master of Sciences degree as the thesis is accepted by the committee.

Third cycle studies are all structured (including both taught courses and independent research) and offered by the graduate schools affiliated to the universities. The total number of doctoral candidates for the academic year 2007-2008 was 34879. The percentage of doctoral candidates to the total number of students for the academic year 2007-2008 was 1.8%, excluding students from vocational higher schools, which are in the short cycle system (Associate degree). The period allotted for the completion of Doctorate Programmes is normally eight semesters (four years). However, while it is possible to graduate in a shorter time, it is also possible to have an extension which is subject to the approval of the graduate school.

According to 2007 statistics, Turkey is on the 19th row in world ranking according to publications in scientific journals. The percentage of GDP spent on research is around 0.7-0.8 %.

Within the framework of the Regulation enacted in 2005, the “Commission Academic Assessment and Quality Improvement in HE” (YÖDEK) has issued standards and guidelines. They defined the processes and indicators necessary for maintenance of the activities for academic assessment and quality improvement in HEIs. These include the main processes of:

- Academic assessment and quality improvement;
- Strategic planning;
- Institutional assessment (self-and environmental);
- Periodic review and improvement.

The processes require all HEIs to perform an annual institutional assessment (including self- and environmental assessments), define and/or review their measurable strategic objectives within the context of their mission and strategic plan. Moreover, they have to review and improve them periodically with the follow up procedures. The self-assessment model as developed by YÖDEK and used by HEIs as a guide for self-assessment exercise within their institutions includes the following areas:

- Inputs (resources and relations);
- Institutional qualities and characteristics;
- Education-training processes;
- Research and development processes;
- Implementation and service processes;
- Administrative and support processes;
- Managerial characteristics (structural);
- Managerial characteristics (behavioural);
- Results (outcomes);
- Higher education mission.

Based on this model, HEIs are expected to prepare their self-assessment reports regularly in January and February and to submit these reports, including evaluation results and a set of 76 performance indicators to YODEK in April. In accordance with these HEIs reports, YODEK prepares a report at national level and submits it to CoHE in May as an input to the national higher education policies and strategies to be developed or for the existing ones to be reviewed.

As regards the level of student participation at institutional level, in accordance with Article 8 of the “Regulation on Academic Assessment at Quality Improvement at Turkish HEIs”, all HEIs are required to include a student representative appointed by the Student Council of the relevant HEI within their “Academic Assessment and Quality Improvement Board” (ADEK). At the national level, one student member appointed by the National Student Council represents the students in the “Commission for Academic Assessment and Quality Improvement in Higher Education” (YODEK) according to the “Amendment to the Regulation on Academic Assessment at Quality Improvement at Turkish HEIs”, published on December 28, 2006. Students shall also participate as full members in external review teams.

Forestry Education in Turkey

Forestry education has a long history in Turkey and there are currently 12 Forestry Faculties (see Table 1) graduating each year around 500 students in undergraduate programmes in “Forestry Engineering” and “Forest Products Engineering”.

Table 1. The forestry faculties in Turkey (www.orman.istanbul.edu.tr, 2012)

Istanbul University	Karadeniz Technical University
Süleyman Demirel University	Kahramanmaraş Sütçü İmam University
Düzce University	Bartın University
Kastamonu University	Artvin Çoruh University
Bursa Technical University	İzmir Katip Çelebi University
Karabük University	Çankırı Karatekin University

The Faculty of Forestry of the Istanbul University is the oldest and leading faculty, graduating approximately 150 forest engineers, 100 forest products engineers and 60 landscape architects each year. The number of students that receive a master's degree is between 30-50 and 20-40 students are awarded a doctoral degree. There is only one graduate program for masters and doctorate which is entitled identical as the undergraduate one: Forest Engineering. The percentage of students that goes on in master's programmes is around 30 percent but only half of them will graduate. There is not a reliable survey on graduated students but according to expert judgement it can be estimated that 80 percent of the students can find a job in government agencies. But in general it will take between one and five years to find a job, due to the government employment policy. The undergraduate and graduate programmes are taught in Turkish but some English courses are given at the graduate level. The faculty is divided in departments according to these three programmes. Forest Engineering is composed of twelve departments, Forest Products Engineering consists of four departments and Landscape Architecture includes three. Five more programmes are offered by the Forestry School which was established recently as part of the faculty. The education at the faculty is conducted with more than 120 lecturers and researchers.

The Forest Engineering programme is a four year study programme with various social, economical and ecological aspects of forestry. The first year of the curriculum is mostly composed of theoretical science courses of physics, mathematics, chemistry and related subjects. The students get a large group of elective lessons as they approach graduation. Field training and internships are also a part of the programme. The 3 and 4th class courses have many field studies. The internships are generally completed at the Forest Service departments. The students also have to complete an undergraduate thesis on the subject they select. This thesis can be theoretical or a practical subject including laboratory or field work. Some students find the possibility to have a part time job in departments of the faculty.

The education duration of four years cannot be changed at the moment due to the actual higher education legislation in charge. This causes the duration of the forestry education not to fit into the regular Bologna cycles. The number of courses given in the undergraduate level is still very high and not modified much in a regular basis. The courses and course materials should be modified and improved in every five to ten years according to changes in trends in forestry.

Lifelong learning is another issue that should be improved in forestry education in Turkey. There are some efforts to attract graduates and also strategies to integrate with the forestry sector but they are not yet matured much. Some short duration programmes and courses are planned for the next years.

Some programmes started recently at the forestry faculties to stimulate mobility. One of the programmes is called “Farabi” which enables students and lecturers to study or teach at another higher education foundation for one or two terms inside the country. This is a good opportunity for students from new founded faculties to visit the Faculty of Forestry in Istanbul. Another recent programme is called “Mevlana” that enables lecturers from abroad to come to Turkey for one year as a sabbatical. In addition to these programs it may also be possible for successful students to change their programmes inside the same university or among universities. Despite these mobility programmes mostly serving inside the country, the exchange of students in undergraduate or graduate level is very limited and needs to be improved.

The forestry education in Turkey has a long history and very qualified lecturers exist, particularly at the old faculties. This makes accreditation easy. Moreover, this is an advantage for the forestry education to adapt to the Bologna process. However, many weaknesses still exist, especially on mobility and lifelong learning.

Conclusions

Turkey is a member of Bologna Process since 2001. Many laws have been accepted since then to adapt to the European Higher Education Area. Technical adjustments have been made by the HEIs including the ECTS credit system. Student’s participation has been achieved in various levels of administration but quality assurance and accreditation issues have not been solved for many of the universities.

Mobility of the students inside the country is realized by native programmes and ERASMUS and SOCRATES programmes are used widely for international exchanges. However, the mobilization of forestry students between forestry faculties in Turkey and European institutes is still a concern because of the fact that no undergraduate course in English is offered at the forestry faculties. The faculties are not chosen by the international students for this reason. The English knowledge of our forestry students is also lower than it should be and only a few of them can attend courses at European universities. However, as the faculties are approaching to the European counterparts and become member of international networks and foundations (IUFRO, EFI, SILVA Network) more mobilization possibilities are expected.

The expectations of government agencies and public from forestry faculties are also very high in Turkey. The Faculty of Forestry of the Istanbul University has a

mission to lead environmental actions and invited to provide suggestions on many environmental issues. The faculty releases reports and its vision on some of the critical environmental problems.

It is anticipated that in near future the forestry faculties in Turkey will have improved the coordination among forestry education, research and extension so that knowledge will be more accessible to all stakeholders. Changes in educational institutions and curricula based on the current and projected development needs of the society require new profiles for foresters. This can be achieved by innovative and interactive methods of teaching and learning (e.g. distance learning and use of new information technologies).

References

www.orman.istanbul.edu.tr, 2012: Web page of Istanbul University, Faculty of Forestry. Addressed September 2012

EFFECT OF THE BOLOGNA PROCESS ON THE HUNGARIAN FORESTRY EDUCATION

ANDRÁS NÁHLIK

Abstract

Due to the historical development of both forestry education at university and at technical level, it is nearly impossible for graduates with a BSc in Forestry to replace the traditionally educated foresters in Hungary, or to find a job in related fields. As the traditional university forestry education did not meet the demands of the Bologna declaration in a sufficient way, the Faculty of Forestry of the University of Western Hungary returned to these curricula.

Keywords: Forestry education, Bologna process, Hungary

Historical background

The history of the Faculty of Forestry situated now in Sopron is already more than 200 years long. In 1807 the Chamber of Royal Mint established the Forestry School within the Mining Academy in Selmechánya (German: Schemnitz) and made Henrik David Wilckens its director. The education of forest specialists began in 1808, when Wilckens taught his first lectures. Shortly afterwards, Wilckens recognised the importance of the technical aspects in the education of foresters and completed the curricula by mechanics, technology and geodesy. The Forestry School was advanced to an independent academic rank in 1840 (for more details see Lakatos, 2013).

Next to the forestry education at university level, the education of forest engineers was started in 1872. The programme took four years and among others contained power station knowledge, road and water construction, dam construction, geodesy, wood technology and mechanics. According to the demands of the practice only forest engineering has been taught since the reorganisation of the education in 1904.

In 1919 Selmechánya (Slovakian: Banská Štiavnica) ceased to be a Hungarian town. It has belonged to Czechoslovakia and therefore the College moved to Sopron in Hungary. Between 1934 and 1957 the study time was four and a half years. Since 1957 up to now the curriculum length is five years.

Steps toward the implementation of the specifications of the Bologna Declaration

The change to the three-cycle degree system has started in 2006 according to the law accepted by the Hungarian Parliament. In the first year all the former degrees

(those similar to diplomas at “Fachhochschulen” and universities in Germany) were replaced by BSc and MSc degrees. The PhD degree was introduced earlier, in the mid 1990s to replace the Soviet-type title “candidate of sciences”. However, some of the former diploma degree programmes of 5-6 years duration were left undivided, e.g. programmes in medicine, pharmacy, veterinary and law.

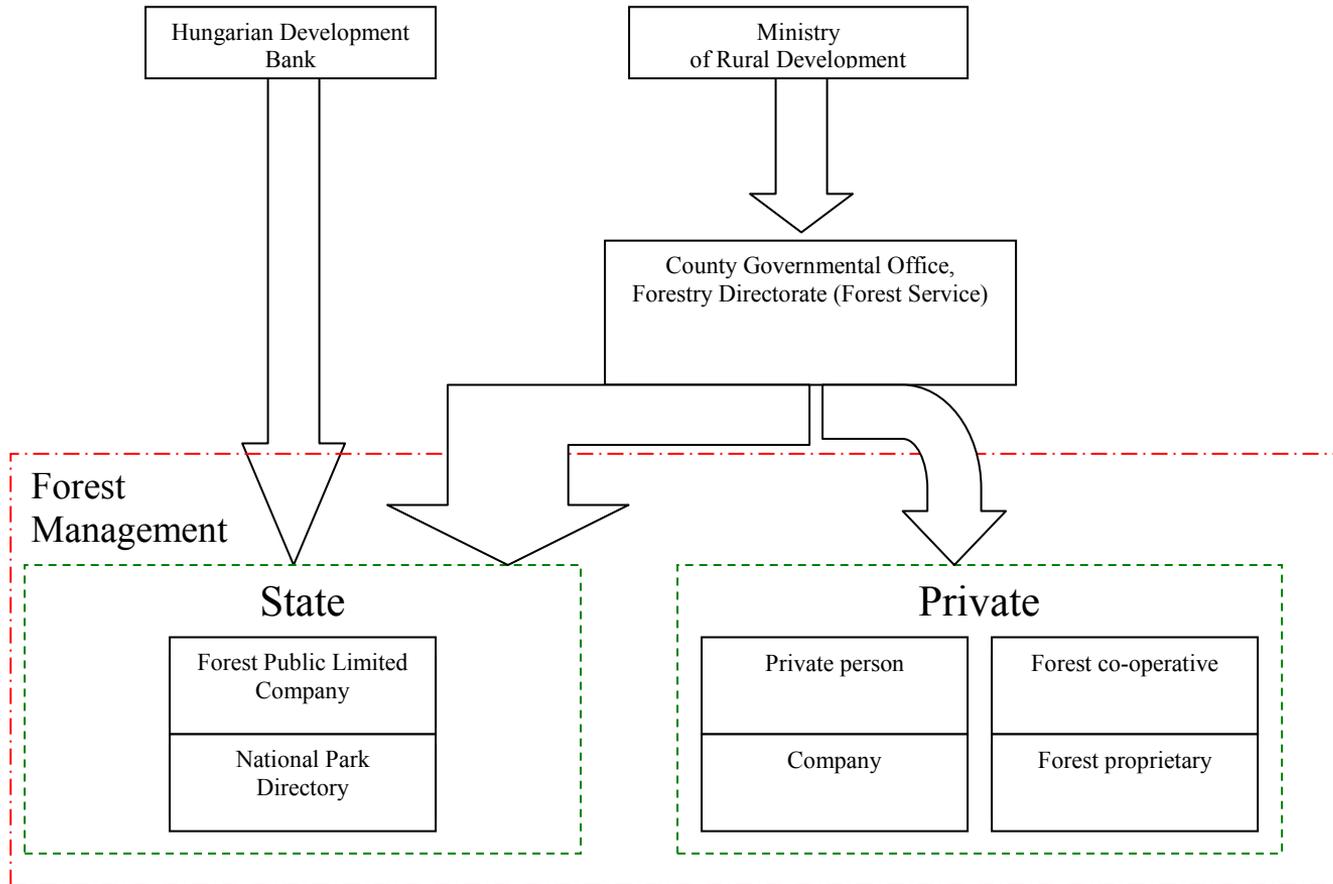
Initially, the university study programme awarded to forest engineers was also in the „package” listed above. However, during discussion in parliament, a wrecking amendment proposed by one parliamentarian was accepted by the majority. The forestry education should be taught in the BSc – MSc format. According to the concept of the ministry responsible for higher education only about 30% of the graduates from a BSc programme (independent of the study programme) are allowed to enrol in the subsequent MSc programme. It meant that 70 percent of the graduates in forest engineering would receive only a BSc degree. This fact was in contrast with the needs of the forestry job market as declared by the forestry associations and companies as stakeholders.

After some years of considering the reality and possibilities, the Faculty of Forestry began the work to re-install the undivided, five-years programme equivalent to an MSc degree. From the start it was emphasized that this reversing in general is in accordance with the concept of the Bologna Declaration as the latter allows some programmes to be undivided. According to the request and support of the Hungarian Forestry Association, the Association of Hungarian Private Forest Owners, the Hungarian Federation of Forestry and Wood Industries and the Trade Union of the Workers in Forestry and Wood Industry and with the support of the Hungarian Rectors’ Conference, the Higher Education Scientific Committee, the Ministry of Agriculture and Rural Development and the approval of the Accreditation Board of Hungary, the Minister of Higher Education signed the statutory rule allowing the faculty to reverse to the undivided 5-years duration programme. This whole process, including the lobby activity, took more than two years.

Why does the BSc forest engineering programme not meet the needs of the job market?

To understand the reaction of the stakeholders in the job market of forestry let us first discuss the draft scheme of the forest management system in Hungary (see Figure 1).

Figure 1 (next page): The forest management system in Hungary.



The whole number of active forest engineers (working according to their qualification), indifferent of sector approaches 1600 individuals, app. 500 of them working in forest administration (including forest planning and National Park directorates), while the rest is working in forest management and in related areas: agriculture, wood industry, geodesy, road and water construction, nature conservation, environmental engineering etc.). The number of active forest technicians is 5,000 individuals and 3,000 of them work in forest management. The number of trained forest workers is 12,000.

In the state forest companies and National Park directorates are 5,500 employees, out of them 1,200 technicians, 1,200 forest engineers, the remaining are administrative staff. In the private sector only 30 forest engineers, 1,500 technicians, 17,000 trained workers are employed. Overall most of the felling and silvicultural work is done by workers from private companies. Only few forest workers are employed by some of the state companies. 3,500 persons are involved in public work financed by the state (Horváth, 2011).

As it is obvious from the data above, the most important employers of forest engineers in Hungary are the Forest Public Limited Companies which manage 46% of the Hungarian forests. The Forestry Directorates which act as authorities and forest planning offices are important employers as well.

Regarding the scope of their activities, forest engineers working in the state forest companies manage the work in silviculture, tree harvesting, transport, including forest road construction, water construction and utilization and protection against floods. Forest engineers working in the state administration are involved in forest planning and forestry administration doing governmental control. Forest engineers working in private forest sector manage the work in silviculture, forest harvest, transport, and preparing tree harvesting plans.

As can be seen the scope of the activities of a forest engineer, independent of the sector, is very complex, and it includes also work which can be done only based on highly qualified technical knowledge. On the other hand the operational guidance and local control of forest work is performed mainly by technicians. A forester with a bachelor degree wouldn't be able to perform the complex work of the forest engineer, and on the other hand his or her chance to find work in related areas (e.g. geodesy or road construction) would be practically non-existent. Moreover it was a risk to displace technicians from the job market. This change would have distracted the traditional structure of forestry and forestry job market.

Does the Hungarian forestry higher education fit the Bologna objectives?

Hungary signed the Bologna Declaration. But the question is: what is exactly the Bologna Concept and does the forestry education programme fit in or not? Let us

see the main statements of the Bologna Declaration (emphasis (bold) added by the author, comments in italic):

- “Adoption of a system of **easily readable and comparable degrees**, also through the implementation of the Diploma Supplement, in order to promote European citizens employability and the international competitiveness of the European higher education system.”
*After five years of study we release graduates with a master degree which is certainly **comparable** to the master degree obtained after three years BSc Forestry and two year MSc Forestry. Forest engineering is a very special programme with much practical work. Hence we do think that the master degree cannot be attained by studying two years forestry as a superstructure on a bachelor degree in other programmes (e.g. agriculture or biology). This being the case, there is no sense to split the 5 years programme.*
- “Adoption of a system essentially based on **two main cycles**, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle **shall also be relevant to the European labour market** as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries.”
*Most of our programs in Hungary are based on two cycles (undergraduate and graduate). But just like in many other countries which signed the Bologna Declaration there are some exceptions which retained undivided master programmes. This is not in contrast with the Bologna Declaration. And indeed, **our second cycle leads to a PhD degree** according to the concept. On the other hand we do think that – as outlined above – the programme also should fit the **requirements of the labour market** and – as we would emphasize – also the traditions of the higher education in the respective country.*
- “Establishment of a **system of credits** – such as in the ECTS – as a proper means of promoting the most widespread student mobility. Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognized by receiving Universities concerned.”
The faculty established the ECTS which promotes mobility and part time studies of the students just like in other countries with undivided programs.
- “Promotion of **European co-operation in quality assurance** with a view to developing comparable criteria and methodologies.”
The faculty does not see any obstacles to quality assurance in our system.
- “**Promotion** of the necessary European dimensions in higher education, particularly with regards to **curricular development, interinstitutional co-operation, mobility schemes and integrated programmes of study, training and research.**”
All the criteria underlined are to be realized in our undivided program which is clear from our data/statistics regarding mobility and cooperation with other institutions.

Discussion and conclusion

The Bologna Declaration also emphasized the intention to take full respect of the diversity of cultures, languages, national education systems and of university autonomy – to consolidate the European Area of Higher Education. The signing parties are convinced that the establishment of the European Area of Higher Education requires constant support, supervision and adaptation to the continuously evolving needs. The Faculty of Forestry fully agrees with these two statements and acted according to those when after a four-year hesitation we returned to the traditional undivided programme favoured also by our job market.

The Faculty of Forestry also supports the conclusion of the Helsinki seminar on bachelor level degrees (SIB, 2001), according to which “programmes leading to a degree may, and indeed should, have different orientations and various profiles in order to accommodate a diversity of individual, academic and labour market needs”.

