

DESIGN AND FUNCTIONING OF INTERNATIONAL FORESTRY CURRICULA: CONSIDERATIONS AND EXPERIENCES

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PREFACE

Each year, the SILVA Network organises an annual meeting, consisting of two parts:

- a professional conference during which subjects relevant for forestry education at universities inside Europe are discussed;
- a general assembly, during which the SILVA Network members present discuss the work and progress inside the Network itself.

Normally these proceedings cover only the professional conference. This year, however, for the first time a small note on the SILVA Network itself is added.

This SILVA Network meeting was organised by the Institute for Forest Utilisation and Work Sciences of Freiburg University, within in the framework of the ICA week of conferences. A group of about 25 persons attended and discussed intensively on various topics. The results can be read in the following pages. We thank the organisation and all speakers, authors and other SILVA Network members for their contributions. Special thanks are going to Hubert Merkel and Gerhard Müller-Starck for acting as reviewers for some of the papers.

Pieter Schmidt and Siegfried Lewark
Editors



Paavo Pelkonen, SILVA Network President 1997 - 2007

SILVA NETWORK 2007

SIEGFRIED LEWARK PRESIDENT, SILVA NETWORK

One of the first annual SILVA Network meetings was organised by the Silviculture Department of University of Freiburg im Breisgau in the Matisle Hutte in Hinterzarten, in the early 1990's. At that time, the SILVA Network it was an Interuniversity Cooperation Programme (ICP) under the EU-ERASMUS Programme. The 2007 conference was, hence, the second one in Freiburg – now with SILVA Network as a standing committee of ICA (Association for European Life Science Universities).

For ten years, from his election as president of the SILVA Network at the 1997 Wageningen conference to the 2007 conference in Freiburg, our Finnish colleague Paavo Pelkonen has led and further built up SILVA Network. During the conference dinner at the historic restaurant “Zum Roten Bären“ Pieter Schmidt, first president and honorary member, thanked on behalf of all SILVA members Paavo for all his activities in this position, after which all present enjoyed a Finnish love song by Paavo one more time.

During the general assembly, a new model of organization for the SILVA Network has been proposed and approved by the general assembly: a tandem of the faculties in Freiburg and Munich will be responsible, with Siegfried Lewark (Freiburg) and Gerhard Müller-Starck (Munich) as president and vice-president (alternation after two years) and Reiner Mühlsiegl (Freiburg) as secretary general. The new team expressed their commitment to old and new activities, to try to involve more of the “sleeping” partners and to continue the series of annual conferences, making them more attractive. The next meeting will be held in Denmark in 2008.

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SUMMARY: DESIGN AND FUNCTIONING OF INTERNATIONAL FORESTRY CURRICULA: CONSIDERATIONS AND EXPERIENCES

PIETER SCHMIDT

Society is changing its views on timber production, on nature conservation, on landscaping, on recreation, on bio fuel, in short on forestry rapidly. Moreover climatic change, increasing richness and prosperity, pollution and desiccation threaten forest and nature area's more and more. Thirdly, students are more and more looking all over the world to find that curriculum fitting optimally their expectations and conditions. Last but not least the European education policy has decided on regulations to make (forestry) university education more compatible and to facilitate student exchange. Reasons enough for forestry teachers and students, organised in universities and their committees, to adapt, to (re)design, to change, in short to 'regenerate' forestry curricula on a more or less perpetual basis. In the first part of this volume, forestry teachers and a teaching expert are looking forward giving the deliberations held or to be held before and during the design process. In the second part forestry teachers and students are looking backwards discussing the experiences they gathered when involved in offering, teaching or studying within a given curriculum.

Curriculum design

For designing a new curriculum, Pahlmann and Schanz *cum suis* started from different points. Pahlmann observed changes in the labour market; hence a change in the employment possibilities of the Munich graduates with consequences for the curricula at the Technische Universität München. Schanz *cum suis* saw new possibilities for jobs in a societal development towards good governance, also in the field of environmental policy, with the consequence that Freiburg University decided to design a new curriculum.

Based on the concept of 'good governance' Schanz describes the five design principles to be used: appropriateness (task specific), pluralism (articulate visions), adaptiveness (extend time horizons), deliberation (convergence), and experimental processes ("learn and tinker, tinker and learn"). Central point is here that not only scientific knowledge but also cultural and moral knowledge and new knowledge, specially created in a discussion process, should be achieved and that the goal setting and the implementation of policies are inextricably intertwined. The MSc curriculum developed responds to these requirements by first confronting the students with realising, then with understanding and at the end with managing sustainability (problems). The Freiburg international MSc "Environmental Governance" is functioning, but it is too early to have good statements on employability. However, the number of applicants is very large.

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Pahlmann, as student advisor, observed that among eight other items employability was one of the important factors for students to choose a curriculum. Moreover, during the last decade the traditional labour market for foresters had diversified expansively. The Technische Universität München decided to re-design their programmes based on the motto ‘diversify the established’: maintain the crucial qualities of the forestry graduate but give him the opportunity for specialization in a chosen field. Key words for further designing a BSc curriculum, two MSc curricula (one German taught, one English) and a PhD programme were international (subject of the courses and composition of the student groups), interdisciplinarity (at programme and course level), specialized generalist (maintaining the traditional broad forestry education with the possibility to specialize in one subject) and sustainability (the crucial forestry characteristic). Again, no statistical data on alumni exist, but the preliminary data look well.

Mussong analyses the disappointing developments around two English taught MSc curricula offered by the University of Applied Sciences of Eberswalde. The number of applicants, of students enrolled as well as graduates for the MSc “Forest Information Technology”, offered in cooperation with the Forestry Faculty of the Warsaw Agricultural University and for the MSc “Global Change Management” dropped drastically, for the former MSc after an encouraging start. Moreover, it can be observed that the non German students need about four years to conclude their studies against the German students only three. Mussong sees an increasing competition among universities, the problematic reputation of Eberswalde in Eastern Germany, the insufficient German language skills of foreign students and the mostly problematic financial situation of these students.

The transformation process from the old forestry curriculum structure at the Forestry Faculty of Dresden University towards the Bologna one is described by Bonn and Wagner. How to educate Forestry BSc graduates both qualified for the labour market, a new phenomenon in Germany and for further study (MSc) is the challenge, which makes teaching a more important issue than ever before. During the BSc curriculum the specific complexity of forestry jobs is taught, during the MSc curriculum the scientific specialisations. Teachers of basic sciences have to teach now in an interdisciplinary way, but have now also the opportunity to teach at MSc level.

Quality assurance

When designing new or adapting or simple continuing old curricula, special care should be taken regarding accreditation. Steen describes the ICA projects on Quality Assurance, formulating methods for Quality Assurances for international master degree programmes in Life Sciences and the Rural Environment. In these projects specific indicators have been developed and tested and a discussion on excellence and fitness for purpose has been started. The projects also prepared the installation of an accreditation centre inside ICA.

Summer schools

Three contributions have international summer schools as subject. Their objectives are next to the obvious information transfer manifold. Martin Ziesak *cum suis* from Munich described three summer schools: (1) the “Indian Summer School” to inform Munich students on Canadian and United States forestry and the other way round, (2) the international summer school “Sustainability in Forestry” to give information on the German concept of sustainability, to maintain the alumni network and to get in contact with potential PhD students, and (3) the international summer school “Sustainable Supply Chains” for post-graduate education for former Munich international MSc students and again to maintain the alumni network. His recommendation is quite clear; don’t mix too many objectives in one summer school.

Alexandre Bernardi Koehler *cum suis* describes his positive experiences with the Freiburg summer school “Forestry Markets and Society”, offering him and others an easy first contact with potential supervisors for a MSc or a PhD study at the University of Freiburg.

Hubert Merkel *cum suis* on the other hand sees, after earlier disappointing experiments with internationalisation by his (applied) university, a summer school developed for Nepalese students as a nucleus, a starting point for internationalisation.

Double diploma programmes

At least four double-diploma programmes for forestry, all working by definition with international groups of students, exist at the moment in Europe. Niels Strange *cum suis* describes the two MSc programmes on sustainable forestry offered in the framework of Erasmus Mundus: (1) “SUTROFOR” for tropical forestry and (2) “SUFONAMA” for temperate forestry and nature management. They started in 2006 and 2007 respectively, selecting about 50 students from 800 applicants. During the first year, students follow a common core at one of three universities involved, during the second year they write an MSc thesis at one of five universities, not the same one as during the first year. In between they follow a joint summer school of two weeks. All teaching is done in English.

Ernst van der Maaten studied the Erasmus Mundus MSc programme “European Forestry”, focussing on international aspects of forestry. Six European universities are involved and the teaching language in the specially developed courses is English. The first year is taught at different universities and concluded with a seven weeks excursion over the (West) European continent. The second year consists mainly of an MSc thesis. He is satisfied with the programme but disappointed by the very few European students participating due to funding problems. Non-European students can obtain more funding from Erasmus Mundus than the European ones.

Student Marion Jay reported on the Freiburg-Nancy double-diploma programme, which has a different concept. In this binational, cross border programme students follow the first part at one university and move then for the second part to the other. They follow courses already offered by that university in the language (French or

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German) of the university, the examination results accepted the next year by the other university. Marion Jay judges this double diploma programme as an intensive cultural experience as well as a professional enrichment.

Heterogeneous groups of students

All curricula mentioned above and many courses involved in these curricula are offered to heterogeneous groups of students from all over the world with different cultural and professional backgrounds. Till Westermayer considers this aspect as one of the large challenges of teaching. He illustrates the high heterogeneity of students enrolled in the MSc Programmes of the University of Freiburg according to nationality, gender and previous degree and explains them as caused by the societal processes of individualization and globalization. He gives four recommendations: (1) Do not assume specific backgrounds, knowledge or motivations! (2) Put student projects and multilayer material with “hooks” (and with something new) for everyone in the centre! (3) Change from “teacher” to “motivator/trainer/expert/...”! and (4) Make productive use of diversity, and don’t enforce stereotypes!

Conclusions

In his concluding remarks, Paavo Pelkonen depicts an increasing internationalisation of forestry curricula. More non-European students have access to the information and can gain entrance to these curricula. Moreover, more international curricula are organised on and by international platforms. In this context some curricula go beyond the traditional forestry boundaries. High quality in teaching and learning is needed to comply with demands from the labour market. New approaches here are needed, in which the SILVA Network can play an important role.

1 INTRODUCTION: INTERNATIONAL FORESTRY CURRICULA AT EUROPEAN UNIVERSITIES

SIEGFRIED LEWARK

Internationality of curricula was in the focus of the 2007 ICA Week of Conferences, which was the frame for the SILVA conference in Freiburg. This Week was concluded by the ICA conference “Enhancing the attractiveness of European life science universities for international Master students”, which of course is only one - though very important - facet of internationality and which was covered too in the SILVA conference.

Probably the first idea coming into one’s mind thinking about internationality will be attracting students from abroad, from other countries to one’s own university, faculty or curricula. Of course there are only international students’ groups, never international students, but single students with their individual cultural and national backgrounds (and perhaps already international experience), as pointed out during the conference.

An early key activity of SILVA was mobility – in the first place of students. This is necessarily leading to questions of language competence, but also of intercultural competence, as the learning socialisation and cultures of all the individuals moving between universities may be quite different. This has been reported at SILVA conferences often, also again in Freiburg.

At second thought arising will be sharing experience internationally by comparing ideas and experiences during conferences, or by international exchange of university teachers or even by joining forces of universities through international study programmes and by curriculum contents representing international aspects and experiences.

All activities to support the above are very much in line with the general and specific goals of the Bologna process. It comes as a big disappointment, that first experiences with Bachelor students, at least with forestry students in Germany, indicate, that international mobility is diminishing as compared to before. So it is an actual challenge to overcome this as fast as possible, which is hopefully only a children’s disease of the implementation of the Bologna ideas.

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SILVA Network has been working for internationalisation of forestry education from its first days. Focus at the beginning besides on mobility of students and scientific staff was on international exchange of views on curriculum development and even working for joint curricula. Over the second half of its twenty years of existence SILVA Network has seen a large number of activities aiming at internationalisation, some of which have been reported on during the annual conferences of SILVA Network and documented in numerous volumes of proceedings. The SILVA annual conference in Freiburg in 2007 was a good occasion again as proved by the following texts

The preparation of the graduates for a common European labour market for university graduates is an explicit goal of the Bologna process. This has a structural side. But also the graduates have to be fit for it, they have to achieve the necessary competences to use it – which includes in addition to language skills and intercultural competence a general mobility in thinking and attitudes as prerequisites. Probably the best or only way to work for these competences is by mobility during education, through studying abroad, in other countries, through internships and many other ways of moving in other countries with open eyes. Let's go on working for it as university teachers in forestry and related fields of study.

2 ‘EDUCATING LEADERSHIP FOR SUSTAINABLE ENVIRONMENTS’ - CONCEPTUAL BASIS OF THE INTERNATIONAL MSc PROGRAMME “ENVIRONMENTAL GOVERNANCE” -

MICHAEL MEMMLER, YVONNE EDER AND HEINER SCHANZ¹

Abstract

The international MSc Programme “Environmental Governance” launched by the University of Freiburg in winter term 2005/06 provides a thorough understanding of governance mechanisms in relation to the sound use and conservation of environmental resources. A large number of applicants from all parts of the world but also international organisations and the media have found the concept of environmental governance to be a promising concept for the solution of today’s environmental problems, and have thus shown great interest in the programme. Hence, the aim of the paper is to demonstrate the need for training in environmental governance at an academic level and how such an educational programme has been implemented at the University of Freiburg in Germany.

The rising interest in environmental governance and respective educational programmes

In recent years a literal ‘governance-hype’ could be observed, documented for example by the frequency of use of the term ‘governance’ in journals listed in the Social Science Citation Index (Jann, 2005). Therefore it is not surprising that the interest in an MSc programme dealing with governance in relation to environmental issues was also very high. Within the very short time from the official launch of the programme to the application deadline of only three months more than 230 enquiries were received, which finally resulted in 150 complete applications. These numbers grew even more in 2006 (350 enquiries) and 2007 (460 enquiries). In total 20 students from 16 different countries were accepted each year representing a broad range of first academic degrees in fields of economics, natural resource management but also in engineering - frequently with relevant professional experience. Not only applicants but also international organisations and the media have found the topic environmental governance to be a promising concept for the solution of today’s environmental problems, and have shown great interest in the new programme. The analysis of job offers also revealed an increasing interest in environmental governance, documented by a small but steadily growing

¹ Contact author

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international job market on the European level but an especially stronger one in the Anglo-American and international region.

The international MSc programme “Environmental Governance” launched by the University of Freiburg in winter semester 2005/2006 has taken up these challenges by providing a thorough understanding of governance mechanisms in relation to the sound use and conservation of environmental resources. But is the establishment of an MSc programme “Environmental Governance” more than a reaction to the ‘governance trend’ in general? The aim of the paper is to demonstrate the need for training in environmental governance at an academic level and how such an educational programme has been implemented at the University of Freiburg in Germany. This paper begins by examining the understanding of environmental governance as the basis for the design of the programme. In the second section the implications for the study programme regarding strategic design will be presented. The third section describes the formal structure of the programme.