References

Bologna declaration, 1999:

<http://ec.europa.eu/education/policies/educ/bologna/bologna.pdf>.

Addressed September 2011

Horváth, S., 2011: Evolution of enterprises in forestry. PhD thesis, University of West Hungary, pp. 147. (in Hungarian with English summary)

Lakatos, F., 2013: The Faculty of Forestry at the University of West-Hungary at Sopron, Hungary. Pp 37-45 in Schmidt, P., Susnjar, M., Müller-Starck, G and Lewark, S. Bachelor/master education in forest sciences – Ready for the next decade? Proceedings of the SILVA Network conference held at the Faculty of Forestry, University of Zagreb, Croatia. June 17th - June 19th 2010.

SIB (The National Unions of Students in Europe), 2001: Conclusions and recommendations of the seminar to the Prager Higher Education Summit. The Bologna Process, Seminar on Bachelor-level Degrees, Helsinki, Finland February 16-17,. PDF File, read November 2013.

www.unze.ba/.../Report%20on%20Bachelor-level%2...

HIGHER EDUCATION IN FORESTRY AND THE WAY A PHD TRACK AT WAGENINGEN UNIVERSITY IS ORGANISED

JIM VAN LAAR

Abstract

PhD research and education at Wageningen University have expanded substantially in the past decades. At present five categories of PhD tracks can be distinguished and both forestry groups are participating in all of them. The role of Graduate Schools is pointed out and three examples of PhD research have been summarized and included to illustrate the diversity in topics as well as in organisational context.

Keywords: Higher education, forestry, PhD, graduate school, Netherlands

Introduction

Wageningen University (WU) is recognized as a university with a strong international focus. It is a part of Wageningen University and Research Centre (WUR) which has the ambition to further expand its leading position in the field of 'healthy food and living conditions'. This is done in close collaboration with governmental organisations, commercial businesses, fellow institutions and other universities. It's mission is 'to explore the potential of nature to improve the quality of life'. Scientific research and publishing on the results at one hand and academic education at the other hand are the two main activities. Wageningen University's education has a BSc-MSc-PhD structure since the year 2000. At the moment 19 BSc-programmes (duration three years) and 27 MSc programmes (duration two years) are offered. All MSc courses as well as most of the BSc courses are taught in English.

Forest and Nature Conservation study programmes are available at both levels. The Bachelor programme attracts mainly Dutch and some German and Belgian students; the Master programme is very much internationally oriented. Participating students come from almost all continents. Four chair groups mainly contribute to these two programmes: the Forest Ecology and Forest Management Group (FEM), the Forest and Nature Conservation Policy Group (FNP), the Nature Conservation and Plant Ecology Group (NCP) and the Resource Ecology Group (REG). Forestry oriented students usually choose FNP or FEM to conduct a thesis project, depending on their more specific interest for management, policy and societal or ecological issues with respect to forests and woodlands.

After their MSc graduation, most graduates start their professional career and find their way in science, research, education, conservation, governmental and non-governmental organizations, industry, and a variety of commercial (consultancy) companies (see Bos-Boers and Schmidt, 2008).

A small number of graduates continue with a PhD programme however, in Wageningen or at one of the other universities in the world. In this article some peculiarities with conducting a PhD at Wageningen University are discussed. A more general overview will be given on the university's approach, secondly, how it works at both 'Forestry' groups and thirdly the role of the two relevant Research Schools are presented. Finally, three examples of different PhD projects are briefly elaborated and summarized.

The PhD programme at Wageningen University

Wageningen University offers good opportunities for working for a PhD in the domain of the Life Sciences. It is a leading international institute in the fields of nutrition and health, sustainable agriculture, environment, and processes of social change. Forestry as a research field is considered as a part of the Life Sciences. More than 1500 PhD candidates from all over the world are currently working at their ambitions to obtain a PhD. On average 280 PhD candidates get their doctor's degree (dr or PhD) each year.

Several requirements must be met: for instance a research proposal and a Training and Supervision Plan (TSP). A TSP is a document in which supervisors and PhD candidate agree on the individual education programme and on supervision arrangements. It includes educational tasks as well. The TSP has to be approved by the Graduate School of which the candidate is a member (see also section 4). Moreover, an evaluation of the PhD candidate's progress and performance after approximately one year will be part of the so-called 'go/no-go decision' whether continuation of the PhD project will be allowed.

The PhD programme has been developed to reach scientific and academic skills and competences like functioning as an independent scientist, being able to integrate the research in a theoretical framework of the discipline as well as a broader area of research and place one's own work in a societal context and publish in peer reviewed journals or books. The four-year PhD programme largely consists of conducting research and writing a dissertation. Moreover, following relevant courses to obtain ECTS is a requirement and also involvement in teaching is usually occurring. The amount of teaching depends from the type of the PhD track; it might be lecturing, supporting in practicals and field courses and co-supervising thesis work of students.

Not all PhD candidates have the same status. Five categories exist at the moment, each having a specific relation with Wageningen University:

- There are PhD candidates that work as a Research Assistant (AIO or 'assistent in opleiding' in Dutch). This type of PhD candidate is a temporary employee of Wageningen University via first, second or third stream funding.

- Some PhD candidates belong to the staff who have a permanent position at Wageningen University or one of the research institutes and who is given the opportunity to conduct PhD research for instance as a mid-career step.
- Guest PhD candidates have a scholarship and their research is primarily conducted and supervised at Wageningen University.
- ‘Sandwich’ PhD candidates have a scholarship, but their research is primarily conducted at the home institute and/or carried out in the home country.
- Finally, the last category of external PhD candidates which are not employed by Wageningen University and conduct research at an institute other than Wageningen University and whose only affiliation with Wageningen University is through a supervisor.

The Wageningen PhD programme takes four years and is finalized by a public defence; it contains a research and an educational component. As already mentioned a number of courses should be taken. The thesis usually is composed of a collection of articles (published or almost published in peer review journals) added with an introduction and a synthesis, instead of a book. The first one is much more preferred than the second option. Senior staff performs supervision and quality control is done by a promoter (and a co-promoter) and by one of the graduate schools.

PhD candidates at Wageningen University are developing knowledge that serves human mankind and society as a whole. Research is done in the fields of various natural and social sciences on topics which focus on safe and healthy food, lifestyle and living conditions, climate change, nature and biodiversity, sustainable fishery and agricultural systems and the search for alternative sources of energy. The candidate is expected to function as an independent practitioner of science, by conducting original scientific research and publishing articles in journals that are seen as leading. More detailed information can be found in the ‘PhD guide Wageningen University 2012’, which is available at www.PhDguide.wur.nl.

Academic education at two ‘Forestry’ groups

There are currently two groups at Wageningen University dealing with forests, forestry and forest management and its societal context. The present Forest and Nature Conservation Policy Group (FNP) focuses on scientific research and academic teaching about interactions between forest, nature and society with special attention to forest and nature management, forest and nature and recreation, and forest and nature policy and governance, both in temperate zones as in the tropics. The present Forest Ecology and Forest Management Group (FEM) focuses on scientific research and academic teaching in the field of ecology, productivity and management of forest ecosystems with special attention to conservation of biodiversity, conservation and maintenance of regulatory functions, sustainable forest management, forest use, and forest restoration also both in temperate zones as in the tropics.

Education in forestry started in 1883 when the first teacher in silviculture was appointed. In 1918 this education became academic at the new established Agricultural Technical University. Initially the focus was on silviculture, mensuration, inventory, exploitation, forest economics and management (see also Jansen and Schmidt, 2006).

Education and later on research and science with respect to forestry as well have continuously developed till present times. In 1986 the name was changed to 'Wageningen Agricultural University'; in 1990 three departments existed, named Forest Policy & Forest Management, Silviculture & Forest Ecology and Wood Science. These three departments merged to one Forestry Department in 1998. The university was renamed to Wageningen University and around 1999 the two remaining chairs Forest Policy & Forest Management and Silviculture & Forest Ecology, were positioned in the Department of Environmental Sciences. In 2002 the chairs changed their names into Forest & Nature Conservation Policy and Forest Ecology & Forest Management respectively and this is the current situation still.

Especially for selected excellent and talented students a new Research Master in Ecology has been developed in 2011. This is a 20 ECTS credits programme linked to the master programmes Biology, Plant Sciences, Earth and Environment and Forest and Nature Conservation. To this Research Master belong: Introduction to ecological research in PE&RC (see next section) (course of 6 ECTS credits), a Research Master Cluster (project of 12 ECTS), a Research Internship (24-30 ECTS credits) and a Master Thesis (30-36 ECTS credits).

The new Research Master Cluster + selects students, who will write a PhD project proposal which will be evaluated by the PE&RC Research Committee (see next section) for funding. A similar Research Master is being developed by the WASS Research School (see also in the next section).

In both 'Forestry' groups, research as part of the PhD education occurs. The FNP group currently has 21 PhD candidates, the FEM group has also 21 PhD candidates, including 1 shared FNP-FEM PhD candidate. All these researchers belong to one of the five categories mentioned in the previous section and are working on their own projects. External PhD candidates are affiliated with other chairs or institutes, but they are co-supervised by FNP or FEM staff.

Graduate Schools

PhD education and research at Wageningen University is organised in six Graduate Schools or Research Schools, each working in a specific research field. These Research Schools primarily ensure quality control of the PhD research. The Graduate Schools of Wageningen University are formally organised in Wageningen Graduate Schools (WGS). Several graduate schools also have participants from other Dutch universities and institutes. Two Graduate Schools are relevant for the

both forestry chairs: Wageningen School of Social Sciences (WASS) and Production Ecology and Resource Conservation (PE&RC).

Wageningen School of Social Sciences (WASS)

Researchers belonging to the WASS Graduate School aim at contributing to the understanding of social processes with regard to today's global challenges of disparities and poverty, of responsible production and consumption, use of natural resources and the environment, as well as of knowledge in society. The researchers analyse interactions between institutions, practice and social change. Research topics include for instance major societal transformation processes such as globalisation of markets, technological changes, unequal access to resources, climate change, shifts in political power and economic prosperity. WASS researchers work in a variety of social science disciplines and also develop interdisciplinary methodologies to bridge scientific disciplines.

Production Ecology and Resource Conservation (PE&RC)

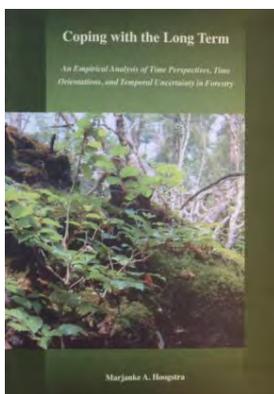
Researchers belonging to the Graduate School PE&RC aim to contribute to the understanding of functioning of (agro)ecosystems to design and enable the development of sustainable and multifunctional production and land use systems. This goal can be viewed from various temporal and spatial scales and different levels of biological integration and complexity where production refers to products as well as to services such as recreation or biodiversity.

PE&RC research ranges from intensive agro-systems to extensive (semi)natural systems like natural forests, agro-forests and savannas. Bio- and geo-sciences are essential for PE&RC research, but communication and collaboration with social sciences are crucial for the design and development of sustainable and multifunctional land use systems. The Graduate School for Production Ecology and Resource Conservation is a collaborative research and PhD education institution coordinated by Wageningen University.

Both graduate schools have the task to develop and co-ordinate education of PhD candidates, to improve and safeguard the quality of academic research, to stimulate the development of a coherent academic research programme and to act as a national platform within its area. Moreover, both institutions stimulate the development of the candidate's own academic profile, and the necessary skills and competences to successfully conclude their projects (Wageningen School of Social Sciences, 2013). Furthermore they aim at establishing international collaboration with similar organizations in its research area with exchange programmes for staff and PhD candidates, portfolios of international postgraduate courses and the development of international curricula. A similar role of a Graduate School can be found for instance at the Technische Universität München, Germany (see Müller-Starck et al., 2013).

Some examples of recently finished PhD projects

In this section three examples of PhD theses from the forestry perspective are given: an FNP, an FEM and one joint thesis which was done in both groups. This section intends to illustrate some research topics dealt with.

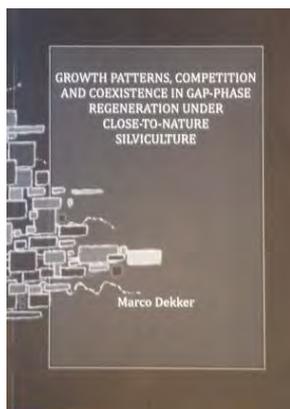


In 2008 the PhD thesis ‘Coping with the long term: an empirical analysis of time perspectives, time orientations, and temporal uncertainty in forestry’ was successfully defended by FNP staff member M.A. Hoogstra. This PhD researcher belonged to the ‘permanent staff PhD’ category.

The main goal was to investigate uncertainty as an influencing factor in decision making in forestry. Rotation periods in silviculture are relatively long: from several decades to centuries, which makes forestry a unique type of business. The longer the time horizon the more variables interact. Empirical evidence of how foresters cope with the future was not yet available. Is a forester a ‘visionary futurist’ or not at all? The author investigated this gap in knowledge by exploring the legitimacy of the ‘doctrine of the long run’, which is a long-standing hypothesis in forestry. By taking an actor-oriented perspective, the researcher studied the question of how foresters actually cope with the uncertain future in their actions. The first case study explored the time perspectives of Dutch and German foresters. The findings stressed the ‘short-range’ nature of the actual practice of forestry decision-making: 15 years seemed to be the most distant horizon to which meaningful action is taken. In the second case study, the Dutch foresters’ time orientations and more specifically their orientations towards the future, were explored. The findings show that foresters have a strong future orientation: actions in forestry are not just a continuation of the past and present, but are also based on the foresters’ future expectations.

The futurity of actions taken is only limited, and foresters do not seem to differ substantially from other social groups. By using scenarios, foresters can examine the consequences of several possible future changes and how to cope with such alternatives. So, scenario analysis is an interesting tool in order to train foresters to orientate on the future, as intuition and creative thinking are core elements in this approach. But even if foresters are successful in embracing all skills and techniques to improve their capacity to understand and act on the future, the practice of forestry must still be regarded as one full of surprise. Traditionally, foresters have viewed surprises as unwelcome and dysfunctional. However, surprise could be something that provides an opportunity. From a sociological perspective, the challenge of the future is to reduce uncertainty, but from an economic-entrepreneurial perspective the challenge of the future is to increase the degrees of freedom by creating an open future. The ability and willingness of foresters to recognize changes, and make use

of emerging opportunities might even prove to be a necessity for the future survival of forestry (Hoogstra, 2008).

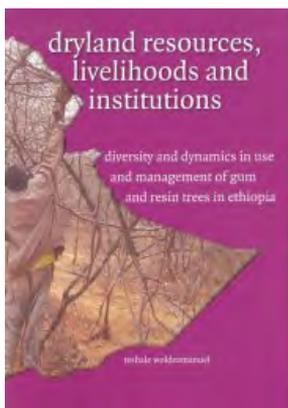


M. Dekker, PhD candidate at the FEM chair group, defended his thesis ‘Growth patterns, competition and coexistence in gap-phase regeneration under close-to-nature silviculture’ in 2008 also. He belonged to the ‘research assistant PhD’ category.

The author studied the consequences to create multifunctional, mixed-species and uneven-aged forests for the Dutch forests of the prevailing European forest discourse. This discourse includes the nature-oriented conversion of single species plantations. To reach this objective so-called close-to-nature silviculture can be applied. This is generally done by creating canopy gaps to establish natural regeneration. In the Netherlands, experience with gap-phase regeneration is limited, making it difficult to assess the effect of close-to-nature management on forest development. This problem is addressed by investigating the coexistence between the four dominant species that occur in naturally regenerated canopy gaps in Douglas fir forest in the Netherlands (*Betula pendula* Roth., *Larix kaempferi* Carr., *Pinus sylvestris* L. and *Pseudotsuga menziesii* Mirb. Franco).

Self-thinning among saplings in gaps affects the species composition of the regeneration unit. Important factors in self-thinning are specific morphological growth patterns of the species, the effect of stand characteristics on competitive relationships, and the effect of light availability on growth and mortality. The results from data collection in the field demonstrated a competitive response rather than a competitive effect. Canopy position affected the radial growth of saplings. Scots pine did not show a relation between growth and mortality, even though it is highly responsive to light.

Under continued autogenic development, a low-density top stratum of Silver birch and Japanese larch will develop, overtopping a declining number of Scots pine and a large number of increasingly dominant Douglas fir. This implies that Scots pine will be suppressed by the other species, and Douglas fir will gain dominance in the future. It was concluded that forest conversion by natural regeneration will therefore not lead to the desired mixed-species composition, but stands will eventually revert back to Douglas fir forest. Maintaining a diverse forest thus means the need for interventions in the early stage of development (Dekker, 2008).



T. Woldeamanuel Habebo defended his thesis '[Dryland resources, livelihoods and institutions: diversity and dynamics in use and management of gum and resin trees in Ethiopia](#)' in 2011. Promoters were from both FNP and FEM chair groups. This research project belonged to the 'guest PhD' category.

This study examined the use and management of the so-called ABC species (Acacia, Boswellia and Commiphora) in Ethiopia. The production systems, institutional arrangements for exploitation, and roles in local livelihoods are very diverse. Production systems involve a complex set of both formal and informal institutions at both government level and local level. The historic process of institutionalisation of ABC governance differs between regions. Depending on local land-use conditions and government policies, different exploitation arrangements have been developed based on either company, cooperative or private control over the production, labour and marketing. Despite this diversified stage of domestication in a social sense, the production systems are still in an early phase of domestication in ecological and technical sense and intensified production through tree cultivation or plantation establishment has hardly been developed. Several gum and resin production systems are even subject to serious degradation due to the inappropriate nature of the exploitation arrangements. It was concluded that the governance of gum and resin production involves a complex, diverse and dynamic web of formal and informal institutions, and that it will not be effective to stimulate production as a means for both sustainable forest use and livelihood improvement by a generic development policy. A diversified and regional-specific approach is needed that builds upon the location specific characteristics of the gum and resin production systems and exploitation arrangements (Woldeamanuel Habebo, 2011).

These three examples show the diversity of types of research as well as the differences in organisational categories of PhD-researchers. They have in common that based on their conclusions implications for forest management practices can be extracted. As such, PhD-researches conducted at the two 'forestry' chair groups have a strong empirical basis and a relatively high applicability in practice. As can be seen from table 1 both forestry chairs together produce an average of 3-6 PhD theses each year.

	2013	2012	2011	2010	2009	2008	2007
FEM	3	1	3 (1: 50%)	4	3	1	3
FNP	1	2	2 (1: 50%)	2	2	4	1
total	4	3	4	6	5	5	4

Table 1. Number of PhD theses produced at both chairs, FEM and FNP, between 2007 and 2013

Conclusions

In the past ten years Wageningen University and Dutch research institutes in related fields have combined their forces within Wageningen University and Research Centre. This strategy has had strong implications for the development of its scientific research and academic education. Since a few years both are concentrated on Wageningen Campus. Wageningen University benefits very much from this new situation in terms of growth of numbers of students at the BSc and MSc level and candidates at the PhD level. A number of conclusions can be drawn. Firstly, Wageningen University offers good opportunities for conducting scientific research in several categories of PhD-candidates from all over the world. Secondly, a system of six research or graduate schools supports the candidates with their research and safeguards the quality of the PhD research. Two of them are of importance for forestry oriented PhD-candidates: Wageningen School of Social Sciences (WASS) and Production Ecology and Resource Conservation (PE&RC). And finally, the two forestry groups at Wageningen University maintain a remarkable number of PhD defences yearly, especially seen in the light of a relatively small staff which is supervising the candidates.