Conceptual basis of environmental governance

Dependent on the perception of scholars, consequences of globalization, internationalization, state failures and the rise of neoliberalism - or all together -, are in general provided as explanations for the career of the term ‘governance’ (Jann, 2005; van Kersbergen and van Waarden, 2001). Blurring functional, structural and territorial boundaries are seen as the main reason for the shift from hierarchical steering by government to regulation by governance arrangements involving private and public actors at the same time (Benz, 2004).

Empirical research indicates that blurring functional, structural and territorial boundaries also account for the observable shifts in environmental governance worldwide (e.g., Kanie and Haas, 2004). Consequently, (political) scientists have interpreted environmental governance as a specific form of governance in general (e.g., Durant *et al.*, 2004), comprising all forms and types of social regulation by private and public actors, however with a special focus on environmental issues (Köck, 2005: 323). Nevertheless, we argue that the career of the term governance in environmental policy can be also explained by the characteristics of environmental problems and their specific challenges they pose on regulation.

There is growing consensus that many environmental problems have to be characterized as so-called ‘wicked problems’, meaning that there is no accepted definition of the problem, that one problem is interrelated with others, that there is no right or wrong answer, only more or less useful solutions, and even worse that the problem is constantly shifting (e.g. Stankey *et al.*, 1992; Friedmann, 1987). The reason for the emergence of ‘wicked problems’ is seen in the enormous uncertainties, given the complexity, pervasiveness, multiple causations and mutual interdependencies of natural environments. The uncertain basis of most decisions with regards to the environment is reinforced by the provisional nature of most facts on the environment: dynamic changes, non-linear threshold effects as well as catastrophic, irreversible and discontinuous features seem to undermine any effort of predictive explanations for the environment.

Still, the characterization of ‘wicked problems’ might also hold true for many other policy fields. However, what might be a specific feature of environmental problems is the continuous ‘sound of clashing certainties’ (Schwarz and Thompson, 1990) about the resilience and stability of natural environments. This is best illustrated by the so-called ‘myths of nature’- concept developed by Holling (1979; 1986) and Timmerman (1986). They found in their analyses of managed ecosystems that different managing institutions faced with exactly the same kinds of situation, adopt strategies based on different interpretations of ecosystems stability. They identified four different ‘myths of nature’ whereby the relation of a ball to its surface can represent the model of stability and resilience of nature graphically (see Figure 1).

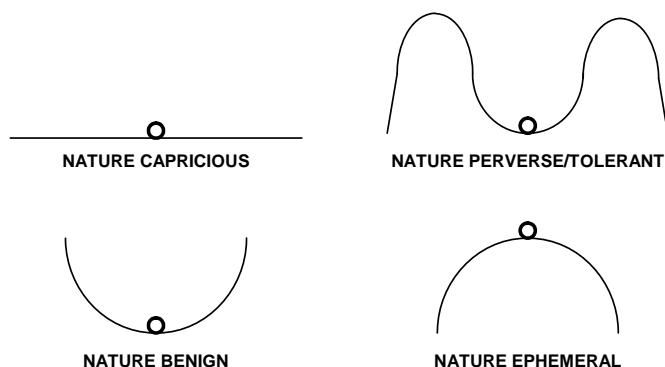


Figure 1: Four ‘myths of nature’ representing different, empirically backed up representations of environmental stability and resilience.

These four different ‘myths of nature’ pose an enormous challenge on all efforts of environmental regulation, as – even though mutually exclusive – all of them are backed up by sound empirical evidences and therefore contain at least partially the truth. Facts about the environment are thus not only used politically, but are obviously also formed politically (Schwarz and Thompson, 1990).

Given the innate uncertainties surrounding environmental issues and the immense significance of cultural representations of environmental change in shaping political discourse, there has been growing interest in social constructivist perspectives on relations between society and nature (Jones, 2002). This is well illustrated by the recent controversy about Bjorn Lomborg’s book ‘The sceptical environmentalist’ and it’s claim that the state of the environment is actually going better (e.g., Lomborg, 2004; Oreskes, 2004; Pielke, 2004; Sarewitz, 2005; Jacques, 2006).

For a long time the management of environmental problems was considered to be purely a problem of the application (or better: translation into policies) of the contributions of the relevant natural and technical environmental sciences. The limitations of the natural sciences to provide ‘proofs’ about the environment (Oreskes, 2004) have cast severe doubts on this perception. Not surprisingly the management of environmental problems is increasingly appreciated to involve the

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skills of governance as well (De Marchi and Ravetz, 1999: 743). Even though no unifying school of thoughts, let alone a stringent set of theories have developed yet, there seems to be emerging consensus on some of the design principles for effective environmental governance arrangements. Environmental knowledge (in the sense of ‘facts’) and the process how to acquire knowledge still form the central point of departure, however in an increasingly alternative interpretation (Table 1).

Table 1: Design principles for effective environmental governance based on emerging consensus about environmental ‘facts’.

Design criteria	Hints for governance arrangements
Appropriateness	‘Task-specific’ rather than ‘general purpose’ governance
Pluralism	Equal and effective opportunity to articulate visions in processes of collective judgements
Adaptiveness	Extend time horizons and introduction of elements of foresights
Deliberation	Convergence through overlap, complementarities and integration
Experimental processes	‘Learn and tinker, tinker and learn’

In this alternative interpretation, environmental knowledge is no longer limited to scientific knowledge, but is assumed to be specifically created anew in argumentation processes through exchanging perceptions and understandings and through drawing on the stock of life experience and previously consolidated cultural and moral knowledge available to participants in negotiation processes (Healey, 1993). The sharp distinction between scientific and ordinary knowledge is thus disappearing, with none of the different information sources being superior. Information is no longer a resource solely provided by external experts into the decision process. Probably even more important in environmental policy, communicative action in itself ‘informatizes’ and policy results are a foregone conclusion in the process of formulating and agreeing on the information, rather than the later choice after the information is in final form (Innes, 1998). Formulation (goal setting) and implementation (identifying means) of policies are no longer distinct, succeeding steps, but inextricably intertwined.

Educating leadership for sustainable environments thus requires a sound knowledge about global environmental and social changes, the ability to reflect on societal decision-processes from different theoretical perspectives and competing conceptual frameworks, as well as the skills to manage such decision-processes effectively.

Strategic design

The MSc programme “Environmental Governance” responds to these requirements by its underlying tripartite structure *realising – understanding – managing*. At the beginning students will gain profound insight into the concept of sustainable development and different modes of governance. In addition, they will become acquainted with contemporary societal trends (provided by lecturers of the MSc programme “Global Studies”) and urgent environmental problems with the latter provided by lecturers of the neighbouring MSc programme “Forests, Environment

and Bioresources". Building upon this knowledge base, the following modules aim at an in-depth understanding of human – environment interactions. Thus a wide spectrum of different analytical frameworks and theories from social, economic and political science will be elucidated ranging from political ecology, environmental ethics, institutional economics, environmental law, and policy analysis to corporate governance, to name but a few. Lastly, students are offered a variety of opportunities to apply their knowledge and skills in lifelike exercises. Special emphasis is thereby laid on the continuous development and improvement of key qualifications necessary to design and manage social negotiation processes between market economy, government and civil society.

At first glance, this briefly described tripartite structure complies with a classic managerial approach for problem-solving. But a merely textual estimation of the topics of the study programme mirrors the strategic design in an insufficient way. Moreover, such a perception would be especially unable to reveal the main strategic principles of the MSc programme: ability of reflection, procedural and persuasive rationality, context-sensitivity. In the following, their systematic consideration in the design of the MSc programme will be pointed out.

With regard to the *ability of reflection* the above described tripartite structure of the MSc programme must be interpreted in a different way: The introductory modules in global societal and environmental issues aim only partially at teaching assured facts. Instead of obtaining detailed instructions how the world works students rather get challenged with different certainties of scientific knowledge. Taking as example the controversy about Lomborg's book students will recognise that scientists provide rather 'informed options' than definitive proof, as they adhere to differing standards of demonstration and argumentation in varied contexts and disciplines (Oreskes, 2004; Sarewitz, 2004). Consequently, comprehensive knowledge of the comparative shortcomings of scientific theories as well as scientific methodologies is indispensable for graduates, at least if pluralism of science is recognised as an unavoidable feature of modern societies. Therefore, intensive discussions and comparing reflections on several disciplinary approaches related to environmental problems, also involving argumentative dispute between the lecturers in charge, represent the means applied during the second term. This provocative confrontation with different scientific 'frames' conduces also significantly to students' self-reflection and their ability for reasoned argumentation. In this regard the educational guideline of the MSc programme can thus be phrased as teaching '*not know-how, but know-why*' meaning that lastly only students themselves should draw well-informed and reasoned conclusions about the most fruitful approaches to Environmental Governance.

Nevertheless, students rightfully expect some hints how to 'cope with clashing certainties', as effective governance arrangements cannot be derived from instrumental or substantial 'scientific' rationality. Again taking societal and scientific pluralism seriously, students hence will conduct integrated case studies to become familiar with the concept of '*procedural rationality*' as the way a complex negotiation process is organized. While stressing the uncertainties of social

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interactions, this concept calls for an elementary agreement on ‘the rules of the game’ as most important prerequisite for overcoming mutual distrust and for encouraging self-governing processes (Blum, 1999; compare Heap, 1992). Besides, achieving a basic agreement is also linked with ‘*persuasive rationality*’ as a second useful concept of rationality that focuses on shared beliefs of ‘right’ behaviour on community level. Consequently, students will learn to take into account, that an actor will probably choose that option that can be convincingly attached to his beliefs through persuasive communication (Fischer and Forester, 1993).

Eventually, graduates should be able to perform a *deliberative role* in Environmental Governance. Students will thus be particularly taught to develop capacities for ‘practical judgements’ and promote self-transformation (Hajer and Wagenaar, 2003). Furthermore, they will be able to re-arrange prevalent meanings in an unorthodox way and to get involved in communicative action and public discourse (Fischer, 2003). This public involvement of experts seem especially meaningful for the initiation and facilitation of societal learning processes in Environmental Governance, though studies of policy-science interactions have assigned a merely indirect and unpredictable ‘enlightenment function’ to scientific knowledge (e.g., Weiss, 1977). Certainly, further abilities are also needed to maintain, support and improve existing governance arrangements: the competencies of moderation, mediation and deliberation will be promoted through the interactive parts of the core modules, special elective modules (environmental conflict management e.g.), the integrated case studies as well as student-organised scientific symposia.

Among these specific features of the MSc programme especially the integrated case studies have to be highlighted, as they are mainly intended to strengthen students’ *sensitivity for contextual framework conditions*. Two modules, each lasting three weeks, are scheduled in which students conduct empirical case studies on various environmental problems in different contexts worldwide. On a strategic level, the case studies will be selected according to the following considerations: Thematically, they ought to represent some of the globally most important environmental problems like water and air pollution, forest decrease, soil erosion or loss of biodiversity. Regarding scales and time frames they ought to range from micro to macro level, from cellular to ecosystem-wide scope, incorporating historical impacts and path-dependency as well as elements of foresight. More precisely, the first case study will deepen the understanding of regional contexts by adding geographical concepts like political ecology or risk analysis and illustrate the latter considering outstanding examples of environmentally affected regions like the Aral sea, Chennai or Cascadia. Focusing on exemplary local and regional governance processes in South America and Asia the second case study intends to familiarise students with the entire toolkit of Integrated Natural Resource Management, specifically with promising techniques to combine quantitative and qualitative, natural and social data. Hereby special emphasis is laid on a holistic claim and the cultural as well as socioeconomic compatibility of the models and results worked out. Besides, medium-term adaptability and susceptibility of proposed solutions to unforeseeable events will be stressed.

Structure of the study programme

The duration of the programme is two years. Teaching modules are divided into three-week units and conclude with a graded written exam. Students earn 5 ECTS credits upon successful completion of each module. The modules are classified as either core or elective. In total, 120 credits are required. Included is an internship of (in minimum) seven weeks and a master's thesis. Figure 2 demonstrates the sequence of the modules.

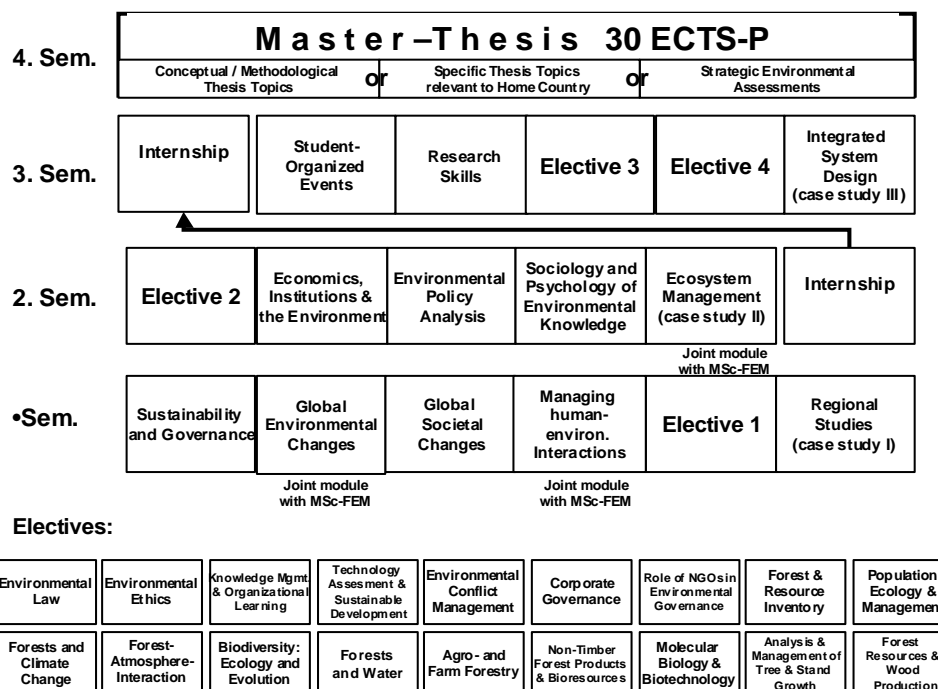


Figure 2: Structure of the MSc Programme “Environmental Governance” at the University of Freiburg (July 2007).

Instruction does not involve a single lecturer imparting knowledge in the classical lecture format; rather it is crafted by a team of lecturers from a broad variety of scientific disciplines. In accordance with the interdisciplinary concept of the course, the team of lecturers comprises representatives from the various disciplines hosted by the Faculty of Forest and Environmental Sciences. These are for example environmental economics, environmental policy, landscape management, hydrology, geography, natural biology, biochemistry and ecosystem management, to name but a few.

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Table 2: Course matter of the MSc programme “Environmental Governance”

	<i>Name of the Modules</i>	<i>Brief summary of syllabus</i>
Realising	Core modules Sustainability and Governance	Vision and principles of SD; historic background; importance in political processes; different meanings, modes and theoretical approaches of the governance concept.
	Global Environmental Changes	Important environmental problems (water and air pollution, acid rain and forest decline, the loss of forests and biodiversity, global warming etc.); research process in the environmental and social sciences.
	Global Societal Changes	Contemporary global societal trends; topical development debates; outline of recent conceptualisations of environmental change in social theory and political geography.
	Electives Electives of the MSc “Forests, Environment and Bioresources”	Forests and water, conservation biology, ecological modelling, forest-atmosphere interactions, agro and farm forestry, non-timber forest products and other bioresources, etc.
Understanding	Core modules Environmental Policy Analysis	Comparative discussion of different approaches (e.g., rational choice, policy networks, advocacy coalition framework, multiple streams, social constructivism, discourse analysis, cf. Sabatier 2007); case studies.
	Economics, Institutions and Environment	Economic instruments for governing and tackling environmental problems; specificities of economics dealing with environment; evaluation techniques and instruments; environmental economics.
	Sociology and Psychology of Environmental Knowledge	Individual environmental behaviour (game theoretic foundations, basics of psychological behavioural architectures), possible factors to change environmental behaviour, perception of slow / sudden environmental risks. decision support systems; social structures and the construction and use environmental knowledge.
	Electives Environmental Law	Key structures and interconnections of main forms of modern environmental law (property rights, administrative regulatory, and trade promotion law); interactive lectures, readings and short case studies.
	Environmental Ethics	Historical overview of environmental ethics; current debate on human responsibilities with regard to nature; various types of conceptual distinctions as well as philosophy of nature.
Corporate Governance	Comparative discussion of the concepts of Corporate Governance, Corporate Social Responsibility and Corporate Citizenship as well as different management systems in general.	