References

- Bos-Boers, M. and Schmidt, P., 2010: Changes in the job market for university forestry graduates in the Netherlands. Pp 20-28 in: Schmidt, P., Lewark, S. and Strange, N. (Eds.): What do we know about our graduates? Graduate analyses for forest sciences and related curricula. Proceedings of the SILVA Network Conference held at the Faculty of Life Sciences, University of Copenhagen, Denmark, May 15th - May 17th 2008. SILVA Publications 6.
- Dekker, M., 2008: Growth patterns, competition and coexistence in gap-phase regeneration under close-to-nature silviculture. PhD thesis Forest Ecology and Forest Management Group, Wageningen University, Wageningen University, the Netherlands.
- Hoogstra, M.A., 2008: Coping with the long term: an empirical analysis of time perspectives, time orientations, and temporal uncertainty in forestry. PhD thesis Forest and Nature Policy Group, Wageningen University, Wageningen University, the Netherlands.
- Jansen, J.J. and Schmidt, P., 2006: Forestry and nature conservation in one curriculum at Wageningen University: a contradiction in terminis? Pp. 94-101 in: Schmidt, P. and Bartelink, H.H. (Eds): Forestry Education between science and practice. Proceedings of the SILVA-IUFRO Symposium held at Wageningen University, Wageningen, the Netherlands, April 6th-9th 2005. SILVA Publications 3.
- Müller-Starck, G., Ziesak, M. and Schieder, A., 2013: Bologna cycles 1-3 at the Technische Universität München, Germany: current status and new developments in cycle 3. Pp 31 – 36 in: Schmidt, P., Susnjar, M., Müller - Starck, G. and Lewark, S. (Eds.): Bachelor/master education in forest

- sciences – ready for the next decade? Proceedings of the SILVA Network Conference held at the Faculty of Forestry, University of Zagreb, Croatia, June 17th – 19th June 2010. SILVA Publications 8.
- Wageningen School of Social Sciences, 2013: Procedures, Principles and Good Practices for Supervising PhD candidates at Wageningen School of Social Sciences (WASS). Brochure, 27 p.
- Wageningen University, 2012: PhD guide Wageningen University 2012. www.PhDguide.wur.nl. Accessed 6 November 2013.
- Woldeamanuel Habebo, T., 2011: [Dryland resources, livelihoods and institutions: diversity and dynamics in use and management of gum and resin trees in Ethiopia](#). PhD thesis Forest and Nature Policy Group and Forest Ecology and Forest Management Group, Wageningen University, Wageningen University, the Netherlands.

THE BOLOGNA PROCESS AND CHALLENGES FOR STUDENTS' MOBILITY: SOME IDEAS FOR PROGRESS

MARTIN ZIESAK AND GERHARD MÜLLER-STARCK

Abstract

The "Sorbonne Joint Declaration" (1998) and the "Bologna Declaration" (1999) raised expectations concerning an increase of the mobility of students. Unfortunately, there are not many cases in which the objectives of these declarations were fulfilled in this respect. The reasons for this unsatisfactory development are manifold. Incompatible module structures and untransferable ECTS credits seem to play major roles. Examples for commendable mobility are presented and suggestions are made in order to follow such developments and to overcome the current stagnation.

Key words: Bologna Declaration, Sorbonne Joint Declaration, EHEA, ECTS, mobility

Background

In order to understand the European higher education system, but also in order to conceive the importance of students' mobility, it is necessary to have a look at universities implementing the Bologna declaration:

In **1998** France, Italy, the United Kingdom and Germany signed the "Sorbonne Joint Declaration", i.e. the "Joint Declaration on the harmonisation of the architecture of the European Higher Education System".

In **1999**, Ministers of Education from 29 European countries signed the Bologna Declaration which aims to create a coherent and cohesive "**European Higher Education Area**" (EHEA) by 2010.

The main objectives outlined in the last named statement were as follows:

- "adopt a system of easily readable and comparable degrees,
- adopt a system with two main cycles (undergraduate/graduate),
- establish a system of credits (ECTS),
- promote **mobility** by overcoming legal recognition and administrative obstacles,
- promote European co-operation in quality assurance,
- promote a European dimension in higher education."

It is worth to mention that "mobility" was included in a list of objectives already in 1999.

In the long process of introduction and activation, the ministers of education met every two years and produced regular communiqués: Prague (2001), Berlin (2003),

Bergen (2005), London (2007), Leuven (2009) etc. In Bergen 2005, the ministers committed themselves for their next meeting in 2007 **to reinforcing the social dimension and removing obstacles to mobility**. According to this, the London 2007 communiqué stated:

"**Mobility** of staff, students and graduates is one of the **core elements** of the Bologna Process, creating opportunities for personal growth, developing international cooperation between individuals and institutions, enhancing the quality of higher education and research, and giving substance to the European dimension".

With this short glance at the historic development it becomes evident, that mobility apparently was even upgraded in its relative importance over the last years.

Students' mobility in practice

It is not necessary to highlight the many good reasons, why students' mobility can be considered positive for the individual and social development. That what needs to be added are the reasons why, in particular in forestry, mobility should be considered of high priority. A first and evident motivation is the high variation in forest ecosystems and plantations themselves, but also in their management. In view of the huge differences in Europe from the Nordic boreal forests to Mediterranean woodlands, from alluvial to dry land forests, the need to really explore and experience these vast variations through mobility lies at hand. We finally must not forget that on top of that, different products and markets add further variation. In conclusion, mobility is having an even higher importance for forestry as compared to disciplines which do not reveal such a strong variation among its bases like e.g. physics, mathematics, chemistry, electrical engineering or others.

Finally it is interesting to know, that there exist precise target figures, which mobility rates for students should be achieved by 2020, as reconfirmed in the Leuven communiqué (2009). For the outgoing branch, 20 percent of all EHEA graduates should at least collect a minimum of one credit from another university (EU Erasmus Statistics, 2009).

An important tool supporting student mobility in Europe is the '**Erasmus student mobility**' (SMS), which provides a streamlined application, placement and enrolment procedure for the students. It includes a standardised study programme selection process for the students and in addition it also provides some financial support for the travelling students. Hence, it must be assumed that most of the achieved student mobility falls under these SMS activities. Looking at the statistics (EU Erasmus Statistics, 2009; Statistisches Bundesamt, 2012) we see that the realised overall mobility within SMS for the considered German BSc students is still substantially smaller than the expected placement figures. This finding agrees with the students' comment from again the Leuven conference: "When looking at general student perceptions, it seems like progress on making mobility the rule,

rather than an exception, is considerably slower than the rhythm of commitments expressed by the ministers, higher education institutions leaders and European institutions representatives in various European mobility seminars.” (ESU, 2009)

The reasons why these mobility figures are still unsatisfactory low are manifold. Quite surprising is the fact, that apparently a rather strong influence must be seen in how faculties encourage and enable students to realise mobility periods. Figure 1 shows mobility figures for some German universities, where mathematics can be studied. With a number of almost 60 outgoing students, the “Technische Universität München” (TUM) stands out against other universities. The reason for this positive trend for TUM mathematics is very simple: the faculty culture promotes studying abroad substantially and supplies corresponding financial resources (individual mentoring for the students, a clear guidance in the selection process of host universities and corresponding courses), but also in the examination regulations a clear support is given, where up to 18 credits from visited universities automatically get acknowledged. The mobility figures over time show the successful development of this faculty policy during the last years (Figure 2). With a number now of well over 70 percent in 2013/14 it is evident that this is a sustainable development (Jumpertz, 2014).

Looking at the figures of TUM, related to forest science curricula, the picture is different: while the incoming side always shows high international inflow of students (> 20%) the numbers of outgoing students are still far too low to meet the EU mentioned figures for 2020.

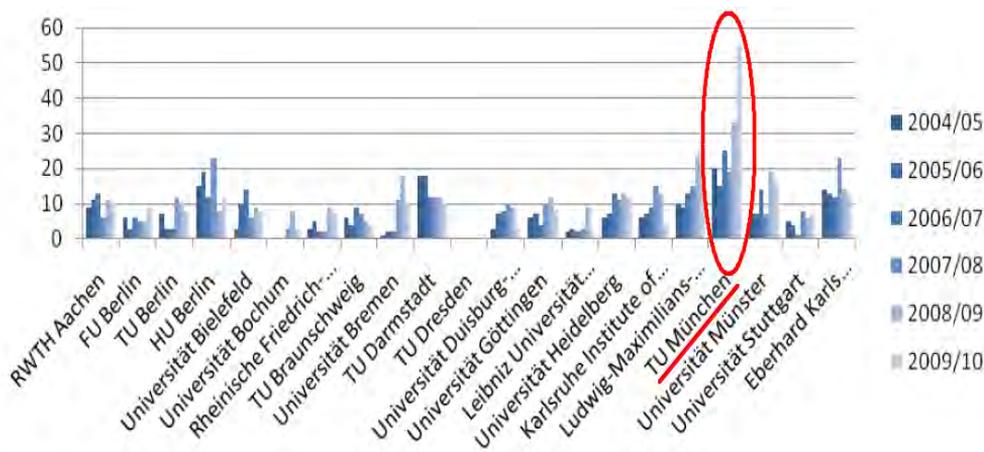


Figure 1: Frequency of outgoing students of mathematics at 21 universities in Germany (slightly changed after Jumpertz, 2011).

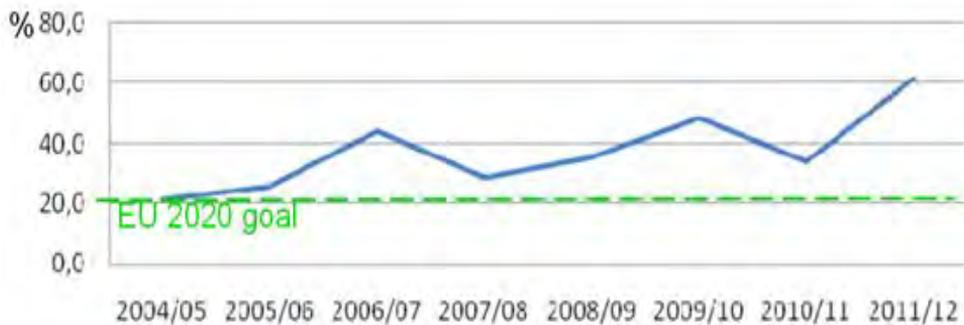


Figure 2: Percentage of outgoing students of mathematics at the TUM over eight years, percentage ratio in the 5th semester (slightly changed after Jumpertz, 2011).

The typical friction points which oppose achieving high mobility figures are manifold. A stiff, strict and full syllabus in the BSc and MSc courses may limit the options for studying abroad. Possible time delays and difficulties in the acceptance of credits collected at the foreign host university must be seen as another hurdle. But also the trend to generate larger modules with a then lower interchangeability makes it difficult for mutual acceptance of the corresponding ETCS credits.

What can be done to improve this situation?

For the incoming side, the TUM experience in forestry indicates, that a wide option of subjects - currently eight different elective fields are offered, reaching well beyond the scope of classical forestry subjects - and teaching in English increase the attractiveness. In particular this is true as these options are added to the full programme of BSc and MSc courses which are all taught in German, which therefore makes it possible for incoming students, who might not be able to follow courses taught in German, to have a fall back option with a wide choice of attractive courses in English (see also Müller-Starck *et al.*, 2013).

It also may be an option to have at an institutional or curriculum level a compulsory mobility period (like the TUM MSc Horticulture has, where one complete semester out of the four semesters in the curriculum has to be studied abroad).

Next to these rather strict regulations, curricula can be revised to foster mobility. In the TUM BSc curriculum Forestry, the study schedule has been rearranged in such a way, that it is much easier to plan in the 6th semester a sojourn (study or practical) at another university abroad or in Germany. This semester has a drastically reduced number of courses.

Finally summer schools may be mentioned as another instrument, which could spark interest at students' side for studying a semester abroad (Ziesak *et al.*, 2008).

We should consider fixed partnerships between universities as another tool to enhance mobility. Typical examples would be the 'double degree' programmes, which exist already at some faculties (Freiburg-Nancy, details see <http://www.doubledipltome.uni-freiburg.de/>).

In general it can be concluded, that a maximum of flexibility and openness concerning curricula, time schedules etc. helps travelling students a lot to realise their travel plans. In order to improve the situation, higher education institutions are strongly recommended to actively promote and facilitate the mobility of their students. Bilateral agreements with partner institutions may help to coordinate curricula and to initiate mobility. Faculties which successfully experience students' mobility such as the mentioned Faculty of Mathematics at the TUM, may be seen as promising motivators.

References

- Bergen communiqué, 2005: The European Higher Education Area - Achieving the Goals.http://www.bologna-bergen2005.no/Docs/00-Main_doc/050520_Bergen_Communique.pdf [February 2012]
- Bologna declaration, 1999:
http://www.eua.be/eua/jsp/en/upload/OFFDOC_BP_bologna_declaration.1068714825768.pdf [February 2012] and <http://www.eua.be/eua-work-and-policy-area/building-the-european-higher-education-area/bologna-basics.aspx> [February 2012]
- EU Erasmus Statistics, 2009: Outgoing Erasmus student mobility for studies from 1987/88 - 2009/10.http://ec.europa.eu/education/erasmus/statistics_en.htm#1 [February 2012]
- EU, 2009: The Bologna Process 2020 - The European Higher Education Area in the new decade; Communiqué of the Conference of European Ministers Responsible for Higher Education, Leuven and Louvain-la-Neuve, 28-29 April 2009.
http://www.ond.vlaanderen.be/hogeronderwijs/bologna/conference/document/s/Leuven_Louvain-la-Neuve_Communique%C3%A9_April_2009.pdf [February 2012]
- ESU (European Students' Union), 2009: Bologna with Student Eyes 2009
<http://www.ond.vlaanderen.be/hogeronderwijs/bologna/conference/document/s/BolognaWithStudentEyes2009.pdf> [February 2012]
- Jumpertz, C, 2011: Bericht für die Auslandsbeauftragtensitzung im Sommersemester 2011 [Internal report at the International Relations Officers' meeting], TUM faculty for mathematics
- Jumpertz, C, 2014: oral communication on latest figures of outgoing students at the faculty of mathematics, TUM
- Leuven and Louvain-la-Neuve Communiqué, 2009: The Bologna Process 2020 - The European Higher Education Area in the new decade.

- http://www.ehea.info/Uploads/Declarations/Leuven_Louvain-la-Neuve_Communicu%C3%A9_April_2009.pdf [December 2013]
- London Communiqué, 2007: Towards the European Higher Education Area: responding to challenges in a globalised world.
http://www.ehea.info/Uploads/Declarations/London_Communique18May2007.pdf [December 2013]
- Müller-Starck, G., Ziesak, M. and Schieder, A., 2013: Bologna cycles 1-3 at the Technische Universität München, Germany: Current status and new developments. Pp. 31-36 in Schmidt, P., Susnjar, M., Müller-Starck, G. and Lewark (Eds.): S. Bachelor/Master education in forest sciences – ready for the next decade? Proceedings of the SILVA Network Conference held at the Faculty of Forestry, University of Zagreb, Croatia, June 17th – June 19th, 2010. SILVA Publications 8.
- Sorbonne Joint Declaration, 1998: Joint declaration on harmonisation of the architecture of the European higher education system (1998)
http://www.ehea.info/Uploads/Declarations/SORBONNE_DECLARATION1.pdf [December 2013]
- Statistisches Bundesamt, 2012: Bildung und Kultur. Studierende an Hochschulen-Vorbericht - Wintersemester 2011/2012
https://www.destatis.de/DE/Publikationen/Thematisch/BildungForschungKultur/Hochschulen/StudierendeHochschulenVorb2110410128004.pdf?__blob=publicationFile [April 2012]
- Ziesak, M., Biber, P. and Weber, M., 2008: Summer Schools at Technische Universität München (TUM): Our experiences and some recommendations. Pp 42-45 in: Schmidt, P. and Lewark, S. (Eds.): Design and functioning of international forestry curricula: considerations and experiences. Proceedings of the SILVA Network Conference held at the University of Freiburg, Germany August 26th – 30th, 2007. SILVA Publications 5

THE IMPORTANCE OF FINANCES FOR EUROPEAN STUDENT MOBILITY – EVIDENCE FROM THE ESN SURVEY 2010

EMANUEL ALFRANSEDER

Abstract

The paper presents results from the ESNSurvey 2010, a European research project conducted annually by the Erasmus Student Network (ESN). More than 8,000 respondents have voiced their opinions on the impact of financial support on their studies. Additional topics cover general satisfaction with the stay and study abroad and the main factors connected with higher satisfaction levels. The findings show that the grant amount influences students' choices of study abroad destinations. Around 10% of responding students have to worry often or very often about basic living expenses. About one third of respondents would definitively not have studied abroad without financial support while another third is unsure whether they would have opted for studying abroad without financial support. The most important factors correlated with satisfaction with studies are the evaluation of “courses at the host university”, “improvements in academic knowledge” and “quality of teaching”.

Keywords: Student mobility, ESNSurvey, financing, EU

Introduction

The ESNSurvey is one of the main international projects of the Erasmus Student Network exploring current issues connected to student mobility. First launched in 2005, every year around 8,000 people answer the online survey. Via the support of the whole ESN network, many other associations in the field of education and mobility and various institutions such a high number of respondents is attained. Thus, the ESNSurvey provides valuable insight into students' needs and current developments in education and mobility.

At its core, the 2010 edition of the ESNSurvey investigates the importance and consequences of financial issues for student mobility. This topic attracts significant interest from many stakeholders and a study requested by European Parliament's Committee on Culture and Education makes a broad investigation on the topic (Beerkens *et al.*, 2010). With ongoing discussions on the shape and financial setup of the successor of the “Lifelong Learning Programme”, expiring in 2013, information on how much financial support is adequate, is of crucial importance. Student mobility makes many valuable contributions to intercultural understanding which is a prerequisite to master the current and future challenges of European integration, both politically and economically. To allocate the available resources

optimally, deeper insights into students' financial needs and incentives are necessary. The present study makes a contribution to these topics based on a student survey.

In addition, the survey explores which parameters influence students' satisfaction levels with their stay and study abroad. For higher education institutions this can give valuable insight how to allocate increasingly scarce funds to improve the quality of studies.

The importance of finances

Asking students whether the amount of their grant affects the choice of their host destination, shows that around one fourth affirms this question. This result, provided in Table 1, makes clear that the level of financial support has an impact on student choices.

Table 1: Did the amount of your grant affect you in choosing a place to study? (n=7602).

Definitely yes	Rather yes	Rather no	Definitely no	Difficult to say / I do not know
10.5 %	15.6 %	24.7 %	39.7 %	9.4 %

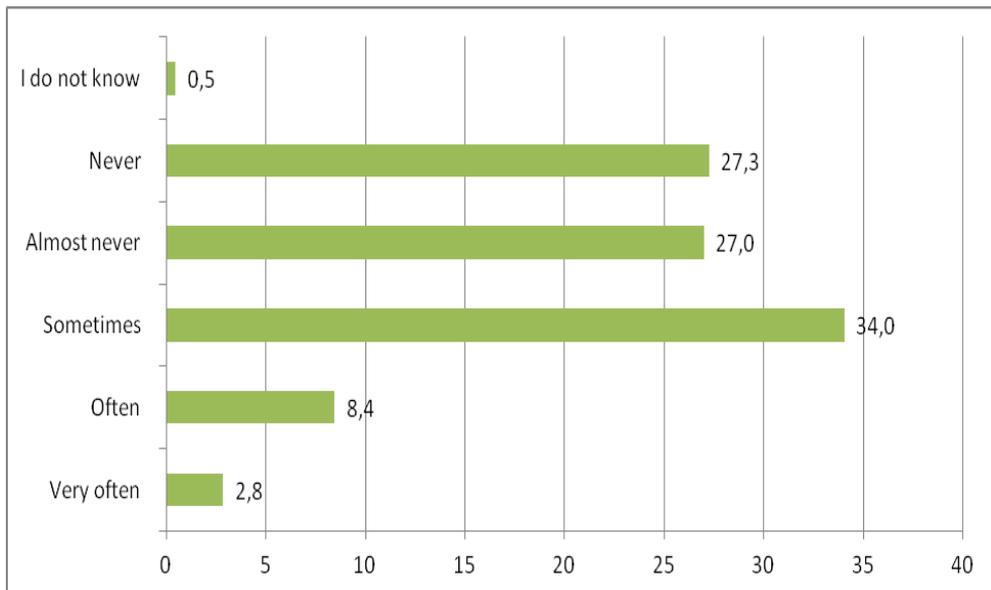


Figure 1: How often students have to worry about basic living expenses (in percentage, n=8385)

Figure 1 gives further insight into the financial situation of international students. Around 10% of responding students have to worry often or very often about basic

living expenses. Another third has to at least sometimes worry how to cover basic expenses. These results show that, if anything, the current per student financial support should be selectively increased to avoid such underfunding.