Managing	Core modules	Managing Human-Environment-Interactions	Exploration of various ways in which societies organize and manage relationships with their environmental context; focus on five major institutions: property, community, social organizations, markets, law.
		Ecosystem Management	Ecosystems in a measurement perspective: material and energy flows; ecosystems in a phenomenological perspective, i.e. elements and processes; ecosystem management approaches and principles.
		Case Study 1: Regional Studies	Concepts of geographical regional studies likewise political ecology, sustainability and risk analysis; case studies covering some of the globally most important environmental problems.
		Case Study 2: Integrated System Design	Integrated Natural Resource Management Approach (INRM); combined, ecologic and socio-economic assessment of biophysical and institutional components; application of adequate tools.
	Electives	Technology Assessment and Sustainable Development	Concepts and methodologies of technology assessment (TA); Interdisciplinary, open concept for the analysis of technical developments and their implications, and for the development of options for action.
		Environmental Conflict Management	Conceptualisation and management of environmental conflicts; overview on relevant conflict theories; practical experiences with established methods in conflict management.
		Knowledge Management and Organisational Learning	Principles of learning, cognition and instruction; complex problem solving strategies especially in the context of decision making; individual knowledge organisation; Organisational Learning.

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The team is supplemented by representatives from other faculties of the University of Freiburg, from the political sciences, sociology, philosophy, psychology and educational sciences, as well as external research institutes and national and international partner universities. Involved are also practitioners from industry, civil society and organizations for development cooperation. To illustrate the resulting broad range of course matters, a brief description is given in Table 2. For an unabridged version please refer to www.meg.uni-freiburg.de.

And, last but not least the assorted background of students regarding disciplinary qualification and work experience has to be mentioned. As mentioned before, the students represent in average 17 countries in different geographic regions per class assuring a unique spectrum of contextual knowledge which can be used in modules and case studies.

Conclusion

Since the Earth Summit in Rio de Janeiro in 1992 the concepts of sustainable development and accordingly sustainability in the manifold relationships between humans and the environment have become integral rules of conduct in politics and society. In economics, for many companies a commitment to the principles of sustainability has become a central strategic competitive advantage. Nevertheless, the realisation of these goals still represents an enormous challenge as the prudent use of environmental resources as basis for sustainable development is controversial for good reasons: anyone interpretation of sustainability represents ecological, economic and social values at others' expense, often with irreconcilable time and spatial scales. This is well reflected in the tensions between environmental sustainability and development, as expressed for example in the *UN Millennium Declaration* between Development Goals 7 'Ensure environmental sustainability' and 8 'Global development partnership'. Consequently the achievement of sustainable development ultimately depends on ways of reconciling the manifold stakeholder interpretations of sustainable use of environmental resources and of facilitating the institutionalisation of context-effective environmental governance arrangements that combine market, state and civil society regulation modes across functional, sectoral and institutional boundaries.

The international MSc Programme "Environmental Governance" launched by the University of Freiburg in winter semester 2005/06 has taken up that challenge. Unique worldwide, its mission is to train leaders for sustainable environments, namely:

- leaders with grand, innovative ideas about environmental governance arrangements beyond the traditional functional, structural and territorial boundaries ('sustainability designers'),
- leaders who embrace and understand these ideas, and are capable of finding ways to implement them in organisations, enterprises and administrations in a context-sensitive manner ('sustainability facilitators'),

for any development, at any scale from local to global, and in any context worldwide. Its attractiveness for students from all over the world (e.g. in 2007 more than 400 applications from 83 different countries) can be taken as proof for the actuality and adequateness of its underlying educational principles.

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3 CURRICULUM DESIGN AND CAREER OPPORTUNITIES AT THE SCHOOL OF FOREST SCIENCE AND RESOURCE MANAGEMENT, TECHNISCHE UNIVERSITÄT MÜNCHEN

SOPHIE PAHLMANN

Abstract

The prospect of a rewarding and fulfilling job can be regarded as an important factor in the decision of an individual to study a certain subject at a certain institution. In this respect, forestry faculties are particularly challenged in the set-up and scope of their academic education, because they are expected to prepare their students for a labour market that has transformed profoundly. The School of Forest Science and Resource Management of the Technische Universität München (TUM) is also undergoing a re-design of their entire study programme offering. This process is led by a strategy which can be termed “diversifying the established”; it aims to expand the subject matter while not compromising the unique qualities of the traditional forestry education. A long-term review of this strategy has not yet been carried out, but many success stories from graduates prove that it is on the right track.

Factors of attractiveness

In a programme coordinator’s and student advisor’s office, many telephone calls and e-mails are received from candidates who wish to enquire about the programmes at the institution before they decide to apply. Such enquiries usually comprise various questions concerning the programmes, but what all queries come down to is the question: “What is the use of studying forestry at this specific university?” Candidates want to know what they can hope for after graduating from the institution.

Judging from the questions raised frequently during such consultations, various factors can be identified influencing the choice for or against a certain study programme at a certain institution. It can be said that the attractiveness of a programme is a matter of:

- Relevance of the subject;
- Location;
- Reputation of the institution;
- Study fees and other costs;
- Service;
- Curriculum and course offering;
- Campus infrastructure;
- Other preferences such as family, landscape, economy;
- Employability of the graduates.

Employability

In fact, the question of employability is one of the most frequently asked and especially in the field of forest science not the easiest to be answered. Figure 1 shows how “employable” forest science graduates of the School of Forest Science and Resource Management at TUM have been in the past.

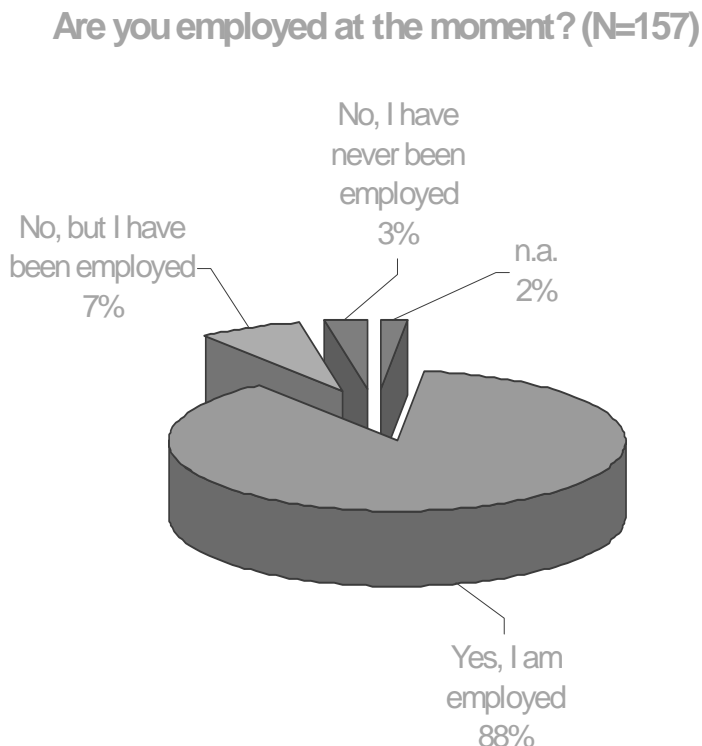


Figure 1: Employment rate of forest science graduates of TUM. Survey among graduates of the diploma programme “Forest Science” at TUM (2006).

Although an 88% employment rate among graduates is a reasonably good figure, a faculty can further raise its attractiveness by increasing the chances of employment for its graduates. In order to do so, it is necessary to have a closer look at these 88% of employed graduates. What exactly are their occupations? Which fields are they working in? Are they all “foresters”? Figure 2 shows that they are not. On the contrary, the graduates of the School have found occupations in various fields of profession. About one third of the graduates with jobs are working in forestry itself. Of those, only about another third are employed in the public forest service – one of the main employers of German foresters in the past. Among the most common fields are the academic field (research), the wood industry and the services industry, including insurances and finances. Moreover, foresters are sporadically working in a few other fields. And this is a phenomenon not restricted to Munich’s forestry graduates.

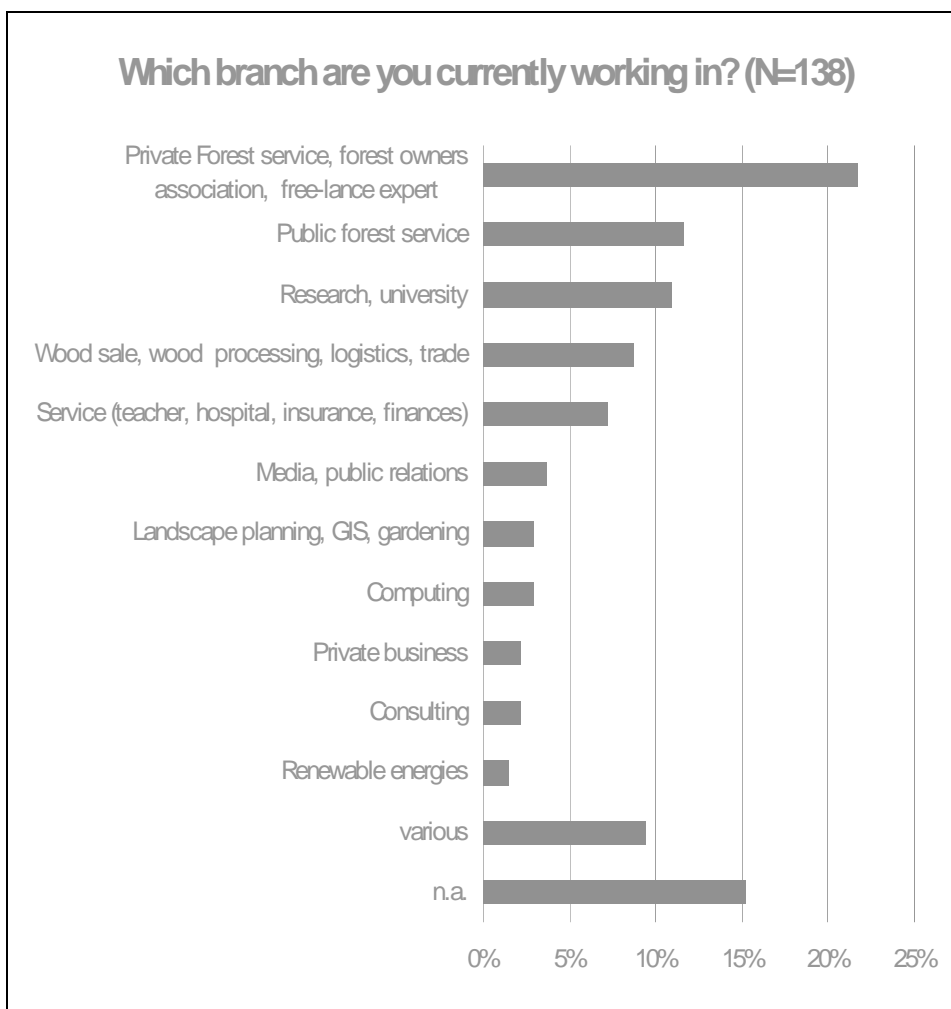


Figure 2: Branches of occupation of forest science graduates of TUM. Survey among graduates of the diploma programme “Forest Science” at TUM (2006).

In fact, education in the field of forest science and forest management has generally been subject to massive changes during the past decades. More and more academic institutions recognise that the traditional occupational image of a forester is no longer cut in stone. The demands on foresters have increased and their field of activity has diversified. Factors explaining this included the increasing interest of society in environmental issues (ETH Zürich, 2005), the extension of the subject matter from local woodlands to forest ecosystems dependant on global developments (Wageningen University, 2007; Swedish University of Agricultural Sciences, 2007), the reduced employment opportunities in forest administration due to the political changes in the organisation of forest management (Georg-August-Universität Göttingen, 2007) and lately especially the increasing recognition of wood as a re-growing source of energy (Utschig and Kukuk, 2005; Yale University, 2006). Graduates from forestry faculties around the world increasingly tend to be

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environmental managers, development workers, consultants, wood retailers, scientists, environmental planners, wildlife managers, politicians etc.

The higher education institutions now bear the responsibility to adapt their curricula to this widened occupational field of forestry. Figure 2 shows that around one third of Munich's forest science graduates do work in the traditional field of forestry (private and public forest service, first two bars), and that the majority has found other niches in the labour market. We can conclude that any kind of curriculum adaptation must aim to improve the forestry education towards a wider field of application while:

- Maintaining the crucial qualities of a forestry graduate, and at the same time
- Providing the opportunity for specialization within diverse subjects that are located beyond pure forestry.

In short, it means that curricula re-design must diversify the established. In order to keep a forestry faculty attractive in terms of employability, applicants must be ensured that graduates passing a certain programme will be qualified to fit various niches.

Munich's curricula re-design

In this context, the School of Forest Science and Resource Management of TUM has undertaken a re-designing process during the past decade. The politically enforced Europe-wide administrative reforms (Bologna process) triggered a voluntary revision process of the structure, the contents and the scope of the school's curricula. The results of this revision are the school's four new study programmes:

- *Bachelor of Science* "Forest Science and Resource Management".
Aim of the curriculum is to learn how to manage a natural resource in a sustainable way; the object of learning is the forest ecosystem. On the basis of a thorough training in economics and natural sciences the student will gain methodological competence and the ability of systems thinking in forest related matters.
- *Master of Science* "Forest and Wood Science".
The objective of this programme is to educate a diverse range of professionals qualifying for the traditional career (public service) as well as for private and communal forest management, wood, pulp and paper industry, consulting, research, development cooperation and nature conservation.
- *Master of Science* "Sustainable Resource Management".
This international programme addresses the full spectrum of natural resource management including landscape planning, plant, soil, water and wildlife resources and the scientific methods of resource management like system analysis and inventory methods. It takes students well beyond the boundaries of traditional disciplines, such as forestry and agriculture. A special focus is put on the so-called soft skills, such as rhetoric's and conflict management. The programme is taught in English.

- *Philosophical Doctor* “Sustainable Management of Environment and Resources”.

The aim of the PhD programme is to foster highly qualified graduates from different countries in the field of sustainable management of resources. The development of sustainable concepts for environmental management is supported by deepening the analytical abilities of the young scientists.

Each programme was created by a special working group composed of professors, assistant professors and programme coordinators. Students’ expectations and visions were derived from questionnaires and formed a part of the basis for planning. Due to the labour-intensive re-design a step-by-step approach was chosen. While the Bachelor’s programme and the international Master’s programme were implemented in 2001 and 2005, respectively, the other Master’s curriculum is still under re-construction and the PhD programme is in its final conceptual stage. The latter two are expected to start in 2008.