Directly asking students whether they would still go abroad without a scholarship, indicates that only a bit more than one third of responding students would do so (Figure 2). Another 30% are unsure and more than 34% would not have gone abroad to study.

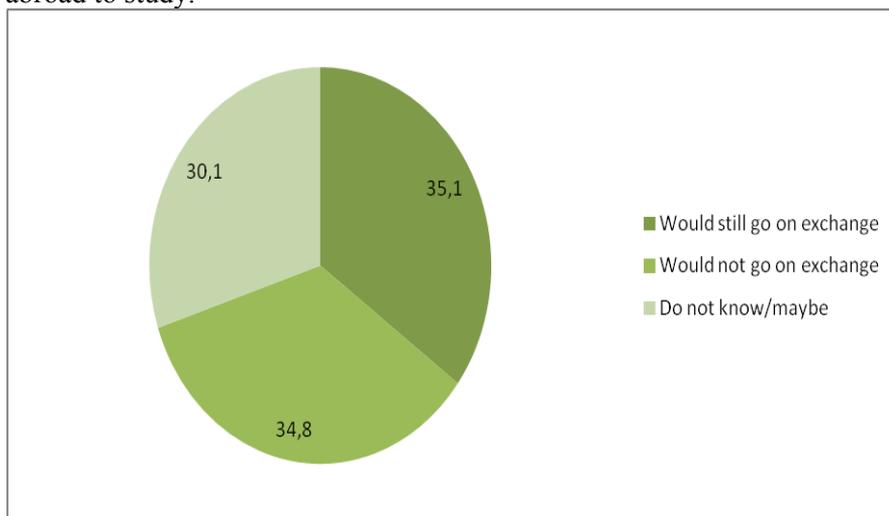


Figure 2: Students who would still go abroad without a scholarship (in percentage, n=7600).

Satisfaction of international students with their studies abroad

When assessing institutions, around half of all respondents say that teaching quality is the most important factor (Figure 3). Employability of graduate students follows with 21.6% while 13.6% regard the international outlook of an institution most important. The research quality of the university is not widely considered important (7.5%).

Determinants of student satisfaction

The following part investigates the factors determining satisfaction with students' studies abroad. We apply a general-to-specific approach starting with a very general model including all potentially relevant variables of the ESNSurvey 2010 and removing all statistically non-significant variables. Owing to the nature of the survey data, ordinary regression (ordinary least squares) is not optimal and we use a standard ordered probit model. We focus on the sign and to a lesser extent in the relative size of the estimates as it is not trivial to interpret the absolute size of the estimates.

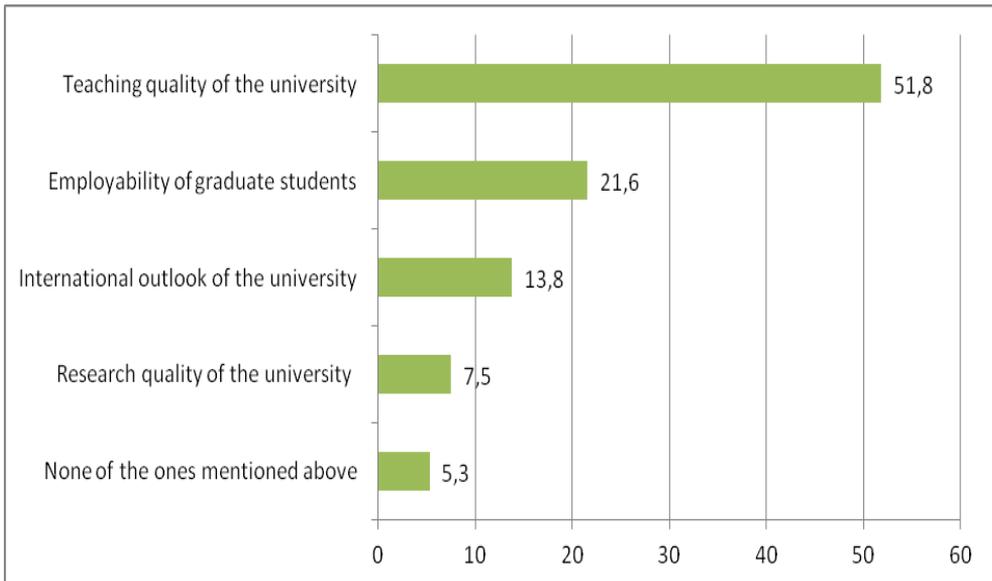


Figure 3: Most important factor when assessing a Higher Education institute (in percentage, n=8358).

The basic model denotes as the following:

$$\text{satisfaction with studies} = \beta_1 * \text{explanatory variable 1} + \beta_2 * \text{explanatory variable 2} + \dots + \beta_k * \text{explanatory variable k} + \text{error}$$

where the β 's are the estimates for the k different explanatory variables. The final set of explanatory variables is given Table 2.

The results in Table 2 show what influences the satisfaction of international students with their studies abroad. A positive sign of the estimate indicates that a higher evaluation of this item is positively correlated with higher satisfaction levels, while a negative allows for the opposite conclusions. All but one variable are statistically significant. The dummy variable asking whether a student received a grant is positive but not statistically significant and thus cannot be reasonably interpreted. A reason for this is the low variation in the variable. Around 91.5 % of all respondents receive a grant. We keep this variable in our final regression as we consider it particularly important.

The most important factor correlated with satisfaction with studies is the quality of "courses at the host university". High ratings for "improvements in academic knowledge" and "quality of teaching" are connected with substantially influence students' satisfaction. High ratings in developing analytical competence and tolerance lead to higher satisfaction levels. University facilities and the specific knowledge which students gain in their field of studies are additionally important. The negative sign for the variable for the variable indicating whether students

expected academic support for their thesis shows that such students are less satisfied. However, the positive sign for high ratings when actually getting academic support for their thesis indicates the importance for concerned students. Students additionally value the sufficiency of information provided by the host institution confirming the importance of the topic more closely investigated in in the ESNSurvey 2009 (cf. Alfranseder *et al.*, 2011).

Table 2: Factors influencing the satisfaction of international students with their studies abroad.

Explanatory variable	Probit estimate	Statistical significance (99% level, p-value in parenthesis)
Courses at the host institution	0,515948	yes (0.0000)
I improved my academic knowledge	0,213795	yes (0.0000)
Quality of teaching	0,145263	yes (0.0000)
Analytical competence	0,112025	yes (0.0000)
Tolerance	0,101873	yes (0.0000)
University facilities	0,092330	yes (0.0000)
Gained more specific knowledge in field of studies	0,082688	yes (0.0000)
I found academic support (professors, study material etc.) for my thesis	0,087614	yes (0.0000)
Sufficiency of information while studying abroad (from host institution)	0,07855	yes (0.0000)
Difference in availability of professors	0,060771	yes (0.0000)
Received Grant (Yes-No)	0,023846	no (0.6653)
Went abroad to find academic support for my thesis	-0,067552	yes (0.0000)

Note: The pseudo R-squared of the estimation is 0.234.

Concluding remarks

Overall, the results show different areas of improvement for academic mobility. Most important, current funding levels have to be increased to further promote student exchange and mobility. The findings show that the grant amount influences students' choices of study abroad destinations demonstrating that financial support is an important incentive to go abroad. It is essential to further extend financial support for student mobility as about one third of respondents would not have gone abroad without financial support and another third is unsure whether they would have studied abroad without financial support.

Every tenth student has to worry often or very often about basic living expenses, which could be addressed via additional support for individuals from less favourable socio-economic backgrounds.

The most important factors correlated with satisfaction with studies (“courses at the host university”, “improvements in academic knowledge” and “quality of teaching”) show that academic progress does indeed determine satisfaction levels to a large extent. Additional university resources are well allocated to improve courses and teaching quality which is an area that international students value highly.

References

- Alfranseder, E., Krzaklewska, E. and Taivere, M., 2011: Information for Exchange – Provision and Quality: Research Report of the ESNSurvey 2009, Erasmus Student Network AISBL, Brussels.
- Beerkens, M., Besançon, B., Cremonini, L., Focken, N., Leurs, J., McCoshan, A., Mozuraityte, N., Otero, M., Vossensteyn, M. and de Wit, H., 2010: Improving the participation in the Erasmus programme, Policy Department B: Structural and Cohesion Policies.

EMPLOYABILITY SKILLS FOR FORESTRY GRADUATES

EXPLORING THE CHALLENGES AND PROSPECTS FOR FORESTRY GRADUATES WHO SEEK JOBS OUTSIDE THE FORESTRY/FOREST BASED SECTOR

DESIANA BARIANTI AHLBERG AND SIEGFRIED LEWARK

Abstract

This article aims to review relevant literature on employability skills of new forestry graduates through the eyes of recruiters, job markets and employers. It focuses on the skills which are thought to better promote forestry graduates' employability outside forestry/forest based sector. Our findings in the literature highlight that recruiters, job markets and employers not only expect graduates to have the technical and disciplinary competences from their degrees but also require graduates to demonstrate a range of broader skills i.e. the so called generic employability skills. For the graduates, in order to possess these skills, this paper highlights the need for an alternative to the traditional curriculum and education. Forestry faculties are encouraged to promote investigative skills and to lay greater emphasis on employability skills of problem solving, leadership and teamwork. Future graduates need to be able to manage and communicate with a broad range of people with conflicting views and different backgrounds, and to ensure that Higher Education Institutions are providing valuable human resources where they are most needed.

Keywords: Higher education, forestry graduates, employability, job market

Background

The fact that more than one third of graduates with a degree in forestry find jobs outside forestry (case of Germany: Steinert and Lewark, 2009), forest based industry or nature conservation, gives a strong indication that the forestry programmes need to prepare their graduates for extensive career choices outside the targeted sectors. Both, faculty and students, must be aware of the challenges and opportunities graduates face on the job markets. The job markets hold the power to define the characteristics and skill requirements of its workforces which may or may not be matched by the graduates educated by higher education institutions (HEIs). Hence the faculties of forestry education are encouraged, if not pressured, to educate graduates to be employable and the students to seek that information and be well prepared to live up to the expectations of potential employers including those outside forestry. In the process of finding jobs, one often has to demonstrate that he/she is not only employable as a person but also a contributing team member and has the highest potential productivity for employer's organization, particularly when he/she possesses an academic background different from the original field of

the organization. Often, the problem is not that the graduates do not possess critical skills needed for a certain job in forestry sector, but with so much emphasis on qualifications particularly in the academic world, these generic skills are taken for granted and therefore dismissed from the curriculum.

The concept of employability

Employability is more than subject knowledge, subject specific qualifications or specialist experience. It is a multi-faceted concept open to different interpretations and definitions (Lees, 2002). While employment is often described as ‘having a job’, employability is associated with ‘having those qualities that facilitate and improve employment opportunities’ (Knight and Yorke, 2002). Knight and Yorke (2004) define employability as “a set of achievements, understandings and the acquisition of attributes (knowledge, skills and abilities) that make individuals more likely to gain employment and be successful in their chosen occupations”. Hence employability is regarded as beyond solely getting a job with emphasis on learning and ability.

Potential employers expect Higher Education Institutions (HEIs) not only to educate graduates who have the technical, disciplinary and subject-specific competences from their degrees but also demand that these graduates demonstrate a range of broader skills and attributes, i.e. generic competences (team-working, communication, leadership, critical thinking, problem solving and managerial abilities) and to develop suitable personal characteristics that are relevant and attractive to employers organizations (Vanclay, 2007; Mendell, 2005; Mendell, 2006). This indicates that the HEIs need to include the development of generic skills into their curriculum, teaching methods and assessment.

Generic skills

Generally, we can identify two types of skills and/or competencies one achieves in HEIs, i.e. subject-specific skills and generic skills and/or competencies. The higher education council report achieving quality (Higher Education Council, 1992) identified generic skills as, “... skills, attributes and values which should be acquired by all graduates regardless of their discipline or field of study. In other words, they should represent the central achievements of higher education as a process.” From the point of view of working life, Rautopuro *et al.* (2011) suggest that problem-solving skills, team working skills, communication skills, information acquisition skills and organizational skills are the skills that should be most developed in HEIs. In this article, we focus on generic skills that we believe are relevant to employability.

Based on an interview study conducted with job recruiters, Fearn (2009) believes that the job market is increasingly expecting multi-skilled and multi-tasking employees who can survive in today’s work environment. Employees need to apply

new skills that require learning and re-learning (new tasks, new jobs, new technology, etc.) on the job. To answer this challenge, students need to actively identify and develop skills which are relevant to the future job market and for HEI faculty to find ways to promote these skills under a stimulating learning environment (Garcia-Aracil *et al.*, 2004). Other education experts feel however, that there are tensions of expectation between HEIs and employers due to conflicting agendas and priorities. This is reflected in the research literature reviewed by Lowden *et al.* (2011): "... one HEI representative stressed that employers and universities had two different emphases, i.e. teaching and research versus profit which was why the HEIs were reluctant to focus on developing students' employability and rather, HEIs seek to develop students' capacity to think and be independent".

Of course, it is disputable whether many of the criteria for employability identified by the HEIs representatives are compatible with academic and wider abilities, capacities and advancement. For example, a survey of members of the Institute of Foresters of Australia (IFA) conducted by Vanclay (2007) reflects a perceived utility of subjects such as silviculture, mensuration and forest management as very useful, while others such as fire management, geographic information skills, and community engagement were seen as less useful. The survey also highlights the need to include subjects, for example human resource management, business studies and communication skills in forestry programmes. A study by Bourgeois (2001) that represents views from corporate employers in the forestry sector suggests that forestry schools should provide graduates with relevant communication skills e.g. public presentations, technology transfer and the ability to work as team members capable of building relationships.

Employers from companies producing wood products seek candidates with business insight, marketing knowledge, and ability to work well with people (Howe, 2004). Howe also suggests that forestry courses should ensure "silvicultural competence, reinforced by practical experience and contact with industry, coupled with generic skills such as consultation and business/professional interactive skills, e.g. the abilities to work in teams, work with people of different backgrounds (academic and professional, nationalities, etc.) and to understand and respond to public questions" (Thompson *et al.*, 2003).

Sample *et al.* (1999) and Strake *et al.* (2006) conducted surveys on a range of employers in forestry. They found that forestry employers desired new employees who, in addition to the requisite for technical and subject-specific forestry skills, also possess knowledge and/or understanding of ethical issues and the ability to make decisions, integrate and apply them in work situations (according to their survey, 80 per cent of entry-level forestry jobs required the ability to, among other things, integrate sound ethical principles, establish relationships and credibility within one's organization, and provide responsive and effective client services). These surveys also mapped and ranked university subjects (skills, subject-specific

forestry skills and other standard of accredited forestry curricula) which respondents thought more or less useful, as well as subjects that in hindsight, they wished they had taken.

Based on these surveys and looking at the set of skills and at the current forestry curricula, the authors recommend additional emphasis on skills such as communication skills (primarily writing and public speaking skills), skills in finance/general management/business (business administration is recommended for specialization) and a good technical foundation which are thought to be the most relevant skills for graduates who wish to pursue careers in consulting companies. Furthermore, Sample *et al.* (1999) noted that employers in consultancy emphasize the importance of possessing the ability to work in teams (of different background e.g. academic and professional, nationalities, etc.), to listen to and address public questions, such those from Thompson *et al.* (2003). They also found that those basic skills in applied sociology and psychology are equally important to consulting work because these skills help to understand and relate with the rural people.

To summarize, the most highlighted employability skills are communication skills, social skills, leadership, and the ability to work in teams of different backgrounds and to integrate sound ethical principles on work issues. Other skills mentioned are skills to manage people, integrated forest management, basic technical (GPS and GIS) and computer skills. Finally, a survey work by the National Association of Colleges and Employers in Pennsylvania, USA, found that employers across all industries rank interpersonal skills first, followed by the ability to work in teams and verbal communications skills as the most preferred traits for new employees (NACE, 2001).

Exploring newer perspectives: the need for stimulating learning environments

Vanclay (2007) suggests that one of the HEIs barriers to reform their curricula is the tendency to offer programmes that are familiar to the capability and interests of the existing teaching staff, as opposed to the future needs of the profession or what skills considered as significant to the job market. Arevalo *et al.* (2010) carried out a survey on forestry education in China, Brazil and Finland that shows, although employers and universities view similar assessments on the importance of competencies, there is a gap between achievements of the training of professional foresters and what the job market needs (e.g. the ability to plan, coordinate and organize, and the ability to communicate with specialists and non-specialists). Sample *et al.* (1999) also identified similar gaps in graduates' skills – specific areas for improvement for forestry graduates – i.e. in teamwork, communication skills, and managerial skills.

Why do these graduates (i.e. prospective employees) lack the necessary employability skills? Experts point to a number of potential reasons. First, according to Knight and Yorke (2002), traditional learning in HEIs is considered

too passive, leaving limited opportunities for students to actively develop communication and other generic skills. Thus the challenge for the faculties is to find creative ways to teach basic subjects such as chemistry or mathematics, and make them more relevant and applicable to work in a stimulating learning environment. This may be done through integration with other subjects and innovative learning and teaching methods (e.g. problem-based learning) which involve practicing of the above mentioned employability skills. Such study environment and learning and teaching methods could enhance the promotion of employability skills and personal characteristics.

Next, Cotton (2008) suggested that HEIs need to recognize and implement specific educational practices, which will directly address the development of employability skills, thereby using the method of knowledge and competences assessment. He promoted two forms of assessment, i.e. peer assessment and self-assessment. Through team work, competition, stimulation and mutual learning, students are exposed to the professional content and future challenge. Research conducted by Schmidt *et al.* (2006) showed that students involved in stimulating active learning environments and students who were allowed to assess themselves and their peers, became actively aware of the goals of the courses, their performance and their peers' performance. They turned out to be more involved and competent for self-studying, problem-solving work and teamwork as compared to students who studied in a conventional environment.

To sum up, looking at the two above arguments, it is becoming increasingly apparent that forestry HEIs need to create learning environments which mimic or are closer to the work conditions and situations in typical today-organizations, in which employees come from multi-disciplinary academic background or different nationalities. Having the ability to work and fit in this type of environment is a requisition for successful entry into the job market. To achieve this, HEIs can opt to involve employers in the design and delivery of their courses or invite them as guest lecturers in workshops, seminars, or skill sessions (i.e. conducting one-to-one tutorials and/or interview simulations) and to use actual case-study material and data in their courses.

In addition to traditional on-campus learning environments, students can also reap the benefit of practical training and internship (forestry training) where training or internship in bachelor degree programmes provide the students with formative career preparation (Vanclay, 2007). This could be a good environment to practice and promote the skills they acquired on campus, both subject-specific and generic skills. Apprenticeships, internships or practical training may increase students' self-confidence and self-motivation (Dimitrios, 2006). These add to the list of working experiences, offer suitable preparation to work and lessen the transition shock from school to work (Garavan and Murphy, 2001; Dimitrios, 2006).

Conclusions

While there are variations in definitions and interpretations of employability, there is a broad understanding and consensus of what qualities, characteristics, skills and knowledge constitute employability in general and of HEI graduates in particular (Lowden *et al.*, 2011). The findings in literature demonstrate recruiters', job markets' and employers' perspectives. They seem not only to expect graduates to have the technical and disciplinary competences from their study programmes but also to require graduates to demonstrate a range of broader skills, the so called generic skills. These attributes include the ability to work in teams, to possess good communication skills (public speaking, report writing), leadership, critical thinking, problem solving and social skills and often include managerial abilities.

Thus, creating a work-based learning environment, internships and apprenticeship placements is regarded as an effective way to provide HEI students with relevant employment skills, the knowledge and awareness of work-culture. In the literature, we found views that underline that forestry HEIs still have the tendency to neglect the generic skills, professional and leadership development. This needs to change.

This paper further underlines the need for creating alternatives to the traditional curricula and education. Nowadays education should be more about learning than about collecting knowledge and more about thinking critically and solving problems than solely about being trained. Forestry faculties are therefore encouraged to promote investigative skills, to lay greater emphasis on employability skills of problem solving, leadership and teamwork. Future graduates need to be able to manage and communicate with a broad range of people with conflicting views and different backgrounds. There are many leadership skills needed by foresters that are common to other professions and fields of endeavor (e.g. human resources management, business/financial management) all to ensure that forestry HEIs provide the best education and produce valuable human resources where they are most needed.

References

- Arevalo, J., Pitkänen, S., Gritten, D. and Tahvanainen, L., 2010: Market-relevant competencies for professional foresters in European graduate education. *International Forestry Review* 12 (3) 200-208
- Bourgeois, W., 2001: Requirements of a forestry education from an employer perspective. Meeting of International University Forest Education Leaders, 4 December 2001, University of British Columbia Faculty of Forestry, Vancouver BC, Canada.
<http://www.fao.org/DOCREP/MEETING/007/AD234E/AD234e05.htm>
Retrieved: 14/11/2013
- Clanchy, J. and Ballard, B., 1995: Generic skills in the context of higher education. *Higher Education Research and Development* 14 (2), 155-166.

- Cotton K., 2008: Developing employability skills. Northwest Regional Educational Research Laboratory. Retrieved from www.nwrel.org/scpd/sirs/8/c015.html. Retrieved: 11/14/2013.
- Dimitrios, M. M., 2006: Internships at Greek Universities: an exploratory study. *Journal of Workplace Learning* 18 (1): 28-41.
- Fearn, H., 2009: More things in heaven and earth, Horatio. Retrieved March 12, 2013. <http://www.timeshighereducation.co.uk/404855.article>. Retrieved: 14/11/2013
- Garavan, T. and Murphy, C., 2001: The co-operative education process and organizational socialization: a qualitative study of student perceptions of its effectiveness. *Education + Training*, 43, 281-302
- García-Aracil, A., Mora, J.G. and Vila, L.E., 2004: The Rewards of Human Capital Competences for Young European Higher Education Graduates, *Tertiary Education and Management*. 2004.
- Harvey, L., 2001: Defining and Measuring Employability. *Quality in Higher Education*, Vol. 7, 2, 2001
- Higher Education Council, 1992: "Higher Education: Achieving Quality". October 1992. Canberra: AGPS.
- Howe, R., 2004: Review of Higher Education for forestry. A paper for the Forestry Commission Advisory
- Knight, P. T. and Yorke, M., 2002: Employability through the Curriculum. *Tertiary Education and Management* 8 (4): 261-276.
- Knight, P. T and Yorke, M., 2004: *Employability: Judging and Communicating Achievements*. Learning and Employability Series. York: Higher Education Academy.
- Lees, D., 2002: Graduate employability – literature review. LTSN Generic Centre. <http://qualityresearchinternational.com/esectools/esectpubs/leeslitreview.pdf>. Retrieved: 14/11/2013
- Lowden, K., Hall, S., Elliot, D. and Lewin, J., 2011: Employers' perceptions of the employability skills of new graduates, Edge Foundation, London. http://www.edge.co.uk/media/63412/employability_skills_as_pdf_-_final_online_version.pdf
- Mendell, B.C., 2005: Loving trees is not enough: communication skills for natural resource professionals. In Working Manuscript. Maher, Angela & Graves, Sarah. "Making Students More Employable: Can Higher Education Deliver?"
- Mendell, B. C., 2006: "Integrating communication training into the forestry curriculum". 2006. <http://www.for.gov.bc.ca/hfd/library/documents/Bib96089/43.pdf>
- National Association of Colleges and Employers (NACE): Job Outlook Survey 2001, 2001: <http://www.unco.edu/careers/assets/documents/NACEJobOutlookNov2013.pdf>. Retrieved: 14/11/2013
- Sample, V., Ringgold, P., Block, N. and Giltmier, J., 1999: Forestry education: adapting to the changing demands on professionals. *Journal of Forestry* 97(9): 4-10.

- Schmidt, H.G., Vermeulen, L. and van der Molen, H.T., 2006: Long-term effects of problem-based learning: a comparison of competencies acquired by graduates of a problem-based and a conventional medical school. *Med Education* Jun 2006 Jun; 40(6):562-7.
- Steinert, S. and Lewark, S., 2009: Occupation after studying forest sciences in Germany. Graduate analysis 2006 for German speaking forest science curricula and first results for the Faculty for Forestry and Environmental Sciences of the University of Freiburg. In: Schmidt, P. and Lewark, S. (Eds.): *What do we know about our graduates? Graduate analyses for forest sciences and related curricula*. Joensuu: SILVA Publications 7, University Press, University of Joensuu. www.silva-network.eu
- Strake, T.J. and Childers, C.J., 2006: Consulting foresters' view of professional forestry education. *Journal of Natural Resources and Life Sciences Education* 35:48-52.
- Thompson, J.R., Colletti, J.P., Jungst, S.E. and Liklider, B.L., 2003: Preparing tomorrow's foresters: embedding professional interactive skills in a technical discipline. *Journal of Forestry* 101(7): 8-13. 2003.
- Vanclay, J.K., 2007: Educating Australian foresters for the 21st century, *International Forestry Review* Vol.9 (4), 2007.
- Yorke, M., 2004: *Employability in higher education: what it is -what it is not*. No. 1 of the ESECT Learning and Employability Series. York: Higher Education Academy. 2004.
- http://www.heacademy.ac.uk/assets/York/documents/ourwork/tla/employability/id116_employability_in_higher_education_336.pdf. Retrieved: 14/11/2013

LEARNING OUTCOMES AND WORKING LIFE: A STUDY IN PROGRESS

MIKA REKOLA

Abstract

Increasing complexity and rapid technical and social changes call for qualified and productive professionals in working life. Human capital theory has stressed the role of education as a productivity enhancing investment. In Finland public policy has emphasized the education not only as a source of economic benefit but also a backbone of social welfare. It is evident that not all education has equal outcomes in increasing knowledge and skills and finally economic productivity. This can be analysed, for instance, using individual level data on education and earnings which is typically seen as a valid measure for productivity. The paper presents a productivity model of individuals that consists of four main elements: learning outcomes, working experience during the studies, working experience after the studies, and the relatedness of studies and job. The data collection is to be done later on and empirical results thus not yet available. It is expected that results will provide insight into the relationship of education and later career and thus provide information into university curriculum design.

Keywords: higher education, learning outcomes, economic returns, forest education, human capital

Introduction

The role of skilled labour is an elementary component of economy as well as investments and raw materials. A country without rich natural resources like Finland has emphasized education as a productivity enhancing investment. Education has also been seen as an important element of social policy because it has several external effects, namely improved life management skills and thus enhanced health. From the labour market perspective the quantitative adjustment of labour in all levels, i.e., vocational, polytechnics, and university, has always been a challenge because of rapidly changing economic cycles. These cycles have been extremely heavy in export oriented business like forest industry and forestry. From the qualitative side of education there have been drastic changes because of scientific and technological advancement. For instance, the work of marking the trees to be cut has been moved from academic foresters to forest engineers and lately to drivers of harvester machines. That is why it is evident that there has been constant discussion during the recent decades how the education and labour markets fit together (For discussions in Finland see Turunen, 2002; Strandström, 2007; The best knowledge..., 2008; Schuck, 2009; on European level see Schmidt *et al.*, 1998; Lewark and Steiner, 2010).

Some changes have been proposed to the quantity of forest education enrolment and also modification for curricula. This discussion about curricula could be analysed using the concepts of skills, profiles, competences, or learning outcomes (e.g., Harden, 2002; Arevalo, 2011). With learning outcomes we mean what a learner knows, understands and/or is able to do at the end of a period of learning (Allan, 1996). From the economic point of view it is evident that not all education has equal outcome in economic productivity. Historically education has been an investment that has produced a reasonable rate of return from the individual point of view. However, recent research has shown decreasing returns to education (Asplund and Pereira, 1999; Robst, 2007)

There has also been a discussion about the relatedness of university forestry studies and working life needs. Some concerns about the job-studies mismatch have been raised, that is several foresters are not working in jobs that are really related to their studies. One emotional topic in higher education in general has been whether it is appropriate that university students work during their studies (Kurri, 2006). This work has shown to lengthen the study period however, it may also give students so called extra curriculum experiences (D'amigo, 1984).

The aim of the study is to find out the connections between university studies and working life, especially between learning outcomes and the economic productivity of labour. This research has four specific research questions: first, what are the effects of study programmes and majors on learning outcomes and earnings; second, whether working during university studies has an effect on learning and earnings; third, what is the proportion of graduates working in jobs unrelated to their field of study; and fourth, whether relatedness of studies and work affect earnings.

Frame of reference

The essence of the study is to link working life and education using meaningful concepts to answer the research questions. For that purpose the frame of reference, based on the theory of human capital and learning outcomes, was constructed (Figure 1). The theory of human capital is based on classics such as Adam Smith (1776) and Alfred Marshall (1890). However, it started to get its recent format not earlier than the 1950s by Mincer (1958), and continued in the 1960s and 1970s by Schultz (1960, 1961) and Becker (1962, 1975). Human capital is defined as the stock of productive skills and knowledge that individuals possess. The amount of human capital is increasing function of the division of labour and specialization. Both education and working experience enhance human capital.

The basic model from private view is so called Mincerian method (Mincer, 1974). The income of an individual i is assumed to be a function of years of education and working experience as follows:

$$\ln(y_i) = g(s_i, EXP_i, X_i)$$

where y_i is the annual income, s_i is the number of years at school, EXP_i is the working experience in years, X_i is a vector of determinants other than schooling.

The assumptions of this basic earning functions are among others first, individuals live/work for an infinite number of years; second, the only costs during the studies is forgone earnings, and third, only the years, not the level of schooling, has importance (Asplund and Pereira, 1999, Psacharopoulos and Patrinos, 2004). However, these assumptions are under some conditions not necessarily severe for interpreting the results.

This study also applies earnings function method to fit a function of log-wages ($\ln(y)$). However, the more detailed emphasis is put on the qualitative aspects of education and working life as well. The model of this study can be seen as an extension to the model by Robst (2007). In order to answer four research questions the earnings function integrates independent variables measuring learning outcomes, working experience during and after university studies, relatedness of studies and job, and further education. In specific, the model includes three different types of learning outcomes as follows:

$$\ln Y(y_m, y_n) = \alpha + \gamma_r LO_Tr + \gamma_{ac} LO_Ac + \gamma_{sb} LO_Sb + \gamma_{wd} EXP_Wd + \gamma_{rel} Rel + \gamma_{wr} EXP_Wa + \gamma_f Fure + \gamma_x X + \varepsilon$$

where

- A1 LO_Tr = learning outcomes of transferable skills
- A2 LO_Ac = learning outcomes of academic skills
- A3 LO_Sb = learning outcomes of subject
- B. EXP_Wd = working experience during studies
- C. Rel = relatedness of studies and work
- D. EXP_Wa = working experience after studies
- E Fure=further education
- F y_m =earnings
- G y_n =non-monetary rewards
- X X= socioeconomic background.

Capital letters mentioned above refer to the frame of reference (Figure 1) which shows visually the relationship of educational and working life concepts. It is plausible to find statistical correlations between the concepts such as learning outcomes and earnings; however, the causality is more difficult to prove.

The initial point of the study is the concept of learning outcomes by which we mean what a learner knows, understands and/or is able to do at the end of a period of learning (Allan, 1996). It is important to realize that learning outcomes are results of the learning process as a whole. A student may learn several issues during the time which are not mentioned in curricula. For instance, presentation skills are

practiced in a few courses even though these skills are not mentioned in the course syllabus. Thus learning outcomes can be divided into intended and not intended. However, this is not a purposeful way to analyse learning outcomes in this study. There are also studies which has used a long list of competences when exploring forest education (e.g. Schuck, 2009). Instead of these categorizing we used the classification by Allan (1996) into three broad categories: generic academic skills, transferable skills, and subject specific skills (Figure 1).

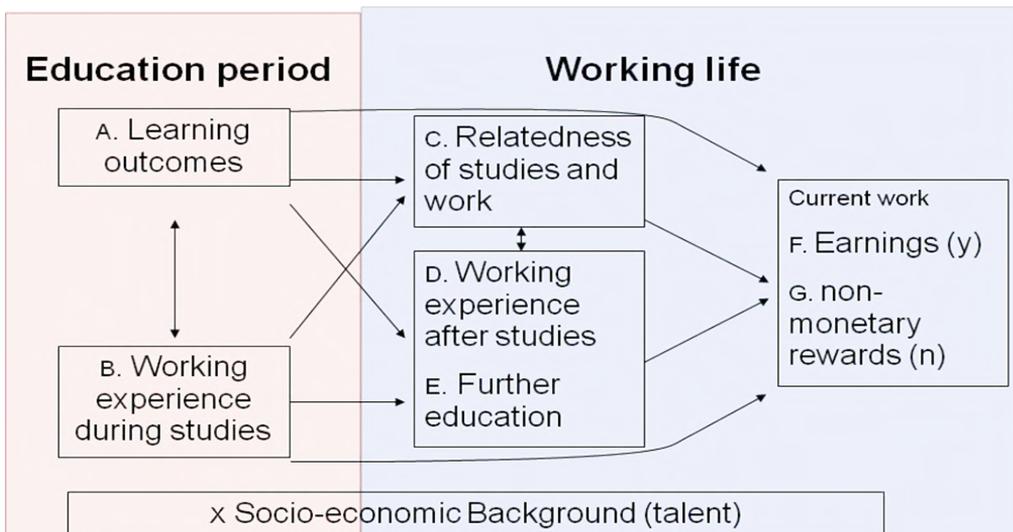


Figure 1. Frame of reference. Relations between education period and working life. For explanation see text.

Generic academic skills are needed by all high level professionals no matter the discipline. These are for instance ability to analyse, organise and structure ideas. Transferable skills are even more general and are needed in any level and branch of working life, for example numeracy and communication. The third category is about subject specific skills, such as silviculture and forest economics, and these are more easily separated from the two previous categories. There are some general classifications of forest science, e.g., IUFRO has nine divisions under which several subcategories for forest science have been placed. For the purpose of this study the most relevant disciplines both regarding university and polytechnics were formulated keeping in mind the appropriate number of categories for the analysis. We thus ended up with eight categories (Table 1).

The concept B in the model (Figure 1) is "Working experience during studies". There is contradictory evidence how these and learning outcomes are related. A congruence hypothesis by D'amigo (1984) says that there are similarities between the personality traits desired and rewarded by employers and teachers. That means that employment and class-room participation may reinforce each other.

Table 1. Learning outcomes included in the survey.

Learning outcomes		
Generic academic skills	Transferable skills	Subject specific skills
Analyse Organise and structure ideas Think critically Synthesise ideas and information	Communicate effectively Organise Gather information Use information technology Act independently Work teams Numeracy	Silviculture Forest ecology Timber procurement and forest technology Forest industry Forest resource monitoring and management Multiple use of forests Wildlife and game management Forest economics and policy and marketing

Accordingly, a reasonable amount of work during studies may improve learning outcomes; however, very intensive work could be detrimental to school grades.

Relatedness of studies and work, the concept C in the framework (Figure 1), is an important aspect of individual's success on the labour market and thus one determinant for earnings. It defines the match between worker's education and skills required in his/her job. This is typically divided into quantity (level of schooling – job requirements) and quality (type of schooling – job requirements) relatedness. If the mismatch of studies and work is high, it may cause reduction in wages, job satisfaction, and productivity. This may, however, depend on the discipline (Duncan and Hoffman, 1981; Cohn and Kahn, 1995; Robst, 2007). Individuals select the major studies based on interests, expected earnings, patterns of labour for participation, uncertainty, and likelihood of graduation (Robst, 2007). It is clear that the eventual match between the studies and work is uncertain at the moment of degree and major choice.

Working experience after studies, concept D in the framework (Figure 1), may have a non-linear effect on earnings. In a recent study by Masoumeh *et al.* (2011) employee's earnings were found to increase with experience in the beginning of career and then reach the maximum that is followed by a decline. In our study graduates are early in their career and positive correlation is thus expected. Further education, the concept E, is also assumed to have a positive impact on productivity and earnings. However, there are some mixed results from the effect of further education on earnings (Crichton and Dixon, 2011).

The explained dependent variable in the model (Figure 1) is a combined variable, a function of earnings and non-monetary rewards of work. Monetary rewards, concept F, are measured with gross annual salary. According to the theory the return to education consists of future discounted earnings from educational investment. These net returns include private foregone wage during studies as costs and increased wage after studies as benefits. Non-monetary rewards of work, concept G, are a controversial topic. The effect of non-monetary issues, especially intrinsic motivation on labour supply has been argued in particular around the

theory of crowding-out effect. It says that under some circumstances monetary rewards can decrease rather than increase supply (Titmuss, 1970; Frey and Jegen, 2002). We assume here that both monetary and non-monetary rewards are positive to work motivation and supply and thus enhance the career development. It is important to realize that professionals may have really diverse values and motivations to work (on forestry professionals' values see Rekola *et al.*, 2011). In this study it is not possible to measure values as such; instead, we assume that there are four broad non-monetary rewards that motivate professionals. They are social status, ability to adapt leisure and working hours (flexibility), opportunity to learn new things, and autonomy.

In order to estimate the econometric model of returns to education we have to control individuals' background and abilities by including e.g., socioeconomic variables, concept X, and ability test scores in the earnings equations. We use grades from high school matriculation to measure for individuals' general background ability.

Data and method

The data to be collected in late 2011 will consist of graduates from universities, academic foresters, and forest engineers from polytechnics. University graduates have both three years BSc and two years MSc degree whereas polytechnic graduates have four years BSc degree. Data includes all university graduates between years 2000-2008, total of 900 and all graduates from Polytechnics (University of Applied Sciences) from the same period, total of 950 people. Learning outcomes are measured using course credits (ECTS) and grades (1-5) from university registers. Courses are classified according to three different categories of learning outcomes (see Table 1).

The survey administration is kindly provided by labour unions, the Society of Finnish Professional Foresters SFPF and Forestry Experts' Association METO. The emails with a link to electronic questionnaires were sent to all members of these labour unions in late 2011. Non-members were contacted by regular mail.¹

The basic method to analyse the data is linear regression following Robst (2007). However, our study includes several broad concepts, e.g., learning outcomes, that cannot be measured with a single variable rather a bundle of variables. In this case there is a need to compound variables that can be formed with factor analysis. It is possible to use structural equation modelling (Jöreskog and Sörbom, 1996).