According to the motto “diversifying the established”, the working groups were lead by the following principles:

- Curricula and courses must become more *international*, both in regard to the subject matter as well as to the target group of students. It means that courses shall not only consider local or national ecosystems or social/legal conditions, but shall also deal with international aspects. At the same time, programmes must be made attractive to foreign students and guest teachers.
- Programmes must become more *interdisciplinary*. Subjects from other faculties related to resource management, natural or social sciences must be included in the curricula and future-orientated subjects of research and teaching must be established (e.g. in the field of energy wood). Furthermore, curricula have to be complemented by key qualifications such as skills in problem-solving, systems thinking or social competences in order to build the bridge between the subjects.
- It is important to keep up the idea of *educating generalists* and giving the students the opportunity to expand on certain subjects and thus becoming specialized generalists with their individual profiles.
- Crucial to the education of foresters has always been the principle of *sustainability*. The ability to approach decisions and problems from an economic, an ecological and a social perspective as well as the habit of long-term planning qualifies foresters for jobs of high responsibility – not only in the environmental field.

The example of “Sustainable Resource Management”

The “Sustainable Resource Management” (SRM) programme was established in October 2001. Since then, more than 300 students from over 60 different nations have enrolled so far; 174 have graduated to date.

With the SRM programme, the school certainly trod new trails. Faced with dwindling numbers of students at the faculty, the programme developers followed exactly the motto of “diversifying the established”.

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Diversification was achieved by the programme's international scope – in terms of subject contents and targeted students, and its interdisciplinarity – both in terms of the variety of subjects and the qualifying degrees, as well as by its focus on social skills and methodologies to bridge the different technical subjects.

At the same time, the established elements of forestry education such as the management approach, systems thinking and the core principle of sustainability were kept and partially extended. In fact, the principle of sustainability forms the core of the SRM programme.

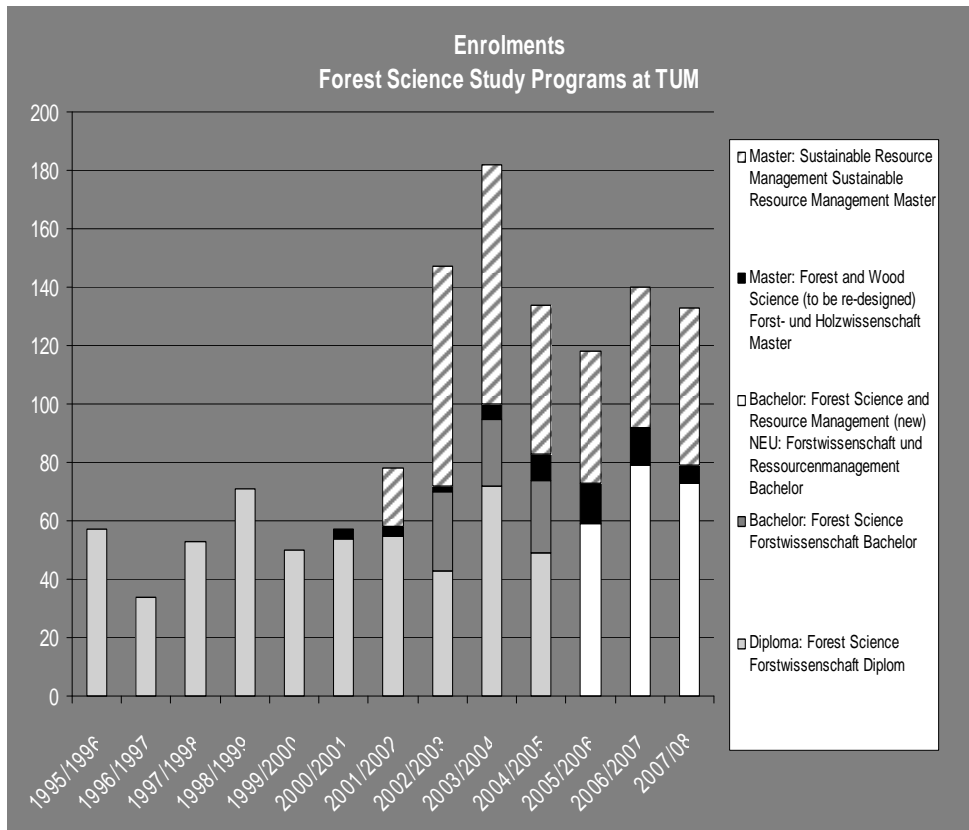


Figure 3: Enrolment numbers at the School of Forest Science and Resource Management, TUM.

The endeavour to set up a curriculum covering the three pillars of sustainability – economy, ecology and social aspects – requires defining necessary skills and competences to educate people in these fields. These skills can be divided in three subject groups:

- Management skills;
- Natural sciences;
- Social competences.

The teaching modules of the SRM programme were established according to these subject groups ².

Results

Have the new programmes of the School of Forest Science and Resource Management proved to be attractive to students? In the light of the reduced opportunities for publicly employed foresters, the introduction of tuition fees in Bavaria and the international boom in environment related study programmes, the student figures of the school look very encouraging (Figure 3).

Statistical figures for the success of the graduates of the new programmes do not yet exist. The newest programme is expected to produce the first graduates in 2008. Their future success can only be estimated. But many graduates from the international Master's course who keep contact to the school show how well they have integrated into the international job market with their new Master's degree in "Sustainable Resource Management". They also show that the concept of expanding interdisciplinarity and internationality was the right decision. Feng Wei from China, for example, graduated in 2006 and was promptly hired as an officer at the China Monitoring Centre of Soil and Water Conservation in the Chinese Ministry of Water Resources in Beijing. Annette Reiber from Germany graduated in 2005 and now works as a full-time campaigner for energy efficiency at Greenpeace in Switzerland. Andrew Blackwell from England took a permanent position in a German sustainability research institute. Nivedita Mahida from India and Ainhoa Carpintero from Spain were employed by a British environmental consultancy company in Dubai even before they had finished their master's theses.

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² The module catalogue can be found on the website of the programme at:
http://www.forst.wzw.tum.de/htdocs/studi_srm_en.php

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4 INTERNATIONAL MASTER PROGRAMMES AT THE UNIVERSITY OF APPLIED SCIENCES OF EBERSWALDE - PROGRAMMES AND EXPERIENCES

MICHAEL MUSSONG

Short Portrait of Eberswalde

The University of Applied Sciences (Fachhochschule) of Eberswalde, located close to the German capital Berlin, has the longest tradition in Europe regarding higher education in sustainable forest management and forestry research. Founded by Wilhelm Leopold Pfeil in 1830 and re-established after the political changes in 1992, the university has currently four faculties and fourteen study programmes. Regarding the number of enrolled students (approximately 1400) and professors (44) Eberswalde claims to be the smallest university in Germany.

The four faculties offer the following study programmes:

Faculty of Forestry:

- “Forestry” (BSc);
- “International Forest Ecosystem Management (BSc);
- “Forest Information Technology” (MSc, taught in English);
- “Global Change Management” (MSc, taught in English).

Faculty of Landscape Use and Nature Protection:

- “Landscape Use and Nature Protection” (BSc);
- “Ecological Agriculture and Marketing” (BSc);
- “Regional Development and Nature Protection” (MSc);
- “Ecological Agriculture Management” (MSc);
- “Sustainable Tourism Management” (MA) (in co-operation with the Faculty of Economics).

Faculty of Wood Science Technology:

- “Wood Science Technology” (BSc).

Faculty of Economics:

- “Regional Management” (BA);
- “Enterprise Management” (BA);
- “Finance Management” (BA);
- “Marketing Management” (MA).

International Aspects

At the University of Applied Sciences of Eberswalde „International“ is understood as:

- Studying according to the international ECTS-System (Bachelor/Master);
- Study programmes with international topics, international (guest) lectures, students from foreign countries, teaching in languages other than German (English, Spanish);
- International research and co-operation projects with universities, NGOs and private enterprises as partners;
- Practical and/or theoretical semesters abroad.

In 2002 and 2006 two international Master programmes were launched at the University of Applied Sciences of Eberswalde. Both programmes are taught in English.

- *“Forest Information Technology”* (FIT) is an interdisciplinary educational programme with its main focus on environmental information technologies (approx. 60 %), forest ecosystem research, forest management and landscape research. The aim of the programme is to train specialists for the creative application of information technologies that will aid in the description and solution of environmental problems. Since 2005 the programme is offered as a joint master programme together with the Forestry Faculty of Warsaw Agricultural University, Poland. Students get enrolled either in Eberswalde or in Warsaw. The first semester is taught in Eberswalde (basic knowledge of environmental information technologies), the second semester in Warsaw (continulative knowledge of environmental information technologies). The third semester contains a specialisation through optional courses in Eberswalde or in Warsaw and an independent research project (minor). The final fourth semester is foreseen for more optional courses and the master thesis.
- *“Global Change Management”* (GCM) is an interdisciplinary educational programme as well with its main focus on a pro-active sustainable management of natural resources under the global environmental change processes. The aim of this programme is to train specialists who are able to effectively contribute to the mitigation of, and adaptation to the drastic effects of global change. Partners of the programme are Germanwatch e.V., German Agency of Technical Co-operation (GTZ), Munich Re Group (Münchener Rück)³, Nature Conservancy Association of Germany (Naturschutzbund Deutschland, NABU), and Potsdam Institute for Climate Impact Research (PIK). In the first two semesters fundamentals and methods are taught (global change processes and driving forces behind them; impact of global change on biological systems and land use; socio-economic, institutional and political dimensions; design and implementation of management strategies). The third semester is foreseen for a

³ Münchener Rück: One of the world's largest re-insurance companies.

research project with support of the programme partners. Beside preparing the master thesis in the fourth semester, the students have to participate in a complex module on global change issues.

Experiences

After five years offering the Master programme “Forest Information Technology” it becomes visible that the number of applicants, especially the number of foreign applicants, is decreasing (Table 1). A drastic break down was in 2005 which is the year since when the programme is offered jointly by Eberswalde and Warsaw. One reason may be that especially foreign students are not so much interested to study in Poland due to expected additional language problems. The number of accepted students is more or less constant. Except in 2004, approximately half of the accepted students are foreigners, mostly from African or Asian countries. Regarding the number of enrolled students, it becomes visible that in all years the capacity of study places (20) is not exhausted. The number of enrolled foreigners is on average less than 50 % of all enrolled students. Looking at the still small number of graduates, it seems that only very few students finish their Master in time. On average our German students need about three years whereas our foreign students need about four years to graduate in the programme.

Table 1: Master programme “Forest Information Technology”: student statistics.

	2002	2003	2004	2005	2006	2007
Applicants						
All		52	49	24	19	16
Foreigners		44	34	13	12	12
Accepted						
All	16	18	25	20	17	11
Foreigners	9	10	23	10	10	9
Enrolled						
All	10	9	15	14	10	n.a.
Foreigners	4	4	13	6	6	n.a.
Graduates						
All			1	6	9	n.a.
Foreigners				1	5	n.a.

n.a. = not available.

Due to the introduction of the Master programme “Global Change Management” in autumn 2006 there are no comparable data up to now. But in both years the number of students is below capacity and amongst the enrolled students there was only one foreigner.

Conclusions

In spite of the supposed attractiveness (international and innovative programmes, excellent studying conditions, and good career opportunities) the number of master students (especially from foreign countries) at the University of Applied Sciences of Eberswalde is only partly satisfying. The reasons are manifold but may be described by the following aspects:

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- The number of finally interested applicants is reduced by the increasing competition amongst (and sometimes within) universities.
- Germany, East Germany and Eberswalde have a problematic international reputation.
- International students are mostly lacking sufficient German language skills. This aspect is not so much important for studying (the master programmes are taught fully in English) but for the social integration of students especially for small university communities and cities like Eberswalde.
- For (international) students who mostly don't hold a scholarship, the financial situation is often very problematic.

The requirements for the future are not only to attract but also to keep students at university. Some of the problems may be reduced on university level but others need broader political solutions.

5 FORESTRY EDUCATION IN THARANDT AT UNIVERSITY LEVEL - QUALIFYING FOR THE JOB

STEPHAN BONN AND SVEN WAGNER

Introduction

The introduction of Bachelor and Master degrees at Germany's universities according to the Bologna agreement brings new ideas and new challenges. The Faculty of Forestry of the Technische Universität Dresden, in short Tharandt, knows a nearly 200 year old tradition in forestry education, practicing the Diploma system for decades. This system is characterized by a five-year long sequence of courses, starting with basic disciplines and offering applied disciplines after the fourth semester (Vordiplom).

The difference of the Bachelor and Master system as compared to the "old" Diploma system is seen – among other things - in the splitting up of one curriculum into two consecutive curricula, each qualifying for a different job. Thus, taking the old Diploma curriculum and just cutting it into two pieces seems not appropriate to answer the demands of the future students. This resulted in an ongoing debate on how to structure the six Bachelor semesters and which contents should be taught during that period. These discussions are most often initialized by colleagues teaching basic disciplines. They fear that the high standard of disciplinary knowledge as well as the importance of these disciplines will suffer. In addition, the labour market in Germany is not familiar with the Bachelor degree and thus another fear is to deliver graduate students whom nobody is asking for. In Germany, polytechnics or "universities of applied sciences" are turning out to be competitors on the labour market, having a long tradition in education at the applied level. In this paper we aim to explain the steps taken to adjust the Tharandt forestry study programme to the new Bologna framework of Bachelor and Master and how we explicitly coped with the claim to qualify Bachelors for the labour market.

The Bachelor degree as a vocational qualification

The terms "qualification" and "competence" are crucial in the process of reforming curricula according to the Bologna regulations. These regulations require that the Bachelor degree includes a vocational qualification: "ready for the job" which means here "ready for the labour market". An additional reason for reform is the increasing "qualification oriented" communication with the labour market and the student instead of the former "certificate or degree oriented" communication. The access of alumni (BSc and MSc) to the labour market will be easier if the employers know which qualifications graduates have.

Consecutive structure of the curricula

The consecutive structure according to the Bologna regulations is adapted in Tharandt in such a way that the specific complexity of forest jobs is trained first (Bachelor) and, based on this, a deepening in the specialist disciplines is obtained second (Master). Complexity of early teaching events (i.e. “modules”) contributes to give a more realistic idea of the profession to the students; examination performances indicate the degree of success.

The former subdivision of the curriculum in the first four semesters (Vordiplom) teaching the basics and the last five semesters (Diplom) offering “applied subjects” is mainly abolished. In the Bachelor curriculum the teaching contents of the basic modules have to be adapted to the new requirements. However, this sometimes conflicts with the teaching concept of the teachers involved, e.g. chemists or soil scientists, used to deeply scientific and mono disciplinary lecturing of their discipline from the very beginning. Instead, these teachers have to implement the concept of complexity in their lectures and thus to include disciplinary or even interdisciplinary teaching. This means to offer modules in which from two up to five disciplines are combined. Basic-basic modules, e.g. combining soil science and meteorology, applied-applied modules, e.g. combining silviculture and economy, and basic-applied modules, e.g. combining zoology and silviculture, are being taught now. This interdisciplinary teaching is and will be done in Bachelor as well as in Master courses.