Concluding remarks

In order to answer the main broad research question, what is the relationship between university forestry education and working career, several theories and

¹ At the time of writing this article the data were not yet collected. The data are now under processing and empirical results will be published later on.

concepts from various disciplines have to be integrated into a unified frame of reference. This study leans heavily on the theory of human capital. It assumes that the stock of skills and knowledge that an individual possesses has a positive effect on his/her productivity in the labour market. The amount of human capital is assumed to be an increasing function of the division of labour and specialization and further enhanced by education and working experience. This model is extended here by incorporating the concept of learning outcomes into the model.

A challenge of this study is the data collection. There will be easily several hundreds of explanatory variables, mainly those related to learning outcomes. They consist of grades and credits of courses earned by graduates from two universities and seven polytechnics. There is thus a need to use structural equation modelling and compound variables. In addition to those challenges the problem of multicollinearity is evident, i.e., several explanatory variables such as learning outcomes, are correlated. Multicollinearity may potentially cause errors in coefficient estimates.

The study may provide important insights in elaborating the role of the composite stock of skills and knowledge in working career. Especially, we can divide the stock into three elements: generic skills, academic skills, and subject specific skills. The concept of learning outcomes is still rather new in education research and forest education in particular. We believe that both branches of sciences, economics and education, will benefit from these kinds of interdisciplinary models. These studies will also develop in the long run practical monitoring systems for education.

References

- Allan, J., 1996: Learning outcomes in higher education. *Studies in Higher Education*, 21(1): 93-109.
- Arevalo, J., 2011: International perceptions of university forestry education – An analysis of student motivation, competencies, and curricula. *Dissertationes Forestales* 128. 56 p.
- Asplund, R. and Pereira, P.T., 1999: Returns to human capital in Europe. A literature review. ETLA. Helsinki.
- Becker, G.S., 1962: Investment in human capital: A theoretical analysis. *The Journal of Political Economy*, 70.
- Becker, G.S., 1975: *Human capital*. University of Chicago Press, Chicago.
- Cohn, E. and Kahn, S., 1995: The wage effects of overschooling revisited. *Labour Economics*, 2(1), 67–76.
- Crichton, S. and Dixon, S., 2011: The labour market returns to further education for working adults. Department of Labour and Statistics New Zealand.
- D'amico, R., 1984: Does employment during high school impair academic progress? *Sociology of education* 1984, vol. 57 (July): 152-164
- Duncan, G. and Hoffman, S., 1981: The incidence and wage effects of overeducation. *Economics of Education Review*, 1(1), 75–86.

- Frey, B.S. and Jegen, R., 2001: Motivation crowding theory. *Journal of Economic Surveys*, 15: 589–611. doi: 10.1111/1467-6419.00150
- Harden, R.M., 2002: Learning outcomes and instructional objectives: Is there a difference? *Medical Teacher*, Vol. 24, No. 2, 2002, 151–155
- Jöreskog, K. G. and Sörbom, D., 1996: LISREL 8: user's reference guide.
- Kurri, E., 2006: A dilemma of study procrastination. A study on delays in graduation and education policies. Opintojen pitkittymisen dilemma. Tutkimus opintojen sujumattomuustekijöistä yliopistoissa ja niihin vaikuttamisen keinoista. Otus 27/2006. In Finnish.
- Lewark, S. and Steinert, S., 2010: Occupation after studying forest sciences in Germany. Pp 29-29 in Schmidt, P., Lewark, S. and Strange, N. (Eds.): What do we know about our graduates? Graduate analyses for forest sciences and related curricula. Proceedings of the SILVA Network conference held at the Faculty of Life Sciences, University of Copenhagen, Denmark, May 15th – May 17th, 2008. SILVA Network Publications 6.
- The best knowledge in ..., 2008: The best knowledge in forestry, wood and paper making. Developing forest sector education in Finland. Maaillan parasta metsä-, puu- ja paperiosaamista. Metsäsektorin koulutuksen kehittäminen Suomessa. Opetusministeriön työryhmämuistioita ja selvityksiä 2008:1. Committee report on Education in Forest Sector. In Finnish.
- Mager, R., 1962: *Preparing Instructional Objectives*, revised 2nd edn. Belmont, CA, David Lake Publishers.
- Marshall, A., 1890: *Principles of Economics*.
- Masoumeh, M., Hamidreza, A., Shahryar Seyedali, M. and Sanaz, G., 2011: Investigation the Effect of Gender, Experience and Education on the Earning of Urban and Rural Employees. *Australian Journal of Basic and Applied Sciences*, 5(7): 200-207, 2011
- Mincer, J., 1958: Investment in human capital and personal income distribution - *The Journal of Political Economy*, 66, no. 4
- Mincer, J., 1974: Schooling and earnings. Pp. 41-63 in *Schooling, experience, and earnings*. Columbia University Press
- Psacharopoulos, G. and Patrinos, H., 2004: Human capital and rates of return. Pp. XX- XX in Johnes, G. and Jones, J. (Eds.): *International handbook on the economics of education*. Edward Elgar Publishing.
- Rekola, M., Valkeapää, A. and Rantala, T., 2010: Nordic forest professionals' values. *Silva Fennica* 44(5) 885-908.
- Robst, J., 2007: Education and job match: The relatedness of college major and work. *Economics of Education Review*, 26(4): 397-407.
- Schmidt, P., Huss, J., Lewark, S., Pettenella, D. and Saastamoinen, O. (Eds.), 1998: New requirements for university education. Proceedings of a workshop held in Wageningen, The Netherlands, 30 July- 2 August 1997. Demeter Series 1. 394 pp.
- Schuck, A., 2009: Perspectives and limitations of Finnish higher forestry education in a unifying Europe. *Dissertationes Forestales* 78. 124 p. Available at <http://www.metla.fi/dissertationes/df78.htm>

- Schultz, T.W., 1960: Capital formation by education. *Journal of Political Economy* 68, 571-83.
- Schultz, T.W., 1961: Investment in human capital. *American Economic Review* 51, 1-17.
- Smith, A., 1776: *An Inquiry into the nature and causes of the wealth of nations*. In Denzin, N.K., Lincoln, Y.S. and Thousand Oaks, C.A., (Eds.): *The SAGE handbook of qualitative research*. 2005. Sage Publications, cop.
- Strandström, M., 2007: *Metsätyövoiman tarve - Savotta 2015, Metsätehon raportti 31/2007*.
- Titmuss, R.M., 1970: *The gift relationship*. London. Allen and Unwin.
- Turunen, K., 2002: *Metsäalan korkeakoulutuksen määrällinen ja laadullinen ennakointi*. Hankkeen loppuraportti. Metsänhoitajaliitto ry.

THE PRESENT SOCIETY'S POINT OF VIEW ON FORESTRY AND ITS IMPACT ON THE NEEDS OF UNIVERSITY EDUCATED FORESTERS

JIRÍ VIEWEGH

Abstract

The 3rd annual ConDDEFFS meeting held in Prague in September 2011 continued with the cooperation among universities educating foresters. This meeting focussed on the present position of forestry in society.

Keywords: Forestry policy, forestry pedagogy, higher education

Introduction

Transformation of the university education is under way in almost the whole of Europe. Disadvantages of the mindless transformation according to the Bologna Declaration especially for technical education are widely known (Viewegh – personal experience) and they were sophisticatedly analyzed by Liessmann (2008). Almost all university teachers complain about this, but also all of them submit to it, since it is connected with EU (money) subventions. In the light of these changes, the following question is in the air. What is the present point of view of the society on forestry and how does this point of view influence the need for university educated foresters? The title of this article has been the topic of the 3rd (annual) Conference of Deans and Directors of European Forestry Faculties and Schools (ConDDEFFS). For members see Table 1.

Table 1: List of forestry university institutions, included in this survey. (For details see Viewegh, 2011).

Moscow State University (Russia)
Faculty of Forestry Krakow (Poland)
University of Ljubljana, Biotechnical Faculty (Slovenia)
Forest Faculty Jelgava (Latvia)
Faculty of Forestry and Ecology (Lihuania)
Faculty of Forestry Sopron (Hungary)
Faculty of Forestry Banja Luka (Republic of Srpska; Bosnia and Hercegovinia)
Kastamonu University, Faculty of Forestry (Turkey)
Istanbul University, Faculty of Forestry (Turkey)
Faculty of Forestry Sofia (Bulgaria)
Faculta de Ciencias Forestales Santiago de Chila (Chile)

Obtained information

The following six statements were formulated on the basis of brief information from 11 forestry university institutions (which list is presented in Table 1):

- *Forest area has generally increased during the last 100 years.*
The forest cover increased in some states to nearly the double area during the last 100 years. It is a result of different reclamations by forests in southern parts of Europe and Turkey. Pasture abandoning and during the last 20 years a decrease of agriculture land occurred in Central and the Eastern Europe.
- *Forestry and the profession of forester are attractive in several countries up till now.*
Since this attractiveness occurs mainly in the Balkan countries, in the Baltics and Russia – areas with a high forest cover -, the reason may be, that forestry has meant (and still means in many places) familial employment.
- *Forestry provides jobs which are mostly below-average-wage jobs.*
Wages in all positions in forestry, with the exception of the top management, are mostly about one third below average. This fact creates an reduced enrolment of forestry students even in traditional forestry countries, not only in Central Europe, but also in Scandinavia. On the other hand perspectives for the alumni of forestry faculties in those countries are not limited by salary, if they are employed in state service, i.e. as civil servants of different levels and also as employees of National Parks (or other sectors of nature protection alternatively). This phenomenon is not so important, since such responsible positions of the middle levels are often filled by workers without any forestry education.
- *Forestry research does not answer to the practical forestry needs in some countries.*
Practical forestry often needs research on the level of local conditions. Since universities are running for more prestigious issues like “impact factors of publications” at present, the research tries to be of more worldwide importance and local conditions are neglected. Because of this there is no interest in the scientific community for practical forestry from other parts of the world. Local special magazines with descriptions of new often very helpful ideas for local forestry are downgraded, since they will not be included in “relevant” databases. They are in a relevant mother tongue and peer reviewers (often international) don’t take them into consideration due to the assessment level of the faculty (university). The research teams of the universities aim often to forestry processes, which haven’t any importance from the practical forestry point of view (e.g. natural succession after fire or migration of *Osmoderma eremita*).
- *During the last three decades forestry and its purpose was and still is very aggressively attacked by the „Greens“, mostly from city populations.*
Aggressiveness against forestry increases with the political power of the “Greens”. It is interesting, that this aggressiveness has its source in many cases in the populations of big cities. This population often feels forests are the

permanent ecosystem suitable for leisure activities and the object of exclusive protection only. The rural population hasn't been affected by this new ideology, since they don't suffer from such extreme environmental changes – settlement versus nature. This phenomenon appears especially in countries where the city (and industrial) population prevails throughout the whole population.

- *Foresters and forest faculties primarily are very passive in educating the whole population.*

Forestry curricula cover some subjects related to characteristics of education and to skills. In addition to that, and referring to the previous (5th) statement, it is necessary to include Forest Pedagogy into the forestry curricula. University educated foresters could know perfectly how to explain all the main goals and methods of the forestry to the rest of population so that there needn't be any more unprofessional attacks.

Conclusions

- *Governments should have a clear forestry policy.*

Meaningful forestry education can't be offered without a clear forestry policy. If it doesn't exist, the society loses interest in the discipline (profession and the work field), which could lead to a lack of specialists. Some students will enrol in university only to extend their youth for a longer period of time.

- *Consult on all curricula with the professional forestry organizations or forest companies.*

The present curricula mostly don't reflect the needs of forestry practice. They are either obsolete or one-sidedly specialized. Syllabi of the subjects are even worse. Their contents for classical forestry subjects haven't changed very much. The traditional curricula have been in force for many years and we feel now is the time to shorten the syllabi to include new ideas and subjects connected to the needs of the practical forestry without extending the teaching hours.

- *Forest Pedagogy has to be an obligatory subject in MSc curricula.*

The characteristic of foresters to keep one to one's self and to their own community is one reason for the easy attack by not-forestry-educated organizations, which often rule by significant mass media and organise anti-forestry campaigns. It is evident that it is not possible to impart details of a completed forestry specialization programme to the general public. Forestry Pedagogy is the subject for this. Its task is to educate the forestry community how to convey to the surrounding population the principles, functions, roles and methods of forestry from the very young age.

- *Try to have Forestry under one EU commission only.*

It is absurd, that forestry falls under the following three EU commission - Agriculture, Industry and Environment. These bureaucratic machineries each have different views on forest principles and rarely combine to make a decision satisfactory to all. There is no difference in principle between agriculture and forestry. Both are "raw factories" as well as being in the nature. This absurd

separating forestry into three departmental fragments thwarts the concept of a whole and clear discipline forestry for making any clear forest policy.

References

- Liessmann, K.P., 2008: Theorie nevzdělanosti. Omyly společnosti vědění. [Theorie der Unbildung. Die Irrtümer der Wissensgesellschaft] Academia, Praha, 125 pp. ISBN 978-80-200-1677-5 [orig. in German, Paul Zsolnay Publ. Wien, 2006]
- Viewegh, J. (Ed.), 2011: Contributions. In: 3rd ConDDEFFS meeting. Sept. 7-10th 2011 Kostelec nad Černými lesy. CULS Prague, published on CD. ISBN 978-80-213-2231-8

THE SILVA NETWORK EMBEDDED IN THE DEVELOPMENT OF FORESTRY SCIENCE EDUCATION IN EUROPE, 1987 – 2011

PIETER SCHMIDT, SIEGFRIED LEWARK

Abstract

The SILVA Network is an association of universities in Europe with a forestry education. In this paper its history, institutional place and its activities are described, including the changes in its focus. Next to this, some developments in the world of university education and some developments in the world of forestry are discussed. In the discussion a few suggestions for the future are made.

Key words: SILVA Network, forestry, forestry education at universities

Introduction

The SILVA Network is a European platform for cooperation between forestry education institutes at university level. With 24 years of age, the SILVA Network has perhaps reached adulthood, but surely is not fully-developed. It passed since its birth in 1987 through childhood and adolescence and underwent a number of changes. This will go on in the future. The main objectives however remained more or less the same.

These changes reflect changes of forestry education at university level to be observed in the same period. Last relics of the ‘traditional’ education disappeared and university education was and is being moulded in formats given by the European Council. Moreover, in quite a number of European societies, the societal focus moved from land uses aimed at production to land uses aimed at conservation².

This leads to the question if the SILVA Network still fulfils its aims in an optimal way.

The start of the SILVA Network: Its environment in 1987

The SILVA Network was founded in 1987 as a network of European universities with a forestry education. At that time, students were becoming more and more interested in studying abroad, as did the ‘Wanderstudenten’ in the Middle Ages (Schmidt, 1993). National borders were disappearing; people were used to holidaying in a foreign (often Mediterranean) country; the knowledge and use of foreign languages improved; the interest in other cultures grew. The difficulties

² Since the presentation in 2011, it is manifest that this trend is somewhat reversed in many countries due to the increasing need for renewable raw materials and due to the reduction in subsidizing nature.

these students met were large. Universities were not yet subject to European rules. Curricula were developed according to national regulations and aimed at national demands and markets. Teaching at universities was done in the home language. Internet did not yet exist, meaning that information about universities, curricula and courses, published in books, booklets et cetera, was difficult to obtain. And this information is an obligatory basis for a successful sojourn at a foreign university for students as well as teachers.

In the middle of these 1980s, the European Commission started to stimulate – through funding in the Erasmus Programme – the cooperation between universities regarding the exchange of students and teachers. In 1986 the Commission changed its focus from bilateral projects to network projects, in which more than two universities participated. Seven universities with a forestry education (Ghent, Louvain, Nancy, Lisbon, Dublin, Aberdeen and Wageningen as the chair) decided to establish the SILVA Network, whose meetings between 1987 and 1997 were financed more or less within the Erasmus Programme. These seven universities grew to 21 in 1993/1994 (Schmidt, 1995), 29 in 1998 (Pitkänen *et al.*, 2004), 45 in 2004 (Anonymous, 2004) and 48 in 2013 (www.silva-network.eu, 2013).

Forestry policy – and hence forestry education at universities too – was during this period still mainly traditional, aimed at timber production and the traditional services (nature conservation, watershed protection etc.) forestry offered to the society. However, attention for nature conservation was growing to a discipline on equal level.

SILVA Network: Objectives and members

The core objective of the SILVA Network is and has always been to improve forestry education at universities. In this framework, during more or less the first decade (1987–1997) to facilitate the exchange of students and teachers was ranking high. This aim became less important in the middle of the 1990s due to the fact that the Erasmus Programme ended the funding of students' and teachers' exchange. The second aim was the exchange of information on all aspects of curricula, including curriculum development, alumni surveys and quality assurance. Summarizing, all aspects of teaching and learning forestry at university level can be considered as objectives of activities of the SILVA Network. They concern only teaching and learning, not research, with the exception of research on teaching and learning.

As at the start personal contact between representatives of the member universities was important, and because neither a legal status nor a membership fee were institutionalised, the SILVA Network consists rather of personal members, representing universities³. Specially, in the starting period, personal contact proved

³ According to the bylaws universities are members, but this was never formalised.

to be important, and it remained the fundament of SILVA Network up till now. At the start, only universities with a forestry education were members of the SILVA Network. However, from 1997 onwards some teachers from universities for applied sciences (Larenstein van Hall University of Applied Sciences, Velp, Netherlands; University of Applied Sciences and Arts, Göttingen, Germany) participated in the conferences. And already in that year the discussion ‘Should the SILVA Network open itself to these universities?’ started. In 2011 (Anonymous, 2014) it was decided that the universities of applied sciences could become members.

Pieter Schmidt (Wageningen University) was founder and first chairman of the SILVA Network, later called president according to the bylaws from 2003. He was in 1997 succeeded by Paavo Pelkonen from Joensuu University, who served till 2007. The next four years the SILVA Network was chaired by a tandem of president and vice-president: Siegfried Lewark, Freiburg University, from 2008 till 2009 and Gerhard Müller-Starck, Technische Universität München, from 2010 till 2012. Siegfried Lewark took over again in 2012.

SILVA Network: Institutional position

The SILVA Network started as a EU-ERASMUS project, went on and was funded as a DEMETER (EU-SOCRATES) project (Schmidt, 1997). As SILVA Network’s then main objective – students’ exchange – ended around 1995, a search for a new ‘umbrella’ organisation discarded two options, which would have been joining IUFRO or EFI as working groups. Both were and are focussing on research, which was (and is) not included in the SILVA Network’s aims. During SILVA Network conferences in 1995 and 1996 in Freising and Vienna it was decided to join ICA as a so-called Standing Committee. In 2001 (Landshut/Freising), 2003 (Beauvais), 2007 (Freiburg im Breisgau) and 2010 (Zagreb) the SILVA Network annual conference was embedded in the ICA Conference. Actually, SILVA Network is still a standing committee of ICA; for more information on ICA see Heath (2013).

Since the middle of the nineteen-nineties, the SILVA Network has an intensive contact with the International Forestry Students Association IFSA. Representatives of IFSA were invited and participated in all conferences. Personal contacts with IUFRO working groups (teaching in silviculture, education group) led to more or less joint meetings (see Schmidt *et al.*, 1998; Lewark and Schmidt, 2004). Since 2003 at least one SILVA Network representative was involved in the steering committee of the International Partnership for Forestry Education IPFE. In 2004, the annual SILVA Network meeting included a meeting of the IPFE core group (see Tahvanainen *et al.*, 2004). Since 2009 contacts, mainly consisting of an exchange of information and invitations, exist with the Conference of Deans and Directors of European Forestry Faculties and Schools (ConDDEFFS, see www.forestrydeans.eu). For more information on ConDDEFFS see Garcia Robredo (2013) and Viewegh (this volume). Contacts with FAO, UNESCO and ILO existed on a more personal basis.