As a consequence of the Bologna system, many opportunities for teachers occur. First, teachers of basic disciplines will have the opportunity to teach advanced subjects of their disciplines in the Master curricula; here depth can be attained with students, who have already acquired the context of forestry. Secondly, in the future this means to teach students who have been working in forest practice already and come back to university to obtain a Master degree. This idea is totally new to Tharandt’s teachers and will be a challenge when happening for the first time. Thirdly, applied subjects are integrated in the first semesters. They should be linked in an interdisciplinary fashion with the relevant basic disciplines. Amongst others, the vocational qualification of the Bachelor is ensured by the fact, that the students are enabled to solve complex problems and to approach their problems flexibly. Interdisciplinary teaching events are to promote the ability to combine and link together different disciplines. They provide an opportunity to train how to handle forest-specific complexity.

Transferable skills

The BSc curriculum “Forestry” is to enable a polyvalent qualification; a certain proportion of elective fields are to yield a curriculum featuring also chances for individual profiles (see Figure 1). Besides broad specialist knowledge also explicit general qualifications are to be conveyed to the students. To these so-called transferable skills belong among others the ability to communicate about their individual understanding, skills, and activities with peers, supervisors, and clients, and the ability to identify and use data to formulate responses to well-defined

Bachelor curriculum "Forestry"								
1./WiSe	Biometrics 1	Wood as Raw Material 2	Biological Processes 3	Fauna 4	Soils 5	Ecology 24	English 46	
2./SuSe	Dendrology 6	Forest Site Ecology 7	Forest Mensuration 8	Inventory Methods 9	Computer Sciences 43	Roundwood Utilization 26	Flora 27	Wildlife Biology 28
3./WiSe	Forest Law and History 10	Forest Treatment 11	Forest Growth and Yield 12	Scientific Working 13	Forest Site and Climate 14	Forestry in Eastern Europe 29	Timber Utilization 30	Hunting <i>optional</i>
4./SuSe	Profitability of Timber Production 15	Forest Renewal 16	Wildlife Management 17	Vegetation 18	Excursions 38,39,40,41	Forest Opening and Forest Road Construction 25	Energetic Use of Wood 31	English 46
5./WiSe	Forest Protection (basics) 19	Forest Business Adminis- tration 20	Forest and Nature Conservation Policy 21	Social Competen- ces 45	International Forestry 32	Timber Harvesting 33	Nature Conservation 34	Participative Forest Planning 35
6./SuSe	Human Resource Management 22	Forest Management Planning 23	Environ- mental Communi- cation 44	Policy of Private Forests 36	Forest Protection 37 (practical exercises)	Bachelor's thesis		

Compulsory modules
 Elective modules (at least 4 of 14)
 Elective modules "transferable skills" (at least 1 of 4)
 Elective modules "excursion" (at least 1 of 4)

Figure 1: BSc curriculum “Forestry” in Tharandt (WiSe = winter semester, SuSe = summer semester). Numeration of modules is for internal use only.

concrete and abstract problems. Thus, we have incorporated modules like Scientific working, Communicating environmental affairs, and Social competence into the Bachelor programme. In the Master programmes modules like Communication science will guarantee the qualification in transferable or soft skills.

The professional qualification of Bachelor is also to be guaranteed by the fact, that students are trained in such a way that they are enabled to solve complex problems and to be flexible when tackling the task (combining and using different disciplines). The concept behind the consecutive programme system is to create

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first of all an understanding for specific issues and specialist complexity (Bachelor), in order to attain on this basis a scientific specialisation (Master).

Advisory council for the program

The curricula contents have been discussed with an advisory council. This council consists of 12 representatives from practice (forestry and forest administration, landscape and environmental protection, nature conservation, forestry service providers in the broader sense and entrepreneurs, international suppliers, social groups, research and third party funding institutions). In the future, the advisory council is expected to arrange partnerships with enterprises and institutions (practical training/start for the professional life), to accompany evaluations and to improve the attractiveness/efficiency of Tharandt as place of study, by purposeful external and internal work.

Connection to Master

The consecutive curricula structure at Tharandt (see Figure 2) will fully be accomplished in the autumn of 2009 when the Master of Forest Science starts. However, it is the intention that students at TU-Dresden will leave university with a Master degree and not with a Bachelor degree. This is due to the tradition of the Diploma system where the entire curriculum of five years has been taught at one academic locality. Thus, the capacity and the identity of the universities are tightly linked to five years of higher education. No university in Germany will specialise to offering a Master degree without a prior Bachelor programme right now because this would mean loss of capacity. Future developments will show whether this can be maintained.

The Master curriculum is open to basic subjects and will be offered to students, who are already in a position to analyse problems in a complex manner and with scientific depth.

There is, however, no professional (or vocational) qualification at BSc level “able to study in the Master curriculum”. Hence, also at universities, concepts have to be developed with the purpose of a Bachelor programme aimed at the labour market. A university bachelor degree does not compare with a traditional polytechnics degree. The Bachelor is a new degree for Germany. However, its curriculum and contents have to be developed to fit labour oriented qualifications. This, too, is for instance a task concerning our advisory council. However, Bachelors need a subsequent further education in an enterprise or institution to be fully adapted to do a job as a professional.

The quality standard of education in Tharandt is, among others, assured by the professors involved in teaching activities. In this view (quantity and quality), we consider ourselves in a good position.

1.Semester 2.Semester 3.Semester 4.Semester 5.Semester 6.Semester	Bachelor (started in October 2006)			
Graduation:	Bachelor of Science (B.Sc.)			
1.Semester 2.Semester 3.Semester 4.Semester	Masters			
	Forestry (will start in October 2009)	Wood science (started in October 2004)	Tropical Forestry & Management (since 1995, starts in revised form October 2007)	Natural resources management (start planned for October 2008)
Graduation:	Master of Science in Forestry	Master of Wood Science and Technology	Master of Science in Tropical Forestry	Master of Environmental Science and Management
Intended duration	(6+) 4 Semester	(6+) 4 Semester	(6+) 4 Semester	(6+) 4 Semester

Figure 2: Overview of curricula offered at Tharandt from winter semester 2008 onwards.

Concluding remarks

Interdisciplinary teaching, specific transferable skill modules as part of the curricula, and the establishment of an advisory council to accompany the development of the curricula are the main instruments Tharandt has introduced to deal with the challenges of the Bologna agreement. The experiences with the new structure of the study programmes are diverse. While the overall resume of the students is encouraging so far – Tharandt’s Bachelor curriculum has just received the “TU-Dresden teaching award 2007” - some of the colleagues teaching basic disciplines are not satisfied with the reduced number of lecturing hours within the Bachelor semesters. These colleagues face difficulties to adapt to the consecutive and split-up structure of the curricula compared to the unity the Diploma system has offered. However, there is new understanding on the campus as well. Many colleagues take advantage of the need to communicate to each other the contents of the so far mono-disciplinary lectures to create interfaces for interdisciplinary teaching now. Hence “teaching” as such has become a more important issue than it has been before.

6 ICA PROJECTS ON QUALITY ASSURANCE AND ENHANCEMENT

JAN STEEN

Introduction

The Interuniversity Consortium for Agricultural and Related Sciences in Europe (ICA) has initiated two projects on Quality Assurance and Enhancement:

- Promoting Master programmes in agricultural and related sciences at European universities (AMEU)⁴: Work Package 3 (WP3) aims to develop a methodology for the comparative Quality Assurance of master programmes;
- Quality: Quality Assurance and Accreditation of International Master degree programmes in Life Sciences and the Rural Environment⁵.

In this paper I will describe the objectives, results, and future plans of the AMEU WP3 project. One result of this project are the specific indicators (the prompts/questions to be addressed in a self evaluation report), which will be described in detail. And I will end this paper with the objectives, results, state of affairs and future plans of the Quality project.

AMEU WP3

The objectives of Work Package 3 of the AMEU project are:

- to develop and test common quality benchmarks (criteria), both quantitative and qualitative, for comparative international quality assurance within higher education Master degree programmes in our disciplines;
- to develop and test a common methodological framework (self assessment based on a self assessment manual, peer review by site visit, and peer review Quality Assurance report including enhancement recommendations) for comparative international quality assurance within higher education Master degree programmes in our disciplines,
- to establish mechanisms for continuous quality improvement and co-operation between the institutions participating in the comparative quality assurance programme;
- to organise a Workshop to stimulate discussion between higher education institutions about what constitutes good quality within higher education Master degree programmes, by disseminating the outcomes of the project.

⁴ Erasmus Mundus Programme, Enhancing Attractiveness; project: "Enhancing the Attractiveness of Masters programmes at European Universities in Agriculture, the Applied Life Sciences and the Rural Environment (AMEU)." See also Cobb, 2007.

⁵ Socrates Programme on Higher Education Reform; project: "QUALITY: Quality Assurance and Accreditation of International Master degree programmes in Life Sciences and the Rural Environment."

The results of the AMEU WP3 project till now are:

- A framework (benchmarks/criteria) for an external evaluation of a master degree programme:
 - Seven categories of benchmarks (Internationalisation; Needs, aims, objectives and learning outcomes; Educational process; Student support; Educational resources and Partnerships; Student progression; Quality management and enhancement) and;
 - For each category one to six benchmarks and corresponding general and specific indicators. These specific indicators are also the questions/prompts that should be addressed in the self evaluation report.
- A procedure for the external evaluation of a master degree programme, that contains:
 - Guidelines (and questions/prompts) for writing a self evaluation report;
 - A site visit of a peer review committee of two days;
 - An evaluation report of the review committee with good practices out of and issues for further discussion about the master degree programme.

The framework (benchmarks and corresponding general and specific indicators and the procedure for an external evaluation of master degree programmes) is tested in a pilot study on two master degree programmes of the University of Ghent (Belgium). Based on these experiences the framework and procedure are revised. In the near future we will finish this project with a second pilot study to test the revised framework and procedure on two master degree programmes of the Mediterranean Agronomic Institute at Chania (Greece). The resulting framework and procedure for an external evaluation of master degree programmes will be used in the Quality project, the other ICA project on Quality Assurance and Enhancement.

Specific indicators

For the international side of a master degree programme the following specific indicators were developed on the following aspects:

Internationalisation:

- Is there a strategy (document) for Internationalisation? How is it embedded in the course structure and delivery in the faculty? How often is the strategy revised?
- What is the international diversity of the students on the programme? What are the targets in the future regarding EU and non-EU students?

Needs, aims, objectives and learning outcomes:

- Do you seek input on the curriculum from all international stakeholders, such as government, employers or funding bodies, NGO's? Are their needs known?
- Are the educational objectives relevant to students from abroad? What about EU students?
- Is an international perspective evident in the programme outcomes?

Educational process (teaching, learning, assessment, guidance):

- Is an international perspective evident in the curriculum?

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- How has the Learning and Teaching Strategy considered the cultural background of international students (plagiarism, independent learning, language skills, academic pre-requisites)?
- How are international students informed of assessment and grading procedures? Are the students well informed? Is there a student handbook to explain these procedures?
- How are the special needs of international students accommodated?

Student support (non-educational):

- Why should students from abroad come to this programme/town? What processes and procedures and support are in place?
- Are there different introduction arrangements for international students?
- Are additional services provided for international students?
- What are the particular requirements for international students?
- Can you clarify the situation for scholarships and funding available for students from abroad? And is the selection procedure publishable?

Educational resources and partnership:

- How do you rate the international experience of the staff? Are there faculty funds available for staff travel and international activity to support the course?
- Do the IT facilities support the needs of the international students (24 hours access, training opportunities)? Are students encouraged to bring or buy laptops?
- Are additional resources allocated to the needs of international students?
- What job opportunities and employment prospects are open to international students? Are they primarily in government organizations?

Student progression:

- Do you monitor student diversity and progress?
- Can any observed difference be accounted for by the experience of international students?
- Which part of international students enter employment or pursue further study? What do you consider be a successful proportion?

Quality management and enhancement:

- How central is the Quality Assurance (QA) process to the degree programme? How does the QA process operate in the international programme?
- How have international developments in higher education influenced the QA process (e.g. Bologna, Dublin Descriptors, master structure, differences in interpretation of QA expectations in different countries, etc.)?
- Is there an international student presence in university and programme committees? Is this input recognized in the regulations of the committees?
- Are there particular issues in relation to complaints or appeals by international students? Have there been many from international students? Any recurring themes or complaints?
- Is staff trained to teach courses to international students? What pedagogic support is available?
- Have any specific issues emerged in recent years? And how have they been dealt with?

Quality project

The Quality project aims to develop a Quality Assurance process for International European Master degree programmes relating to the applied life sciences and the rural environment, and the development of ICA as an Accreditation Agency for the award of the ICA European Quality Label in these disciplines. This project links up with the AMEU WP3 project and builds on the experiences and results of the AMEU WP3 project.

The main objectives of the Quality project are to establish:

- Quality assurance benchmarks (criteria) and indicators which can be used to assess the quality of provision (from entry level to excellence) of International European Master degree programmes delivered at one or more institutions.
- The process, and legal and financial implications for a subsidiary of ICA becoming an International Accreditation Agency awarding the ICA European Quality Label for international European Master degree programmes relating to ICA's constituency.

The starting point for the development of the quality assurance benchmarks and indicators was the framework for quality assurance which had previously been developed by the AMEU WP3 project. The extension of the framework is necessary to take account of three models of master degree programmes delivered across national boundaries as explained in the project application:

- Model 1: European master degree programme delivered by two or more higher education institutions located in different countries. This model is exemplified by the Erasmus Mundus International Master degree programmes. The MSc European Forestry (see van der Maaten, this volume) also belongs to this model.
- Model 2: A European institution delivers master degree programmes at its institutions located in different countries. This model is exemplified by CIHEAM – International Centre for Advanced Mediterranean Agronomic Studies (<http://www.ciheam.org/>).
- Model 3: A European master degree programme which is developed by an international board and delivered independently by two or more higher education institutions in different European countries. This model is exemplified by the International Network for the MBA in Agribusiness and Commerce.

The members of the project have concluded that three slightly different versions of the framework for quality assurance and accreditation of international master degree programmes in the field of Applied Life Sciences and Rural Development have to be developed to meet the QA and Accreditation requirements of these three groups. However the basic framework will be similar and many of the indicators will be the same.

Results of the quality project

The results of the quality project half 2007 are:

- A draft framework that comprises categories, benchmarks, general indicators and specific indicators. This has been developed taking account of frameworks developed by other subject groups such as EUR-ACE (Accreditation of European Engineering Programmes and Graduates). The framework has seven categories of benchmarks and indicators:
 - Needs, aims and learning outcomes of the degree programme
 - Educational process (teaching, learning and assessment)
 - Educational resources and partnerships
 - Student progression
 - Student support
 - Quality management and enhancement
 - Institutional environment.

- The specific Indicators derived from the benchmarks and general Indicators will be used in the assessment of a master degree programme. The specific indicators will address two issues:
 - Is the master degree programme relevant to the needs and expectations of international students
 - Is there evidence for added value provided by internationalisation in the teaching of the degree programme

The first draft framework is designed to address the model 1 of international master degree programmes. For model 1 master degree programmes the specific indicators under issue B above will address the added value brought about by the mobility of the students. Subsequently, frameworks will be developed for model 2 and model 3 master degree programmes.

- A procedure for the accreditation of a master degree programme.

- A proposal for an ICA subsidiary as an international accreditation agency for master degree programmes in Life Sciences – for agriculture, food, natural resources, rural development and the environment.

Discussions in the first phase of the project.

There has been much discussion about how and whether it is desirable to identify excellence within an accreditation system. The discussion has focused on how excellence would be identified and the desire not to set up a ranking system for degree programmes.

A related issue is the one of fitness for purpose. A degree programme which is fit for purpose is one that is observed to fulfil its specification and stated learning outcomes. Two degree programmes in the same discipline area, for example Master of Business Administration, may differ in their claimed fitness for purpose but both

could be accredited. Although their designed overall outcomes may be very different they could still be accredited as long as both degree programmes are recognised as a master degree programme on the basis of mapping their learning outcomes to the Dublin descriptors. Arising out of the differences in outcomes one programme may be perceived to demonstrate greater excellence than the other. The central question in the discussion is whether this excellence should be recognised in the accreditation process, and if so, how should this be recognised? The current proposal is that the peer review committee would identify in their Report validating the self assessment report areas of good practice/excellence from within the benchmark categories, but would not make a judgement as to whether or not the overall degree programme was excellent.

The future plans for Quality project are to

- Test the framework and procedure for accreditation on two Erasmus Mundus master degree programmes;
- Discuss the proposal for an ICA subsidiary with the board of the ICA;
- Organize a workshop to disseminate the outcomes of the AMEU WP3 and the Quality project.

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7 SUMMER SCHOOLS AT TECHNISCHE UNIVERSITÄT MÜNCHEN: OUR EXPERIENCES AND SOME RECOMMENDATIONS

MARTIN ZIESAK⁶, PETER BIBER, MICHAEL WEBER

The study programme structure at the TUM School of Forest Science and Resource Management

In order to understand the setup of summer schools at the Technische Universität München (TUM) School of Forest Science and Resource Management the structure of our study programmes is given (Figure 1). The Bachelor (BSc) education in “Forstwissenschaft und Ressourcenmanagement” (“Forest Science and Resource Management”) is followed by two master programmes: “Forst- und Holzwissenschaft” (“Forest and Wood Science”) and “Sustainable Resource Management”. In the latter one all teaching is done in English. A PhD programme completes the educational structure. Students can enrol at each level.

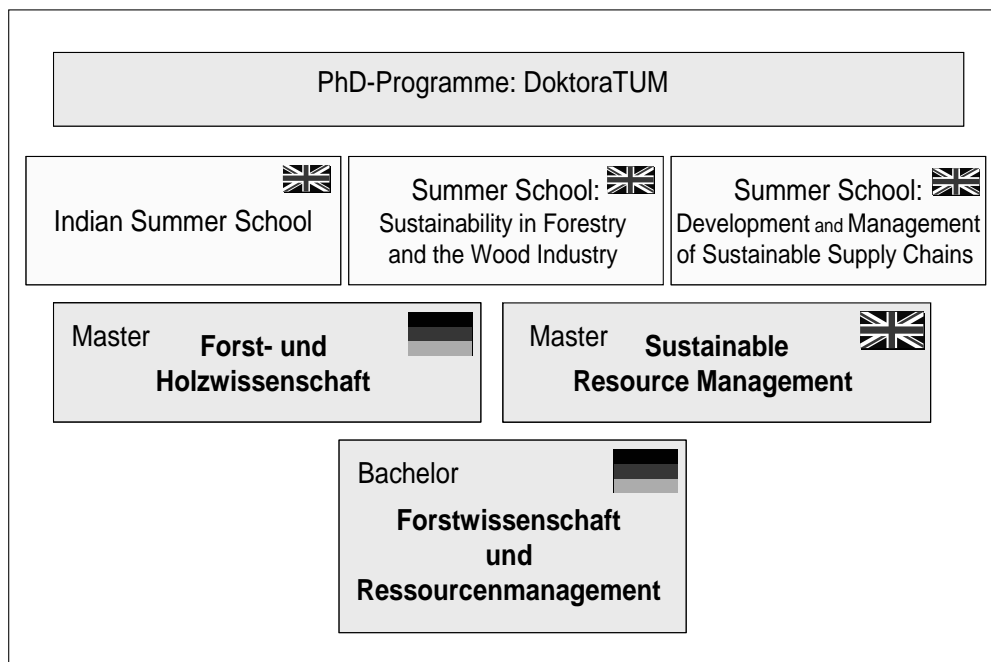


Figure 1: Study programme structure at TUM School of Forest Science and Resource Management, flags indicating teaching language.

⁶ Contact author

Next to these programs TUM offers three quite different summer schools. The minimum entrance degrees are in most cases not regulated, it actually varies from no limitation to a minimum of MSc or PhD level; this, however, becomes not evident from Figure 1. Teaching in all our summer schools is done in English.

Description of the summer schools at TUM

The “Indian Summer School”

Our summer school with the oldest roots is the “Indian Summer School”. It takes place in Connecticut, USA during the Indian summer in cooperation with the Yale School of Forestry and Environmental Studies. The contacts to our American colleagues were established by Prof. Dr. Plochmann in the 1980s. The summer school is now organised by Prof. Dr. M. Suda (Chair of Forest and Environmental Policy, TUM) and colleagues from Yale School of Forestry and Environmental Studies.

This summer school is organised for our TUM forestry students, who are interested in deepening their knowledge on the US and its forestry. Main contents are forest management, silviculture and forest politics in the US. In addition to the two-week summer school an intensive side programme is offered, this consists of some preparative seminars and two excursions with German and American students. The excursion takes place alternately in Europe and the US. This summer school provides up to 20 places and takes place in a three year cycle. Some financial support comes from the German Academic Exchange Service (Deutscher Akademischer Austauschdienst, DAAD).

Summer school “Sustainability in Forestry and the Wood Industry”

The second oldest summer school was now organised three times, its programme director is Prof. Dr. M. Weber (Chair of Silviculture, TUM) (see also TUM1, 2007). It is intended to offer the opportunity to improve existing knowledge about the ecological, technological and socio-economic background and concepts of sustainability management. Furthermore, it provides a view into the scientific foundations and practices of sustainable management in forestry and the wood industry in Europe.

Besides these teaching contents a threefold purpose characterises this summer school. The most important one is probably a kind of missionary approach of teaching the concept of (German) sustainability to an international audience. In addition we want to maintain our network with international institutions and partners. And finally we want to attract possible PhD candidates. Due to this last purpose this summer school is not open to students, it is focused on researchers. We provide 20 highly subsidised places – funding coming from DAAD – which are heavily requested. E.g. in 2006 we had 64 applications from 29 different nations. The selection of participants is based on nationality, qualification, professional background and gender. In addition some extra places are open for guests, who are not depending on subsidies.



Figure 2: In forest teaching during the 2006 summer school “Sustainability in Forestry and the Wood Industry. The international student group is listening to some explanation of Prof. Dr. Warkotsch (Chair of Work Science and Applied Informatics, TUM). Photo by M. Weber.

This summer school takes place in Bavaria, it lasts 14 days and has a blended teaching concept of classroom lessons and in-forest teaching modules (see Figure 2).

Summer school “” Development and Management of Sustainable Supply Chains”
With this summer school, organised by Sophie Pahlmann, MSc (School of Forest Science and Resource Management, TUM), we offer additional educational contents to former students of our international Master programme in “Sustainable Resource Management”. Participants therefore can come from any country. At the same time we maintain the network with our alumni. The programme covers eight days, and it takes place in Bavaria, where local enterprises are used for the case studies. Again, DAAD is co-funding 25 places.

The graduates will gain an overview over the potential of environmental management in chains of custody and possibilities to implement Integrated product policy and achieve an environmentally and socially viable development of value chains; this will be regarded from the point of view of enterprises, of GO’s and of NGO’s. A thorough training will enable the participants to apply tools of process management as integral element of environmental management.

Recommendations

From our manifold experiences over a number of years we come to some general recommendations for the organisation of summer schools:

- Separate summer schools are necessary for different purposes, ranging widely from education for your own students over maintaining contacts and offering education for your alumni and establishing new links to potential new clients. But it is advisable not to mingle too many different ambitions into one summer school.
- Summer schools are a recommendable, flexible component in the academic educational programme of an university, which can easily supplement the educative standard programme.
- Permanent adjustment of contents and structure of your summer schools is necessary. Use the flexibility in your favour.

Literature

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8 INTERNATIONAL SUMMER SCHOOLS AT THE FREIBURG FACULTY OF FOREST AND ENVIRONMENTAL SCIENCES AS A STEPPING STONE TO PHD

ALEXANDRE BERNARDI KOEHLER⁷ AND REINER MÜHLSIEGL

Introduction

Participating in post-graduate courses abroad is a great opportunity for the international student's community. An exchange experience promotes not only technical and scientific qualifications, but also allows the students to experience another culture and different ways of living and thinking. This is a two-way process with benefits for the students as well as the host universities, faculties and institutes.

The European Commission estimates that there are about 500.000 international students studying at European Universities (European Commission, 2003), including BSc, MSc, PhD, and Post-Doc programmes, which normally last from one to four years. Germany is among the most attractive countries for foreign students searching for a high-level education and international experiences. The German Academic Exchange Service (DAAD – Deutscher Akademischer Austausch Dienst) funds approximately 10.000 semester and annual scholarships for foreign students in Germany every year (DAAD, 2008).

In order to attract more students from abroad some countries promote and fund short-term courses, which promotes International networking and stimulates the participants to apply for post-graduate courses afterwards.

This work presents a short overview about the opportunity to participate in the International Summer School of the Faculty of Forest and Environmental Sciences, University of Freiburg, in 2005 and why this experience was decisive for the first author to stay one year in Freiburg, as an international PhD student in 2007.

The structure of the International Summer School

In the summer of 2005, from July 18th to 29th, an International Summer School “Forestry, Markets and Society” (FoMaSo 2005) was held at the Faculty of Forest and Environmental Sciences, University of Freiburg, Germany. The course was organized by the Institute of Forest Utilization and Work Science, which promoted a variety of activities concerning forestry education, including both theoretical and practical activities.

⁷ Contact author

A total of 20 students from 12 countries participated in FoMaSo 2005, 45% from South America, 30% from Asia, 20% from Eastern Europe and 5% from Central Europe (Table 1, Figure 1).

Table 1: Country of origin of FoMaSo 2005 participants.

Country	Number	Country	Number	Country	Number	Country	Number
Brazil	5	China	2	Bulgaria	1	Nepal	1
Chile	3	Argentina	1	Spain	1	Indonesia	1
Romania	2	Lithuania	1	Thailand	1	India	1
Total							20

The financial support for the FoMaSo 2005 was given by DAAD including travel tickets, accommodation, general expenses and an individual scholarship for all students.



Figure 1: The participants of the International Summer School FoMaSo 2005. Photo: Reiner Mühlisegl.

All activities and seminars were held in English and they involved different fields of forest sciences, forest policies and forest industries, under coordination of professors and researchers from the University of Freiburg (Table 2).

The diversity of activities increased the technical level of the programme. The presentations, seminars, technical excursions and field trips provided different approaches and dynamics that embraced all expectations of the participants, considering individual interests and academic background. Not only the University staff were important in the process but also all the persons involved in the

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excursions and field trips. These persons, mainly forest owners, forest engineers, forest technicians and people from the Black Forest Region enhanced the information exchange talking about regional culture and their experiences in forestry.

Table 2: Programme of activities held during FoMaSo 2005.

Date	Seminar Topic	Type*	Coordination
18.07.	Participants background	1	Dr. R. Mühl siegl Prof. Dr. E. Hildebrand E. Muschelknautz
	Dean's note	1	
	MSc and PhD programmes at Freiburg Faculty of forest and environmental sciences	1	
19.07.	Forest road construction	3	Prof. Dr. G. Becker Dr. V. Celestino
	Saw mill industry	3	
20.07.	Forest policy for private forestry	2	Dr. U. Schraml
	Farm forestry on small lots	3	
21.07.	High value timber management	2	Prof. Dr. H. Spiecker
	Excursion to Schonberg and Rhine Valley	3	
22.07.	Wood as energy source	2/3	Dr. C. Grossmann
24.07.	Field Trip to Mt. Feldberg	4	Dr. R. Mühl siegl S. Steinert
25.07.	Individual contacts	-	Dr. R. Mühl siegl
26.07.	Forest district Wolfach "Plenterwald"	3	Prof. Dr. D. Pelz Dr. R. Scoz
	Black Forest Open Air Museum Vogtsbauernhof	4	
27.07.	Close to nature forestry	2/3	Prof. Dr. J. Bausch
28.07.	Forest management and harvesting operations	2	Dr. M. B. Winterhalter Dr. R. Mühl siegl
	Mechanized harvesting systems	3	
	St. Ottilien Church (pre-closing ceremony)	4	
29.07.	How to transfer know-how, experiences and lessons	2	Dr. R. Mühl siegl S. Steinert Prof. Dr. G. Becker
	Closing ceremony	1	

*: Type: 1: presentation; 2: seminar; 3: technical excursion; 4: field trip.

During the second week, one day was reserved for the participants to meet professors in their field of interest. During those meetings quite often the opportunity to come back to Germany to write a MSc or a PhD thesis was discussed, as well other possibilities of integration and bilateral cooperation.

The International Summer School FoMaSo 2005 and the PhD process

Among the different kind of opportunities provided by FoMaSo 2005, the chance to meet some professors presented a base line for the future. Knowing their research fields and talking about supervision possibilities opened a pathway to MSc and PhD possibilities for all participants.

Not all the students were qualified to start a MSc or a PhD directly after Summer School. One of the participants had not finished his graduation at that time, and about ten people, including this author, were already enrolled in a MSc or a PhD

programme in their home country. One participant, from Romania, already possessed a Forestry Dr title. So, in the majority of cases, all the participants just started a process that someday could culminate in a post-graduate experience in Germany.

Despite of that, for all the participants interested in a MSc or a PhD the doors were opened in Freiburg. The first step, then, was to develop a proposal of activities, define and invite the supervisor (one from Freiburg and one in the home country) and apply for a scholarship. The first author started this process just after coming back to Brazil after FoMaSo 2005.

After finishing all the credits in his home country, his next step was to apply for a scholarship to stay one year in Freiburg. This application was addressed to the DAAD/CNPq⁸ programme in March 2006 and the acceptance announcement arrived in July of the same year. After that the time was devoted to data collection in Brazil, with supervision from the Brazilian supervisor, from the Federal University of Paraná, in the city of Curitiba.

In February 2007 the first author started his activities in Germany, first a two months German language course at the Goethe Institute paid for by DAAD, followed by ten months of research activities at the Institute for Forest Growth of the Faculty of Forest and Environmental Sciences, University of Freiburg.

During the time in Freiburg the work involved literature review, participating in seminars at the Faculty, laboratory work at the Institute for Forest Growth and regular meetings with the German supervisor and his assistants. At the end of 2007 a seminar was organized during which all the results obtained during the year were presented to all PhD students at the Institute for Forest Growth.

The expectation after the conclusion of the thesis is to develop bilateral projects and if possible, to strengthen the cooperation between Brazil and Germany in terms of scientific fellowships and students' exchange, considering all the positive aspects derived first from FoMaSo 2005 and second from the PhD international experience.

Conclusions

To conclude, quite a number of benefits arise when giving an opportunity such as FoMaSo 2005. It represents a great investment strategy to attract and stimulate foreign students to apply for a MSc or a PhD programme in Europe. It represents, as well, a significant expansion of the international activities of European universities, industries and research institutes.

⁸ This is a special fellowship programme for Brazilian students wanting to study in Germany, funded by both the DAAD – CNPq – The National Council for Scientific and Technological Development and CAPES – National.