SILVA Network: activities

1987-1997

This first decade was characterized by intensive discussions during the annual conferences on curricula, on similarities and differences between curricula and possibilities how to offer students good and successful opportunities for a study stay at foreign universities. Excursions to the forest, to stimulate contacts between members and to demonstrate the education in the forest itself, were important issues. Minutes of these meetings were attached to the reports to the European Commission, but – unfortunately – not published. These discussions culminated during the Wageningen meeting in 1997, its main topic being “New requirements for university forestry education in Europe”. During this conference about 20 forestry curricula of mainly Western and Central Europe were presented in poster format, 27 descriptions were published in its proceedings (Schmidt *et al.*, 1998).

The main objective during this decade was to facilitate the exchange of students and teachers. Even with more than 20 universities involved, the number of exchange students was low, mostly not exceeding 200 student-months. The intention of both students and universities did exist, but the difficulties were larger than today (see also Ziesak and Müller-Starck, this volume). Subjects were not always accepted: duplications in content were too substantial or too small and translation of course contents from one university to another proved to be difficult. Moreover reciprocal movements were the exception. In the middle of the nineteen nineties, the organisation of student’s exchange moved from the individual (forestry) departments to the International Offices of the universities. Around that time IROICA, the ICA standing committee for international officers, was created.

During the last years of this decade, talks commenced on a Master of Science in European Forestry as a joint degree programme, involving six universities (Parry *et al.*, 1998; Schmidt, 2004). Difficulties proved to be enormous, nevertheless, a proposal was formulated and a programme launched in the next decade.

1997-2011

Three kinds of activities taking place during this second decade should be mentioned: the discussion platform on forestry education, the clearing house activities and the creation and effectuation of the study programme of Master of Science in European Forestry.

The discussions on the MSc European Forestry could be successfully finished. The programme was launched in January 2002 (Anonymous, 2004; van der Maaten, 2008). Seven universities were involved, under the chairmanship of Joensuu University, later the Swedish University of Agricultural Sciences in Umeå (<http://www.uef.fi/fi/europeanforestry>).

From around 1998 till 2005, the SILVA Network acted as a clearing house for exchange programmes for forestry students and teachers worldwide, connecting forestry universities in Europe with colleagues from other continents (Anonymous, 2004).

The main quality, the SILVA Network offered its members during this decade and the subsequent period from 2007 till now, was serving as a discussion platform on teaching and learning. It was used regularly and intensively during the annual conferences and general assemblies. These meetings were organised sometimes in cooperation with ICA, sometimes separately (cf. above). As before, excursions into the forest were always included. An overview of the titles of the conferences and proceedings is given in Table 1.

These annual conferences covered a large variety of subjects, reflecting changes in society, politics and teaching/learning and how to cope with these changes. Societies were and are and thus forestry was and is changing, leading to new requirements for forestry education. Next to this, attention was given to the relations between curricula and the labour market, including graduate studies. Political decisions like the Bologna Declaration and of the subsequent Bologna conferences have impacts on universities and curricula. Changes due to this declaration and the consequences, for instance students' mobility, were frequently discussed.

Perhaps the most remarkable change, however, is the move from *forestry* education towards *forest sciences* education. Does this mean a broadening from the traditional focus on forest management towards a focus on research and policy making, still including management during education at universities? Probably yes, universities focussed more on their first task, i.e. the education of scientists, of young up-and coming academics, and that is reflected in their education.

And forestry?

What happened during this period in the field of forestry? Two experienced Dutch foresters (van Dijk and Savenije, 2011), working in international forestry policy, observed in 2011 that “forests are high on the political agenda but foresters are only little involved”. In many international environment conferences on biodiversity, CO₂ sequestration and other forest related topics are discussed, but representatives of other disciplines than forestry take the lead. Did something happen to forestry and to foresters?

An example from the Netherlands is discussed by Veenman *et al.* (2009) and Arts *et al.* (2010): not a country with an important timber production tradition, although its common name Holland is derived from Holtland, which means wooded land. The ‘Memorandum forestry and forest policy in the Netherlands’ (Min. L&V, 1969) was completely filled with forestry issues. Eight years later, in the ‘Vision on forests and

forestry' (Min. L&V, 1977) there was a little bit of attention to landscape and recreation, but forestry was the main subject. The 'Multi-annual plan forestry' (Min. LNV, 1986) was more or less equally divided over forestry, nature, landscape and recreation. In 1993, in the 'Forest policy plan' (Min. LNV 1993) even less attention was given to forestry, whereas in 2000 ('Nature for people, people for nature' Min. LNV, 2000) the plan concerned mainly nature and a little bit recreation. Moreover, until 1987, the State Forest Service was part of the Ministry of Agriculture and responsible for forest policy and forest management. After 1987, the Ministry of Agriculture, Nature and Fisheries (after 2010 Ministry of Economic Affairs, Agriculture and Innovation) and in it its Direction Forestry and Landscape, after 1991 renamed Direction Nature, Forestry, Landscape and Fauna, and after 2006 Direction Natural Environment and Fauna, was responsible for Forest policy after 1991 for Nature Policy. Since 1987, the State Forest Service is a government owned private company, only responsible for the management of the territories owned by the state. Shouldn't be the conclusion, that forestry has been reduced from not so important to not important at all – even, if a growing attention to wood production can be discerned since about 2009?

Some more but short information will be related in addition to the well documented case above:

- Already in 1980 in Belgium, the division Production of the Ministry of Agriculture responsible for forestry was renamed the division Multifunctional of the Ministry of Environment (Veenman *et al.*, 2009).
- In 2004, the eighty years old Dutch Forestry Journal was merged with other journals to the Professional Journal Nature Forest Landscape (Schmidt, pers. observation).
- In 2005 in the German State Baden-Württemberg, the until then independent institution State Forest Service was integrated in the administration of the counties.
- In 2005, in the German Free State of Bavaria , the State Forest Service was split up in a policy part (Forestry Department of the Bavarian State Ministry for Food, Agriculture and Forestry) and a management part (the Bavarian State Forestry Company, BaySF). This decision was not based on a declining importance of forestry, but to clarify the situation. Since then, BS contributed positively to the budget of Bayern (Anonymous, 2012).
- In 2010, both the British and the Dutch State Forest Services were ordered by the Government to sell forests and forest lands. In 2013 the first auction took place in the Netherlands, resulting in discussions to stop these selling's (Schmidt, pers. obs.; Anonymous, 2013b).
- In Finland, between 1992 and 1996, the high-technology industries (Nokia!) surpassed the forest industries as the main contributor to the gross national product (Taikio and Lilja, 2003; Oinas, 2005).
- Tullus (2013, referring to Estonian websites) mentioned the depreciation of the economic importance of forestry in Estonia.

Based on the above, the conclusion that forestry is decreasing in economic, social and political importance throughout Europe might be justified. In the same time the importance of nature conservation, also in the forests, might have grown in many forms. There is, however, hope for forestry: we can observe a growing attention for timber production, as mentioned above, not only for biomass and energy production or for CO₂ sequestration, but quite simply also to generate income out of quality timber (see Woestenburg, 2010; Schoonderwoerd, 2012; Wijdeven, 2013).

Did universities adjust?

So, the forestry sector is small and even getting smaller, is losing weight. Is that a threat or an opportunity for the university curricula covering forestry and forest sciences? Moreover the forestry curricula in general do not carry much weight within universities (see for instance Aravanopoulos and Christodoulou, 2013). Small forest sciences sections at universities could be at threat, when other faculties, with more students, gobble them up or when forest sciences curricula are forced to react to changes put upon them from above instead of setting rules for new developments. In both cases the Forestry Faculty of Freiburg University is an example: for setting new rules see Weber and Lewark (2004), for a merger with another faculty see Anonymous (2013a). On the other hand, being small can offer opportunities. When small, it is easier to experiment with new curricula (Weber and Lewark, 2004) and teaching and learning methods (see Tahvanainen and Pelkonen, 2004; Tahvanainen *et al.*, 2004; Schmidt *et al.*, 2007). It is obvious, that forestry and forest sciences education implant in students special attitudes valued by employers, for instance working with long-term thinking and long-term concepts, as well as the competence in natural, technical and social sciences at the same time.

Did universities react to these changes? At least five annual conferences of the SILVA Network (see Table 1) had curricula adaptations as main subject. Comparing the titles of forestry or forest sciences curricula at 29 European universities (see Table 2) in 1997 and 2011 gives some remarkable indications: All universities included in 1987 are still offering one or more forestry or forest sciences curricula. Schmidt *et al.* (1998), however, offered no information how many students were enrolled in each study programme in 1987.

Degrees from all curricula in 2011 are titled 'Master' or 'Master of Science', whereas in 1987 only ten universities did so. Of those ten, only four are located in an English speaking country. The other six may have quite simply translated their title into English for the presentation at the SILVA Network annual conference in 1997 where the prevailing language was English. These older one cycle programmes granting a Master (if perhaps just translated) sometimes have a preliminary examination ("Vordiplom" in Germany, "Kandidaats" in the Netherlands). This change, of course, is not due to a movement in forestry, but is the consequence of the political decisions formulated in the Bologna Declaration and the following Bologna process.

The number of curricula at the faculties of forestry exploded. In 2011 nearly twice as many curricula could be studied as in 1997, not all of them including forestry – a widespread diversification. Universities, sometimes stimulated by the ministries, apparently think that they can catch more students and place them on the labour market with more (in number), but quite often more specialized, curricula – a curriculum for each student. Rudi Rabbinge has called those curricula with a very small number of students ‘rabbit paths’ once (Schmidt, pers. obs.). But is the labour market waiting for these small differences? See also the paper by Efthymiou (2103) on the education of forestry generalists or specialists.

Table 1. Important, mainly annual, meetings of the SILVA Network and the resulting proceedings⁴.

Year	Location	Title	Reference
1997	Wageningen, Netherlands	New requirements for university education in forestry	Schmidt <i>et al.</i> , 1998
1998	Joensuu, Finland	Forestry in changing societies in Europe. Information for teaching module. Part I and Part II.	Pelkonen <i>et al.</i> , 1999
1998	Freiburg im Breisgau, Germany	Modern forestry curricula – response to changes in the field of profession ⁵	Lewark & Schmidt, 2004
2001	Landshut / Freising, Germany	Not known	No publication
2002	Warsaw, Poland	ITC in higher forestry education in Europe	Tahvanainen & Pelkonen, 2004
2003	Beauvais, France		
2004	Freising, Germany	Quality and competence in higher forestry education	Tahvanainen <i>et al.</i> , 2004
2005	Wageningen, Netherlands	Forestry education between science and practice.	Schmidt & Bartelink, 2006
2006	Valencia, Spain	Quality assurance and curriculum development in forestry and related sciences.	Schmidt <i>et al.</i> , 2007
2007	Freiburg im Breisgau, Germany	Design and functioning of international forestry curricula: considerations and experiences	Schmidt & Lewark, 2008
2008	Copenhagen, Denmark	What do we know about our graduates? Graduate analysis for forest sciences and related curricula	Schmidt <i>et al.</i> , 2010
2009	Thessaloniki, Greece	Development of forest sciences curricula in Europe	Schmidt <i>et al.</i> , 2013a
2010	Zagreb, Croatia	Bachelor / master education in forest sciences – ready for the next decade?	Schmidt <i>et al.</i> , 2013b
2011	Saint Petersburg, Russia	Bologna cycles 1 to 3 in higher forestry education – objectives and reality	Schmidt <i>et al.</i> , this volume

⁴ Since the presentation of this paper the SILVA Network organised meetings in Lleida (2012) and Istanbul (2013).

⁵ This was a conference of the IUFRO education group with participation from SILVA Network.

Table 2. Curricula (level Master of Sciences) in 1997 and 2011 at universities (not applied science universities) with a forestry education in 1997. Table representative (more or less complete) for North, West and Central Europe, not for South and East Europe.

University ¹ , town and country	1997 ^{2,3}	2011 ³ ,	Websites 2011 ⁴	Changes ⁵
BOKU, Vienna, AU	Diplom-Ingenieur. Forestry and wood technology	MSc Forest sciences; MSc Wood technology and management	www.boku.ac.at	0
Agri. Sci., Gembloux, B	Ingénieur Agronomy/forestry	MSc Nature and forest management; MSc Environment and land management	www.fsagx.ac.be	+
Univ. Ghent, B	Ingenieur Land and forest management	MSc Forest and nature management	www.ugent.be	0
Kath. Univ. Leuven, B	Ingenieur Land and forest management; Ir Engineering, land planning, forestry and nature conservation	MSc Land and forest management;	www.kuleuven.be	-
Cath. Univ. Louvain, B	Ingénieur Agronomy/forestry	MSc Forest and nature management; MSc Forest and natural areas engineering	www.uclouvain.be	+
KVL Copenhagen, DK	MSc Forestry	MSc Forest and nature management	www.ku.dk	+
Est. Agric. Univ. Tartu	MSc Forest management; MSc Forest industry	MSc Biodiversity and nature management; MSc Landscape architecture MSc Forest management MSc Forest industry	www.eau.ee	+
Univ. Helsinki, FI	MSc Forestry?	MSc Environment and natural resources; MSc Forestry and environmental engineering MSc Forest science and business	www.uh.fi	++
Univ. Joensuu, FI <i>Univ. Eastern Finland</i>	MSc Forestry	MSc European Forestry MSc Forestry and environmental engineering MSc Transatlantic forest management MSc Environmental management MSc Forestry (also M) MSc Forest engineering (also M)	www.uef.fi	++
ENGREF, Nancy, F	Ingénieur de génie rural, des eaux	MSc Ecologie, biodiversité, évolution;	www.agroparistech.fr	(+)

80 Status of Forestry

	et des forêts	MSc Fonctionement et gestion des écosystèmes		
Dresden Univ. Tech., D	Diplom-Forstingenieur	MSc Forest science; MSc Wood science and technology	www.tu-dresden.de	+
Univ. Freiburg im Breisgau, D	Diplom-Forstwirt	MSc Environmental governance; MSc Forest ecology and management; MSc Forstwissenschaft MSc Renewable energy management	www.uni-freiburg.de	++
Univ. Göttingen, D	Diplom-Forstwirt	MSc Forstwissenschaft and Waldökologie;	www.uni-goettingen.de	0
Univ. Munich, D <i>Tech. Univ. Munich,</i> D	Diplom-Forstwirt	MSc Forst und Holzwissenschaft MSc Nachwachsende Rohstoffe MSc Environmental engineering MSc Umweltplanung und Ingenieursökologie	www.tum.de	++
Univ. Aberdeen, UK	MSc Forest management; MSc Arboriculture; MSc Agroforestry	MSc Forestry; MSc Renewable energy MSc Rural planning and environmental management	www.abdn.ac.uk	++
Univ. Wales, UK	MSc Environmental forestry; MSc Agroforestry; MSc Forest industries technologies.	MSc Environmental management MSc Agroforestry MSc Conservation and land management MSc Environmental forestry MSc Sustainable forest and water management (EM)	www.bangor.ac.uk	++
Univ. Edinburgh, UK	MSc Resource management; MSc Forest science	MSc Integrated resource management MSc Environmental protection and management MSc Ecosystem services	www.ed.ac.uk	+
Univ. Thessaloniki, GR	MSc Forestry	Not readable		
Univ. College Dublin, EI	M Agricultural sciences	MSc Environmental services	www.ucd.ie	(+)
Univ. Florence, I	MSc Forestry and environmental sciences	MSc Forest systems sciences and technology	www.unifl.it	0
Univ. Padua, I	Laurea Forest and environmental sciences	MSc Forestry and environmental services	www.unipd.it	0
Wageningen Agricultural Univ. NL <i>Wageningen Univ,</i>	Ingenieur Forest and nature management	MSc Forest and nature management MSc Environmental sciences	www.wur.nl	+

Agric. Univ. Norway, Ås, N	Sivil Ingeniør Forestry.	MSc Forest sciences; MSc Management of Natural resources	www.umb.no	+
Univ. Lisbon, P	Engenheiro silvicultor; E. florestal;	MSc Bioenergy systems engineering MSc Environmental engineering MSc Forestry and natural resources MSc Natural resources management and conservation	www.isa.utl.pt	++
Univ. Cordoba, ES	MSc Forestry	MSc Natural resources management and sustainability MSc Renewable energy	www.uco.es	+
Univ. Lleida, ES	Graduate engineer Forestry	MSc European forestry MSc Integrated planning for rural development and environmental engineering MSc Forestry engineering MSc Research forestry systems and products	www.udl.es	++
Univ. Valladolid, ES	Ingeniero superior de montes	MSc Forestry engineering (Palencia) MSc Technical engineering in forestry (logging) (Palencia) MSc Technical engineering in forestry (forest industries) (Soria)	www.uva.es	+
Sw. Univ. Agric. Sci. Uppsala, S	Jägmästare. MSc Forestry	MSc Euroforester MSc Forest as natural resource	www.slu.se	+
ETH Zürich, CH	Diplom Forstingenieur	MSc Environmental sciences	www.ethz.ch	(+)

1. Name of the university and country. In italics: in 2011 new name for the same university, or result of a merger, or faculty moved to another university.
2. Source: Description of curricula in Schmidt et al., 1968. Quite often the official titles for the curricula are not given.
3. Curricula for the tropics not included.
4. Sources: websites (English, sometimes original language) of the universities, August 2011. Websites not always user-friendly, not always easily accessible, only local language
5. Comparison is made on the basis of the title of the curricula, not on the list of courses or the content of the courses. Management, Wirtschaft, etc. >> Science is not considered as a change (is caused by Bologna); forest >> nature conservation, environment, etc. is considered as a change.

The number of key words in the titles of names of faculties (corresponding to the diversification of curricula) exploded too, from around 8 in 1998 to around 15 in 2011. In both years, the word forest(ry) was the most frequent one, in 1998 followed by management, in 2011 followed by environment, and management as a good third. New in 2011 were natural resources, biodiversity, ecology (including ecosystem) renewable and European.

From the above, it can be seen that universities reacted to the changes in society by formulating new curricula adapted to the actual circumstances. Moreover: they focussed more on science than on practical forestry. In other words, the members of the SILVA Network followed the recommendations as given in many annual SILVA Network meetings (see Table 1): ‘analyse the needs in the surrounding society and renew your curricula accordingly’.

Adjustment by the SILVA Network?

Remembering the core objective of the SILVA Network, improving forestry education at universities, two aspects should be considered, answering the question if and how the SILVA Network should react to these changes. These aspects are indicated by two words: forestry and education.

Education: Nothing has changed with respect to the importance of education. Education itself is changing partly slowly (level paradigms) or quicker (practice of education) and these changes, how to measure them and react to them are reflected in the titles of the discussions (see Table 1) and subjects as discussed during the annual SILVA Network meetings. Education is and can remain to the core issues of the SILVA Network, including didactical development and using knowledge of education specialists.

Forestry: As was stated above, the universities, the members of the SILVA Network did react to the changes in the field of profession (see also Table 2). In these universities the faculties of forestry broadened the focus of education: forestry – or forest sciences – is still a major issue in the curricula, but nature management is at least of equal importance as forest sciences. The question can be raised here if the SILVA Network, for which forestry and forest sciences are still the main issues, can still act as a representative of those universities if the Network does not broaden its scope with for instance nature management.

Conclusion

Education in forestry and forestry sciences has survived a cold period and most probably will survive longer. A growing attention for forestry exists, partly driven by natural (biodiversity), partly by environmental issues (water, temperature, CO₂), partly by production issues (energy, money). Moreover graduates from these curricula have some special competences, among which long-term thinking is an

important one. Hence, universities will continue to offer education in forestry and forest sciences.

On the other hand, integration and mergers of forestry and forest sciences and the faculties and schools in this field with those from other disciplines in the field of land use will continue, both in the field of profession, (including research institutes) and at universities.

This leads to an answer to the question as given in the introduction: Does the SILVA Network still fulfil its aims in an optimal way? The answer is yes, it still can function as a platform to promote and stimulate forestry and forest sciences education at universities through cooperation, but it may be possible that the SILVA Network can fulfil this role better when it broadens its scope and integrates for instance nature conservation and management.

References

- Anonymous, 2004: The Silva Network. Pp. 71-72 in Tahvanainen *et al.* , 2004.
- Anonymous, 2012: http://de.wikipedia.org/wiki/Forstreform_in_Bayern. Addressed December 2012
- Anonymous, 2013a: Geschichte der Forstlehre in Freiburg. <http://www.alumni-ffu.uni-freiburg.de/geschichte-forstlehre/geschichte-der-forstlehre-in-freiburg>. Addressed December 2013.
- Anonymous, 2013b: Pilot gestart, voorals nog geen toestemming verkoop gronden. Vakblad natuur bos landschap, 10(4), 13
- Anonymous, 2014: Minutes general assemble 2011 of the SILVA Network. This volume.
- Arts, B., Muys, B., Van Gossum, P. and De Schepper, C., 2010: Beleidskaders. Pp. 569 -576 in Den Ouden, J., Muys, B., Mohren, F. and Verheyen, K. (Eds.). Bosecologie en bosbeheer. Acco, Leuven.
- Aravanopoulos, F.A. and Christodoulou, A., 2013: The undergraduate studies programme of the Faculty of Forestry and Natural Environment, Aristotle University of Thessaloniki: current status and perspectives. Pp. 12-16 in Schmidt *et al.*, 2013a.
- Buis, J., 1993: Holland Houtland, een geschiedenis van het Nederlandse bos. Prometheus, Amsterdam.
- Efthymiou, P.N., 2013: Generalis or specialist? Pp. 6-11 in Schmidt *et al.*, 2013a.
- García Robredo, F., 2013: Conference of Deans and Directors of European Forestry Faculties and Schools (ConDDEFFS): Projects of a new European organization and potential for cooperation with SILVA Network. Pp. 59-62 in Schmidt *et al.*, 2013a
- Heath, S.B., 2013: ICA in support of change in the applied life sciences. Pp. 63 - 72 in Schmidt *et al.*, 2013a

- Lewark, S. and Schmidt, P. (Eds.), 2004: Modern forestry curricula – response to changes in the field of profession. Schriftenreihe Freiburger forstliche Forschung, Band 29. University of Freiburg, Freiburg im Breisgau.
- Min. L&V., 1969: Nota bosbouw en bosbeleid in Nederland. Ministerie van L&V, 's Gravenhage
- Min. L&V., 1977: Structuurvisie op het bos en de bosbouw. Ministerie van L&V, 's Gravenhage
- Min. LNV., 1986: Meerjarenplan Bosbouw. Regeringsbeslissing. Ministerie van LNV, 's Gravenhage
- Min. LNV., 1993: Bosbeleidsplan, regeringsbeslissing. Min. LNV, 's Gravenhage.
- Min. LNV., 2000: Natuur voor mensen, mensenvoor natuur. Nota natuur bos en landschap in de 21ste eeuw. Min. LNV, 's Gravenhage.
- Oinas, P., 2005: Finland: a success story. European planning studies, vol. 13/8, 1227-1244.
- Parry, W.H., Hilton, G., Kolström, T., Carvalho Oliveira, A., Gossow, H. and Schmidt, P., 1998: Proposal for a MSc in European forestry. Pp. 383 – 386 in Schmidt *et al.*, 1998.
- Pelkonen, P., Pitkänen, P., Schmidt, P., Oesten, G., Piuksi, P. and Rojas, E. (Eds.), 1999: Forestry in changing societies in Europe. Information for teaching module. Part I and Part II. University Press, University of Joensuu. 82 and 480 pp.
- Pitkänen, A., Pelkonen, P. and Schmidt, P. (Eds.), 2004: SILVA Network. Pp. 103-106 in Lewark and Schmidt, 2004.
- Schmidt, P., 1993: A student's niche in the SILVA Network. Hinkeloord Occasional Papers 1. Agricultural University Wageningen, Department of Forestry.
- Schmidt, P., 1995: The SILVA Network. Concept for ETFRN.
- Schmidt, P., 1997: New requirements in forestry higher education. Activity 3.2 in SOCRATES Programme. Pp 21-22 in Activity report 1996/1997 DEMETER Socrates Thematic Network for Agriculture and related Sciences.
- Schmidt, P., 2004: Proposal for a MSc in European Forestry. P. 137 in Lewark and Schmidt, 2004.
- Schmidt, P. and Bartelink, H.H., (Eds.), 2006: Forestry education between science and practice. Proceedings of the SILVA-IUFRO Symposium held at Wageningen University, Wageningen April 6th - 9th, 2005. SILVA Publications 3, University of Joensuu Press (FI), pp 130
- Schmidt, P., Huss, J., Lewark, S., Pettenella, D. and Saastamoinen, O. (Eds.), 1998: New requirements for university education in forestry. Demeter series 1, 394 pp
- Schmidt, P. and Lewark, S., (Eds.): 2008. Design and functioning of international forestry curricula: considerations and experiences. Proceedings of the SILVA Network conference held at the University of Freiburg, Freiburg im Breisgau, Germany, August 26th – 30th.2007. SILVA Publications 5, University of Joensuu Press (FI), pp 86

- Schmidt, P., Lewark, S. and Aravanopoulos, F.A., (Eds.): 2013a. Development of forest sciences curricula in Europa. Proceedings of the SILVA Network Conference, held at the Faculty of Forestry and Natural Environment, Aristotle University of Thessaloniki, Greece. November 3rd – November 8th, 2009. SILVA Network publications 7
- Schmidt, P., Lewark, S. and Strange, N. (Eds.), 2010: What do we know about our graduates? Graduate analysis for forest sciences and related curricula. Proceedings of the SILVA Network conference held at the Faculty of Life Sciences, University of Copenhagen, Denmark May 25th – May 17th, 2008. SILVA Publications 6, University of Joensuu Press (FI), pp 117
- Schmidt, P., Rojas-Briales, E., Pelkonen, P. and Villa, A. (Eds.), 2007: Quality assurance and curriculum development in forestry and related sciences. Proceedings of the SILVA conference held at the Politechnical University of Valencia, Valencia, November 2nd – 5th 2006. SILVA Publications 4, University of Joensuu Press (FI), pp 68
- Schmidt, P. Susnjar, M., Müller – Starck and Lewark, S. (Eds.), 2013b: Bachelor / Master education in forest sciences – ready for the next decade? Proceedings of the SILVA Network Conference, held at the Faculty of Forestry, University of Zagreb, Croatia, June 17th –June 19th 2010. SILVA Publications 8
- Tahvanainen, L. and Pelkonen, P., (Eds.), 2004: ICT in higher forestry education in Europe. SILVA Publications 1, University of Joensuu Press (FI) pp 121.
- Tahvanainen, L, Pelkonen, P. and Mola, B. (Eds.), 2004: Quality and Competence in Higher Forestry Education. Proceedings of the 15th SILVA European Meeting held in Freising (Germany) 15 -17 April 2004. SILVA Publications 2. University of Joensuu Press (FI) pp 69.
- Tainio, R. and Lilja, K., (2003): The Finnish business system in transition: Outcomes, actors and their influence. Pp. 69–87 in: B. Czarniawska, B. and Sevo'n, G. (Eds.). The northern lights: organization theory in Scandinavia. LiberAbstrakt, Malmo
- Tullus, H., 2013: The present situation and future of Estonian higher education in forestry. Pp. 25-30 in Schmidt *et al.*, 2013a.
- Van der Maaten, E., 2008: Double-degree programme: Master of Science in “European Forestry”: An international MSc programme, from a student’s perspective. Pp 60-65 in Schmidt and Lewark, 2008.
- Van Dijk, K. and Savenije, H., 2011. Waar hebben we bosbouwers anno 2011 nog voor nodig. Vakblad Natuur Bos Landschap, 8 (2), 30-34
- Veenman, S., Liefverink, D and Arts, B., 2009: A short history of Dutch forest policy: The ‘de-institutionalization’ of a policy arrangement. Forest policy and economics, 11, 202-208
- Viewegh, J., 2014: The present society point of view on forestry and its impact on the needs of university educated forester. This volume
- Weber, N. and Lewark, S., 2004: The new forest sciences curriculum at the University of Freiburg – response to changes in the field of profession. Pp. 117-126 in Lewark and Schmidt, 2004

- Wijdeven, S., 2013: Extra kap én verjonging bij Staatsbosbeheer. Vakblad Natuur Bos Landschap, 10 (2), 4-7
- Woestenburg, M., 2010: Het nieuwe bosbeheer gaat over oogsten. Vakblad Natuur Bos Landschap, 7 (6), 21-22
- Ziesak, M. and Müller-Starck, G., 2014: The Bologna process and challenges for students' mobility: some ideas for progress. This volume.

BOLOGNA CYCLES 1 TO 3 AND HIGHER FOREST EDUCATION – OBJECTIVES AND REALITY

CONCLUDING REMARKS

SIEGFRIED LEWARK, GERHARD MÜLLER-STARCK AND PIETER SCHMIDT

The European Ministers responsible for Higher Education, following conclusions of the European Councils, agreed in 1999 on the “Bologna Declaration” in order to make Europe “the most competitive and dynamic knowledge-based economy in the world”, calling for further action and closer co-operation in the context of the Bologna Process. This led to far-reaching changes of the complete system of higher education, of course including higher education in forestry and forest sciences, which therefore have been subject of the annual conferences of SILVA Network ever since. Consequences of the Bologna Process have been explicitly topics of contributions or were included in many presentations of current curricula in the European faculties of forestry. We can trace this also in these proceedings of the conference in St. Petersburg.

But the many dimensions of the Bologna Process have not been dealt with equally, as they seem to have been of very different importance and impact in higher education in forest sciences. The dominating topic in the discussions within SILVA Network, reflecting the discussions within the faculties of forestry, was the installation of a system of “easily readable and comparable of degrees”, with curricula structured in three cycles. The challenge in this transformation was in the first place on the level of the bachelor’s curricula. Problems related to the constructing and the realisation of the BSc programmes as well as solutions tried therefore were presented most often (cf. introduction to this volume).

As solutions to overcome the shortcomings related to BSc curricula prolongations of the programme have been proposed and realised: examples are curricula of 3.5 or even 4 years, as practiced for instance in Russia and Italy.

Problems of students’ mobility, so much propagated in the Bologna Process, are the second big topic in the reviews of consequences of the Bologna Process. Mobility of forestry students traditionally has been relatively high and has suffered under the new structures, as the new, shorter study programmes do not leave time easily for studying abroad (cf. also proceedings of the SILVA Network conference in Zagreb, 2010). A special time window and better acceptance of external credits may help as well as agreements of partner universities, as Ziesak and Müller-Starck explain (this volume).

Reluctance of the labour market to accept BSc graduates has been complained about very often. But obviously not so many BSc graduates from universities really tried to start into working life at this stage. The majority rather preferred to continue studying in Master programmes. This was certainly not the idea of the European Education Ministers in most signatory countries. Is this because of critical statements of employers or difficulties expected by the graduates or a reaction of the policy of the universities, wanting to hold them as students? This is not easy to answer. A survey of this situation, especially looking at the students of forestry programmes, is needed. Graduate analyses, topic of the SILVA Network conference 2008 in Copenhagen may contribute to information about experiences with job search and motivation for decisions of students – the ones presented in Copenhagen and at later SILVA Network conferences were mostly related to graduates from traditional one cycle programmes and need updating.

In comparison to these issues, structures of BSc programmes, mobility and the labour market for forestry graduates, other dimensions of the Bologna Process received much less attention, probably for different reasons. They may be either of less importance for forestry education or working smoothly.

Quality assurance has been topic of the SILVA Network conference in Valencia (2006), not much been discussed thereafter. The introduction of a credit system (ECTS) obviously has not been a problem. Stressing the European dimension in study programmes was subject of the Master programme on European Forestry as a joint study programme of universities from different countries, not explicitly in study programmes of single universities.

Organisation of examinations, outcome orientation in curricula and new forms of learning and teaching like problem based learning, distance education or e-learning have been subject of contributions to SILVA Network conferences occasionally. But it would certainly be good to have more examples of good practice following these new developments in didactics in forestry curricula. SILVA Network can stimulate discussion of these topics in its coming annual conferences.

PARTICIPANTS

Alekseev, Alexander A_S_Alekseev@mail.ru
Saint Petersburg State Forest Technical University,
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Alfranseder, Emanuel emanuelalfranseder@gmail.com
Erasmus Student Network
Waterkrachtstraat 15, 1210 Sint Jost ten Node, Belgium

Barianti, Desiana Dwi dbarianti@yahoo.com
Freiburg University - Uppsala University
Institute for Forest Utilization & Work Science
Werderring 6, 79085 Freiburg im Breisgau, Germany

Bidló, András abidlo@emk.nyme.hu
University of West Hungary, Faculty of Forestry
9400 Sopron, Ady E. u. 5, Hungary.

Chubinsky, Anatoly a.n.chubinsky@gmail.com
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Chubinsky, Maxim mchubinsky@gmail.com
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Dobrovolsky, Alexander Alexander-83@yandex.ru
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Fax, Helmut helmut.fax@mytum.de
IFSA / Technische Universität Muenchen
Am Hochanger 13, 85354 Freising, Germany

Kartseva, Alexandra gasespb@mail.ru
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Kuznetsov, Evgeny evg_kuznetsov@mail.ru
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

90 Participants

Lewark, Siegfried siegfried.lewark@fobawi.uni-freiburg.de
Institute for Forest Utilization & Work Science, University of Freiburg
Werderring 6, 79085 Freiburg im Breisgau, Germany

Mouche, Juliette ifsa.jmouche@gmail.com
International Forestry Students Association
Tennenbacherstrasse 4, 79106 Freiburg im Breisgau, Germany

Müller-Starck, Gerhard gerhard@mueller-starck.de
Section of Forest Genetics, Technische Universität München
Am Hochanger 13, 85354 Freising, Germany

Nahlik, Andras nahlik@emk.nyme.hu
University of West-Hungary, Faculty of Forestry
Institute of Vertebrate Zoology and Game Management
9400 Sopron, Ady E. u. 5, Hungary.

Reisner, Vaike vaike.reisner@emu.ee
Estonian University of Life Sciences,
Institute of Forestry and Rural Engineering
Kreutzwaldi 56, Tartu, 54124 Estonia

Rekola, Mika mika.rekola@helsinki.fi
University of Helsinki,
P.O.Bx 62, 10014 Helsinki, Finland

Schmidt, Pieter ineke_schmidt@hetnet.nl
Wageningen University, Forest Ecology & Forest Management Group
P.O. Box 47, 6700 AA Wageningen, The Netherlands

Selikhovkin, Andrey Selichovkin@mailbox.alkor.ru
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Serengil, Yusuf serengil@istanbul.edu.tr
Istanbul University, Faculty of Forestry
Dept. of Watershed Management
34473 Bahcekoy-Sariyer/Istanbul, Turkey

Shaytarova, Olga proces.fta@home.ru, shaytarova@mail.ru
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Shvedova, Oksana oksana.shvedova@gmail.com
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Speranskaya, Natalia umslta@yandex.ru
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Teppo, Kristi kteppo@emu.ee
Estonian University of Life Sciences
Kreutzwaldi 56, Tartu, 54124 Estonia

Tereschenko, Svetlana teresveta@yahoo.com
Saint Petersburg State Forest Technical University
Institutsky per. 5, 194021 Saint Petersburg, Russian Federation

Van Laar, Jim jim.vanlaar@wur.nl
Wageningen University, Forest & Nature Conservation policy Group
P.O. Box 47, 6700 AA Wageningen, The Netherlands

Viewegh, Jiří viewegh@fld.czu.cz
Czech University of Life Sciences; Faculty of Forestry and Wood Sciences
Kamycka 1176, 16521 Prague, Czech Republic

Yeşil, Ahmet ayesil@istanbul.edu.tr
Istanbul University, Faculty of Forestry
34473 Bahcekoy-Sariyer/Istanbul, Turkey

Ziesak, Martin martin.ziesak@bfh.ch
Hochschule für Agrar-, Forst- und
Lebensmittelwissenschaften,
Länggasse 85, CH-3052 Zollikofen, Switzerland

NON PARTICIPATING (CO)AUTHORS

Enkenberg, Jorma jorma.enkenberg@uef.fi
School of Applied Educational Science and Teacher Education
University of Eastern Finland,
PO Box 55, 57101 Savonlinna, Finland

Gritten, David david.gritten@recoftc.org
RECOFTC – The Center for People and Forests.
P.O. Box 1111, Kasetsart, Bangkok 10903 Thailand

Mola-Yudego, Blas blas.mola@uef.fi
School of Forest Sciences, University of Eastern Finland
P.O. Box 111. 80101 Joensuu, Finland.

Pelkonen, Paavo paavo.pelkonen@uef.fi
School of Forest Sciences, University of Eastern Finland
P.O. Box 111. 80101 Joensuu, Finland

Schieder, Arne arne.schieder@wzw.tum.de
Graduiertenzentrum Weihenstephan (GZW)
Alte Akademie 8, 85354 Freising, Germany

Stampfer, Karl karl.stampfer@boku.ac.at
Department for Forest and Soil Sciences
University of Natural Resources and Applied Life Sciences Vienna
Peter Jordan Straße 82, A-1190 Vienna, Austria

MINUTES OF THE GENERAL ASSEMBLY OF THE SILVA NETWORK 2011

Place: St. Petersburg State Forest-Technical Academy, Russia

Time: September 15th, 2011, 14:30 – 16:00

Proceedings

2009 (Thessaloniki): 1 contribution missing, publication ready end of 2011

2010 (Zagreb): publication ready end of 2011

2011 (St. Petersburg): maximum 6 printed pages per contribution; deadline for sending contributions to Pieter Schmidt is December 31, 2011 Ineke_schmidt@hetnet.nl

Opening of the SILVA Network for Universities of Applied Sciences

Following the much wider ICA and EU term of “higher education” it is voted to accept in the future also institutions offering BSc AND MSc levels:

Our procedural rules thus need to be changed in:

“2.2. Institutions offering educational programmes leading to Master or equivalent degrees in Forestry are eligible for membership in the SILVA Network.”

SILVA Network team beyond 2011

Suggested candidate for President: Siegfried Lewark

Prof. Dr. Siegfried Lewark will be the new President of the SILVA Network.

Meeting 2012

Two proposals: Bolzano, linked to ICA (June 18-21) or Lleida, Spain (Oct.).

The venue of the SILVA Network meeting 2012 will be Lleida.

ConDDEFFS

- Constituted by heads of the Forest Science Faculties
- An important purpose is lobbying regarding forestry affairs in Brussels
- Presidency 2011 in Prague, 2012 Wien; Meeting 2012 in Madrid

SILVA Network members articulate some disappointment due to past lacking information flow from ConDDEFFS. An improvement of cooperation and profiling is necessary.

Prospects: Participation of the SILVA President in the next conference of ConDDEFFS Conference (Madrid 2012) is recommended. Generally, joint actions are greatly appreciated.

SILVA Network and forestry

So far, procedural rules and other statement related to SILVA address strictly “Forestry”. It is recommended to open this frame, e.g. “Forestry and resource management”, “Forestry and nature management”. Further discussion will be necessary.

Sep. 20th, 2011, updated Oct. 21st, 2011

Gerhard Müller-Starck and Martin Ziesak

(President of the SILVA Network and Secretary General)