The benefits for all students participating in FoMaSo 2005 regarded not only knowledge and technical improvement but also involved networking with various professionals from different origins and cultures. For the university it is a chance to present its structure and its learning programmes.

As a result of this process until now five students from the FoMaSo 2005 finished already or are still doing their studies at the University of Freiburg, three are enrolled as PhD students, two as MSc students. It is expected that these persons will be prepared to conduct future joint programmes with German universities and can cooperate with German students, researches and professors to expand their activities abroad.

Acknowledgments

The authors would like to express their acknowledgments to DAAD, to the Albert Ludwig University of Freiburg and to all the people involved in the promotion and conduction of the International Summer School – FoMaSo 2005.

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9 SUMMER SCHOOLS FOR STUDENTS FROM NEPAL – A NUCLEUS FOR THE DEVELOPMENT OF INTERNATIONAL MASTER PROGRAMMES

THORSTEN GAERTIG AND HUBERT MERKEL⁹

The Faculty of Resource Management of the HAWK Fachhochschule Hildesheim/Holzminde/Göttingen presently offers three Bachelor and two Master programmes. Originally only forestry was taught. In the past, students from abroad were not of importance, and only a small number of German students left the university to study in other countries. Although a high awareness of this has always existed in the teaching staff, an adequate state of internationalization is still missing. Serious efforts in the last twenty years produced limited results. Even if it is indispensable today and time is pressing, the Faculty realizes the difficulties involved in forming an integrated whole. A summer school programme could be a beginning.

The Faculty of Resource Management of the HAWK: Its history and present structure

The Faculty of Resource Management of the HAWK Fachhochschule Hildesheim/Holzminde/Göttingen was founded in 1972 as a Department of Forestry offering only one diploma study programme at the newly created University of Applied Sciences. In that time the curriculum was orientated towards the needs of the forest services of the northern states of Western Germany. In the 1980s the demand for young foresters was so high that the capacity of the department was temporarily increased by 50 %. Up to 150 students graduated each year to be employed immediately. At that time internationalization was not aimed at and regarded as a kind of luxury. In the 1990s, however, the labour market for foresters collapsed. In addition, the ideas associated with the Bologna-process, in particular the two stage model with Bachelor and Master degrees, had to be implemented into our study programmes. This was the signal to restructure the department fundamentally. After ten years of efforts and incorporating the Bologna-ideas with its consequences, the result is as may be seen in Figure 1.

The Faculty of Resource Management offers three study programmes at the undergraduate level (“Forestry”, “Arboriculture”, “Business Administration and Engineering”) as well as two courses at the graduate level (“Renewable Resources and Regenerative Energies” and “Regional Management and Business Promotion”). The forestry curriculum was revised completely. A Master programme “Forestry” is not offered because the Faculty of Forest Sciences and Forest Ecology of the

⁹ Contact author

University of Göttingen offers one on the same campus, within a distance of less than 100 m.

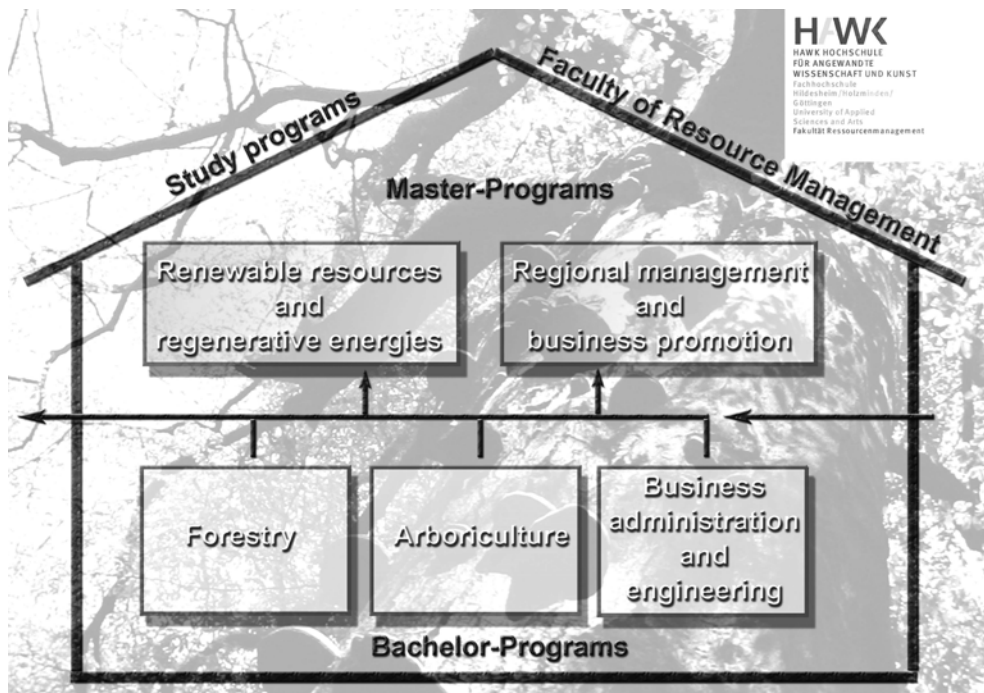


Figure 1: “The house of the Faculty of Resource Management “

At the moment teaching staff counts 24 persons (full time) to serve about 700 students. Each year about 250 students enrol, and the Faculty is working at full capacity.

This short history shows that in the past students from abroad were not of importance.

Efforts on internationalization: past and present

Since the founding of the faculty students were always encouraged consequently and actively to spend at least a practical period abroad. More than one third of the teaching staff has spent some period of their professional life abroad; hence, being convinced of a positive impact. There is a number of stable bilateral agreements (e.g. with universities in Greece, the Netherlands, Spain, Finland, Cyprus, Australia, Argentina). Students go abroad, using the SOKRATES/ERASMUS-ECTS-Information-package, which was published for the first time ten years ago. The International Office is well prepared and offers sufficient capacity, so that all requests from students and teaching staff can be coped with easily.

Nevertheless there was only a poor demand for study exchange in the past. As it is shown, even before drafting the new Bologna curricula, high awareness for the need of (more) internationalization existed at the Faculty, but the turn-around from an eclectic to a systematic approach is still outstanding. Although the whole academic

world is talking about internationalization, the Faculty seems not to be alone with its difficulties.

Reasons for the non-success

Although internationalization always was an issue at the Faculty, an adequate status has not yet been reached. Many reasons can be cited for this “non development”, of which only three shall be pointed out here:

- The main subject of the curriculum is forestry and landscape in Germany. Of course this must be seen in the European context – especially in the case of renewable resources and regenerative energies. Therefore, most of the study programmes are neither so unique nor so general that they are attractive for a foreign student by themselves. There must be other additional motives to come and study at the Faculty of Resource Management.
- German is not really an attractive language for foreigners. The opportunity to make use of it outside Germany is restricted. To learn German just for a two year Master programme is unusual, unless it is combined with other expectations. So the teaching modules must be offered in foreign languages to attract students from abroad. It is not so easy to convince teaching colleagues, especially the older ones, to hold their lectures in English, and the main reason certainly is not the lack of intellectual capabilities. Although it would be a good experience for German students also, a German professor talking English in front of German students seems somehow strange. Internationalization without foreign students – this would be the case at least at the beginning – leads to very artificial situations.
- Active demand for a truly international training is still restrained by the majority of German students in spite of the evident and striking arguments that undoubtedly we are facing a globalized economic world and that the European Union is merging more and more into one.

The challenge

On the one hand it is obvious that the notion to internationalize is not incorporated sufficiently in the study programmes of the Faculty – but actually it should be. On the other hand various serious attempts led to limited success.

Although it is now a matter of urgency, it should not be forgotten that internationalization is something which has to grow. Like growing trees, growing of internationalization has to start with an initial impulse and must grow in a slow and controlled fashion.

It seems to be an illusion that within a short period of time a greater part of German students will integrate a stay abroad as a matter of course and a great number of foreign students will join our study programmes as a whole, even if the language problem could be solved satisfactorily.

The near future

To attract internationalization, situations are needed which are fascinating and meaningful for the instructors as well as for home and foreign students from the

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very beginning. Summer schools based on bi- or multilateral agreements seem to be a means to an end, especially since they can be carried out in addition to the regular study programmes.

The costs are limited, success can be evaluated immediately, the decision whether to cancel, to continue or even to strengthen the efforts is easy to make.

In 2008 a summer school programme will be started, which could be a nucleus for internationalization at the faculty. Students from the Institute of Forestry (IOF) of the partner university in Pokhara, Nepal, will be in Germany for a three month period to get an impression of German forestry. This part of our exchange programme (German students will travel to Nepal in autumn) has three main issues:

- A three week summer school;
- A period of practical training in German state forest districts or private enterprises;
- Project work, where students will deal independently with a topic of interest, all the while being supported by our staff.

For the summer school, the majority of the teaching staff has agreed to prepare one or two days, during which the main topics of their discipline will be presented in English. Half of the time is reserved for field trips. This way the students from abroad will get an overview of the state of affairs. The active attendance of German students will be stimulated by offering it as an optional subject giving the opportunity to earn additional credits.

Hardly half a year after the first idea of this summer school programme sprang up, requests from Cyprus students as well as from South American students arrived. Obviously this summer school programme has the potential to act like a magnet. If students become aware of the programme, the interest in it will begin to grow. This “nucleus” or “seed” of internationalization will be fruitful on our way towards a more international reputation. This is our expectation and hope.

The future

Of course, no one can predict the far future. It can only be stated with John Maynard Keynes: “On the long run we are all dead.” But before that happens we wish to see a Faculty of Resource Management in Göttingen in which we find a considerable number of foreign students studying those parts of our curricula which are of use for their professional live and at the same time enriching our learning conditions by their experiences. We hope to see our entire student body being aware that internationalization is a must to prove oneself in the world of work.

10 EXPERIENCES FROM TWO ERASMUS MUNDUS MSC PROGRAMMES IN FORESTRY

FINN HELLES¹⁰, CARSTEN SMITH OLSEN AND NIELS STRANGE

Two international *Erasmus Mundus Master Programmes* in forestry have been established recently. They are offered by two consortia of five European universities, each coordinated by the Faculty of Life Sciences of the University of Copenhagen. “SUTROFOR” (Sustainable Tropical Forestry) started in 2006 and “SUFONAMA” (Sustainable Forest and Nature Management) in 2007. For a full description, including the application procedure, visit www.sutrofor.net and www.sufonama.net.

What is an Erasmus Mundus programme?

Erasmus Mundus is an EU programme, the overall aim of which is to strengthen European university education and making them internationally attractive and competitive. An *Erasmus Mundus Master Programme* is a graduate programme offered by a consortium of at least three European universities from three different EU countries. An approved consortium has at its disposal, e.g. a number of mobility scholarships that can be awarded to highly qualified students from countries outside EU/EEA-EFTA.

Sustainable management

The objective of both “SUTROFOR” and “SUFONAMA” is to offer an integrated and international two-year Master Programme that qualifies graduates to deal with the huge challenges in contemporary forestry in the tropics and in European and other temperate regions, respectively.

A major input in the struggle towards achieving sustainable tropical forestry is the education of forest managers. Such education has become increasingly demanding, because it must comprise the traditional aspects of biology/ecology (silviculture), technology and economics with livelihood concerns (sociology). Furthermore, all aspects have in recent years become increasingly complex due to improved knowledge and growing demands for products and services. The potential for trees and forests to contribute to the sustainable development of tropical and subtropical countries is increasingly recognised and included in poverty alleviation strategies.

In Europe’s pursuit of an evermore sustainable management of her natural resources, it has become increasingly evident that the management of forests and nature areas must be seen in an integrated landscape context. The economic and

¹⁰ Contact author

social development induced that forests must to a large extent be considered not only as production enterprises but also as a nature type, on par with other types of nature in the landscape. However, there is a risk that forests are not appropriately managed, and this may within a short time period ruin their capability of providing the products and services demanded by society. A similar risk may exist for other nature types in the landscape.

Structure of the programmes


“SUTROFOR” and “SUFONAMA” have the same structure: A first study year at one of three universities, a joint two-week summer course, and a second study year at one of five universities, however not at that of the first study year. The structure is shown in Figure 1.

The “SUTROFOR” Consortium consists of the University of Copenhagen (Denmark), the Bangor University (Wales, UK), the Technical University of Dresden (Germany), The AgriTechParis University (Montpellier, France), and University of Padova (Italy). The aim of the first study year is to provide a thorough and broad introduction to sustainable tropical forestry. There is thus only one common first year programme specification – the learning outcomes are similar for the three first-year universities and will allow students to choose freely among the five specialisation options in the second year as shown in Figure 1. The joint summer course is given in a tropical country, and the master’s thesis is based on research and fieldwork in the tropics. The teaching language is English except for the specialisation at Montpellier where it is French.

The “SUFONAMA” Consortium consists of the University of Copenhagen, the University of Wales, the University of Göttingen (Germany), the Swedish University of Agricultural Sciences (Alnarp, Sweden), and University of Padova. The aim of the first study year is to provide a thorough and broad introduction to sustainable forest and nature management, and – comparable to “SUTROFOR” – to provide a free option to choose among the specialisations as shown in Figure 1. The joint summer course is given in one of the five Consortium countries and the master’s thesis is based on research and fieldwork inside or outside the partner countries. The teaching language is English.

For non-EU country students the application deadline for both courses is 25 January and for EU country students mid-August, studies starting about September-October. Each course has 75 study places per year, 30 places being reserved for non-EU students.

Among the most important admission requirements for both courses are a good bachelor degree in forestry, biology or related fields, in economics or political science, and proficiency in English. On completion of the programme, students obtain a double degree – one of each of the two universities in which the student was enrolled – plus a “SUTROFOR”/“SUFONAMA” Diploma Supplement.

FIRST YEAR (60 ECTS)		SECOND YEAR (60 ECTS)	SPECIALISATION	JOINT DEGREES
Bangor Max. 25 students	Joint Summer Module	Bangor Max. 15 students	Agroforestry systems	MSc in Environmental Forestry (Tropical), MSc in Agroforestry
Copenhagen Max. 25 students		Copenhagen Max. 15 students	Socio-economics of tropical forestry	MSc in Agricultural Development
Dresden Max. 25 students		Dresden Max. 15 students	Tropical forest management	MSc in Tropical Forestry
		Montpellier Max. 15 students	Environmental management and policies for tropical forests	MSc in Agricultural Sciences, specialisation Tropical and Rural Forestry
		Padova Max. 15 students	Ethics in forestry and responsible trade in tropical forest products and services	MSc in Forestry and Environmental Sciences


FIRST YEAR (60 ECTS)		SECOND YEAR (60 ECTS)	SPECIALISATION	JOINT DEGREES
Bangor Max. 25 students	Joint Summer Module	Bangor Max. 15 students	Conservation and land management	MSc in Environmental Forestry/ MSc in Conservation and Land Management
Copenhagen Max. 25 students		Copenhagen Max. 15 students	Economic management of forests and nature	MSc in Forestry
Göttingen Max. 25 students		Göttingen Max. 15 students	Timber and non-timber forest product use and processing	MSc in Forestry
		Alnarp Max. 15 students	Scandinavian and East European forestry	MSc in Forestry
		Padova Max. 15 students	Mountain forestry and watershed management	MSc in Forestry and Environmental Sciences

Figure 1. Structure of “SUTROFOR” (above) and “SUFONAMA” (below). First-year and second-year institutions, including obtained degrees.

Advantages of Erasmus Mundus education

“SUTROFOR” and “SUFONAMA” offer access to the most high-ranking study and research environments in Europe within tropical and temporal forest and nature management, respectively. In both consortia the five universities concentrate on their field of specialisation. This implies excellent teaching and thesis supervision – the students may choose out of the best researchers and teachers in their field of interest in Europe. Students become well exposed to practice through excursions, joint summer courses and thesis work.

Students are offered professional service and support, e.g. introductory weeks, course in the language of the study country, and assistance with permits of stay and finding accommodation. Each student has an academic advisor for the first and the

second year, respectively, and all universities have well-established arrangements for coaching and counselling. The requirements of studying at two universities imply that the student becomes well acquainted with the culture of two countries.

My name is Susan Chomba, a second year "SUTROFOR" student from Kenya. I heard about "SUTROFOR" from colleagues while I worked as a research assistant at the World Agroforestry Centre (ICRAF). With a Bachelor's degree in Forestry from my home country, my aim was not simply to pursue a Masters degree, but I was looking for a Masters Programme that would offer different learning objectives from the traditional forestry knowledge, take me beyond the African context, integrate forestry skills new to me such as economics and broaden the Agroforestry knowledge I already possessed. "SUTROFOR" offered this outfit through intensive modules cutting across different disciplines. The greatest attraction of "SUTROFOR" was the possibility to select the universities and modules of my choice which would satisfy my career ambition. I had no doubt in my mind that I wanted to study my MSc under "SUTROFOR", so I made an application and I'm glad to have been selected.

Having successfully completed my first year at the University of Copenhagen in Denmark and now developing my MSc thesis at Bangor University in the UK, the "SUTROFOR" Programme has not fallen short of my expectations at any one moment. On the contrary, I have gained considerable experience while studying and working with some of the world renowned professionals in forestry. My global forestry outlook has also been greatly improved by having field work courses in Asia (Thailand) and Latin America (Costa Rica) as part of the "SUTROFOR" Programme. I therefore feel well equipped as a multi-skilled forestry professional capable of being competitive globally with professionals from other disciplines as well. I'm looking forward to being a key contributor to the forestry discipline at home and beyond.

Box 1: Comment by Susan Chomba, "SUTROFOR" student at Bangor University

In 2007 the two courses shared equally among them about 800 applications and more than 50 were accepted, their academic qualifications being very high. The number of accepted students is heavily restricted by the number of available EU scholarships. Moreover, internationally recognised scholars are invited as teachers for a three month period each.

European students pay tuition fees of €3,000 per year and non-European students € 8,000; the EU scholarship for the last category is €21,000 per year, covering also accommodation, living and travel costs etc. No scholarship is available for European students but there are good possibilities of raising funds from, e.g. the EU.

Experiences

In the autumn of 2007, the second batch of students was enrolled in the "SUTROFOR" Programme. The first batch of "SUFONAMA" students started in September 2007. The experience of the students as well as the involved institutions is very promising. The students are absolutely qualified for the courses, even though many of them enter the Programme with non-forestry educational backgrounds. Data on obtained marks on the first year of course work in

“SUTROFOR” reveals that they belong to the top third of students taking MSc courses at the three first-year universities. Finally, the students contribute significantly to study environment at the partner universities and many of them would be qualified for entering a PhD study. The two Programmes are continuously developed to enhance education within forestry at an international level.

My name is Kalyan Rai, “SUFONAMA” student from India. I am a forestry graduate student who always had the desire to learn the modern techniques pertaining to forest and nature management. Before entering the “SUFONAMA” Erasmus Mundus Master Programme I participated in four years of professional forestry courses in India. It was indeed an eye opener as it enabled me to have proficiency in various techniques of forest and nature management. But, as it stands today, the developing and underdeveloped countries still lack a holistic approach towards sustainable forest management. Under such circumstances, I was in pursuit of higher education in forestry that would equip me to widen the vista of sustainable forest management and narrow down explicit management regimes that have been devouring the forest resources not only in my country but throughout the world. My search for an apt institution has come to an end when I learnt of “SUFONAMA”. The programme structure of “SUFONAMA” as understood by me stands out to be very comprehensive and designed efficiently for equipping a forestry professional to face multifarious challenges in managing the fast dwindling natural resource. Besides that “SUFONAMA” offers excellent opportunities to witness forestry across Europe through its master’s programme in two different countries along with joint summer module. “SUFONAMA” provides an excellent study environment for the internationals through its expertise teaching, field experiences, excursions, group discussions and a lot more. It also provides ample opportunities to evolve creative research and development strategies in forestry. Moreover, it offers a platform to interact with the students of various nationalities through its various curricular and co-curricular activities. The collaboration of different European universities enables to view forestry from various points of view. As I am in the first batch of “SUFONAMA”, I could bring very little information besides that the “SUFONAMA” Programme is far beyond my expectations and I am enjoying it.

Box 2: Comment by Kalyan Rai, “SUFONAMA” student at University of Copenhagen:

11 DOUBLE-DEGREE PROGRAMME: MASTER OF SCIENCE IN “EUROPEAN FORESTRY”: AN INTERNATIONAL MSC-PROGRAMME FROM A STUDENT PERSPECTIVE

ERNST VAN DER MAATEN¹¹

Introduction

The Master of Science European Forestry (MSc-EF) is a Master-programme co-organized by a consortium of six universities: University of Joensuu (Finland), University of Freiburg (Germany), Swedish University of Agricultural Sciences SLU (Sweden), University of Lleida UdL (Spain), University of Natural Resources and Applied Life Sciences Vienna BOKU (Austria) and Wageningen University (the Netherlands). These six universities together designed a two-year programme that is acknowledged under Erasmus Mundus.

Erasmus Mundus is the European Union (EU) co-operation and mobility programme in the field of higher education, which promotes the EU as a center of excellence in learning around the world. In the Erasmus Mundus programme top-quality Master curricula are selected; MSc European Forestry is one of these. Erasmus Mundus (EM) provides scholarships for third country nationals to participate in European EM-MSc programmes, and scholarships for European nationals going to third countries. (Erasmus Mundus, 2007) European students that are enrolled in EM-masters can apply for regular exchange scholarships like Erasmus.

MSc-EF is a double-degree programme. This means that students that are enrolled in this programme are working for two different MSc degrees at the same time. In my case this is the MSc “European Forestry” degree and the degree of my home-university, Wageningen University: MSc “Forest- and Nature Conservation”.

MSc “European Forestry” – the aims and the programme

The MSc-EF programme responds to an increasing number of issues in forest and nature management at international as well as national level, which provide a whole range of new challenges and demands for policy and

¹¹ Student MSc “European Forestry” and MSc “Forest- and Nature Conservation” 2006-2008.

management at the national, European and wider international level (MSc European Forestry, 2007). MSc-EF-courses focus on all these different scales. For example: several policy courses focus on international amendments like the Kyoto Protocol, on European policies like the EU Forestry Strategy, and on national forest and environmental legislation. The same applies for ecological courses: emphasis is, e.g., on worldwide deforestation and climate change, European trends in forest growth, and on national forestry problems like forest fires in Spain and bark beetle attacks in Germany and France.

EF-students are educated for positions in national and international forest- and nature management agencies, governmental bodies, research institutions, forest industries and non-governmental organizations (MSc European Forestry, 2007).

The MSc-EF programme is an extra dimension to the already existing educational market in forestry and nature management in Europe (MSc European Forestry, 2007). The programme is co-organized by the six above listed closely collaborating European forestry universities. They offer in two years joint courses and courses from their own existing curricula to EF-students. The first year consists of compulsory courses and some elective courses, the second year of a Master's thesis and electives at a partner university. A detailed description of the EF-curriculum is presented in the next sub-chapters.

MSc “European Forestry” – the first year

The first year of MSc “European Forestry” consists of a(n):

- **Introductory course (IC): Trends in European Forestry, 8 ECTS**
The EF programme starts with a one-month IC at an old SLU-campus in Garpenberg (Sweden). A lot of different European forest related issues are discussed like policy analysis, business management, resource management, ecology and biodiversity. The aim is to provide the student with a comprehensive picture of cultural, biological, social and environmental aspects of European forests and forest management (MSc European Forestry, 2007).
The IC is taught by experts from the partner universities, who are ‘flying-in’ to Garpenberg for teaching an intensive block of two to three days.
- **Applied Period in Forest Institutions (AP): 12 ECTS**
The IC is followed by a three-month traineeship period in a European forest institution. The aim of the AP is, through working as a part of a team, to learn how a forestry organization is operating. Students can

choose their traineeship-location from a list of European forest institutions. Some visited research institutes like the Finnish Forest Research Institute METLA, others forest industries like UPM-Kymmene and national forest agencies like Skogsstyrelsen (Sweden). I spend my AP at the Institute for Forest Growth at the University of Freiburg (Germany). Together with my supervisors Prof. Dr. Spiecker and J. Langshausen, I studied new ways in management for growing high-quality oak-timber. Furthermore I was involved in a permanent plot research on beech which is treated in a silvicultural system that tries to prevent the development of red core. The last month of my AP I did a traineeship at the 23.000 ha German forest district Johanniskreuz in the federal state Rhineland-Palatinate (Rheinland-Pfalz).

- **Ethical Approaches to Forest Management: 5 ECTS**
After the AP all EF-students spend four months in Joensuu (Finland), before leaving for excursions throughout Europe. The course Ethical Approaches to Forest Management is one of the courses taught in Joensuu, just like Communication Skills, Problem Oriented Course: Global Challenges in a Local Context, Research Methodology in Forest Sciences and some elective courses. The course on forest ethics introduces basic ethical concepts and discusses several ethical conflicts in global forestry like deforestation in Indonesia.
- **Communication Skills: 3 ECTS**
Scientific writing, writing of a Curriculum Vitae and presentation skills (both poster as well as PowerPoint presentations) are taught in the course Communication Skills. With this course a solid ground for thesis and academic paper writing is provided.
- **Problem Oriented Course (POC): Global Challenges in Local Context: 4 ECTS**
The POC Global Challenges in a Local Context is discussing international environmental treaties like the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Kyoto Protocol. The objective of the course is to understand these various international environmental treaties and their impacts on local communities in Europe and elsewhere, and to develop skills for conflict resolution (MSc European Forestry, 2007).
- **Research Methodology in Forest Sciences: 4 ECTS**
The Research Methodology course aims at the understanding of the fundamentals of quantitative and qualitative research methods including statistical analysis (MSc European Forestry, 2007). For the second year thesis work, and for the future career, this is an important course. Students learn, e.g., to formulate research problems, to design a research, to acquire, interpret and present statistical results.

- **Elective Courses: 12 ECTS**
During the four-month period in Joensuu (Finland) students have to choose elective courses from the regular curriculum of the University of Joensuu. Courses that are available range from Tropical Forestry to Forestry in Changing Societies in Europe, and from Pulp and Paper Industry to European Forest Related Policies.
- **European Forestry Field Course (EFFC): 8 ECTS**
The first year MSc-EF is concluded with a 7-week long excursion period. First there is a 5-week European excursion, followed by a 2-week Mountain Forestry Course in Austria. During the EFFC, students have the magnificent possibility to see the forest and landscape diversity in Europe. National experts describe in situ, e.g., the different aspects of the local silviculture, landscape management, ecosystem dynamics and forestry problems. The EFFC starts in Barcelona (Spain), continuing through Spain, France, Germany and The Netherlands.
- **Multifunctional Forestry in Mountain Regions: 4 ECTS**
The 2-week course Multifunctional Forestry in Mountain Regions is an intensive course with field trips and group work. The focus is on forestry in different parts of the Alps. Amongst other things, geological history, erosion prevention, avalanche risks, site conditions and logging methods are discussed. The mountain forestry course is hosted by the University of Natural Resources and Applied Life Sciences of Vienna BOKU (Austria).

MSc “European Forestry” – the second year

The second year of the MSc “European Forestry programme consists of a Master’s Thesis at one of the partner universities (± 30 ECTS), as well as elective courses (± 30 ECTS). For the second year, students have to submit a preference list of the partner universities. In a selection procedure it is decided to which university the individual students will be sent.

After the first year “European Forestry” I went back to my home-university in Wageningen (the Netherlands), where I am currently working on my MSc thesis Physiological Responses of Individual Tree Species to Climate Change.

MSc “European Forestry” – learning experiences

The Master of Science “European Forestry” is a very challenging and attractive programme, which gave me the opportunity to:

Visit forests in seven European countries and see, understand and evaluate different approaches to forest management. There is no other MSc programme existing in forestry that provides such an experience. Build networks with experts and institutions from several European countries, both in the partner universities as well as in other (inter-)national forest institutions. Such networks are extremely useful for the future professional life. Get acquainted with cultures from all over the world; not only European ones, because a major part of the students is from non-European countries. Develop oneself personally.

MSc “European Forestry” - some reflections

Overall, the Master of Science “European Forestry” is a very attractive programme that adds an extra dimension to the already existing educational market in forestry education in Europe. I learned a lot during my first year MSc-EF, and will also learn a lot when writing my Master’s thesis and finishing my studies this year.

Although I value the MSc-EF programme really positive, there is one thing I regretted: the dominance of non-European students in the programme. A more balanced distribution of non-European and European students would make the MSc-EF programme even more valuable. The lack of participation by EU students is not only occurring in the MSc-EF programme, but in the majority of the Erasmus Mundus masters. It is attributed to various factors, including the comparatively high cost of tuition fees for EM Master’s Curricula in comparison with “national” Master’s curricula, the lack of a scholarship for EU students to facilitate intra-EU mobility and marketing, and branding issues with a perception amongst some students that the EM programme is “for international students” (Erasmus Mundus, 2007). From my personal point of view the finances play a crucial role in this case: non-European students receive an Erasmus Mundus scholarship of 21.000 Euro per academic year, whereas European students can apply once for the Erasmus scholarship of about 3000 Euro maximum, depending on the country (Nuffic, 2007). Although the net monthly income depends on, e.g., the height of tuition fees and additional student funding provided by individual EU-countries, the ‘money-gap’ remains large. An interim evaluation of Erasmus Mundus recognizes this when stating: “Scholarships should be awarded to EU students to participate in the Erasmus Mundus programme on a competitive basis. There is a need to ensure that EU students participate on a more equal footing with their counterparts from third countries” (Erasmus Mundus, 2007).

When this recommendation will be taken into account, the MSc “European Forestry” will even be more attractive and valuable as it is right now!

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Erasmus Mundus, 2007: Available from: http://ec.europa.eu/education/programmes/mundus/univ/index_en.html. Cited 24-9-2007.

MSc European Forestry, 2007: Available from: <http://gis.joensuu.fi/mscef/>. Cited 24-9-2007.

Nuffic, 2007: Available from: <http://www.nuffic.nl>. Cited 5-3-2008.

12 THE DOUBLE DIPLOMA FREIBURG-NANCY: A STUDENT'S PERSPECTIVE

MARION JAY¹²

As a French student from the Institute of Forestry, Agricultural and Environmental Engineering (École Nationale du Génie Rural, des Eaux et des Forêts, ENGREF¹³), Nancy, France, I participated in the binational study programme “Double diplôme franco-allemand d’ingénieur forestier – Deutsch-Französisches Doppeldiplom in Forstwissenschaften”¹⁴, which is jointly offered by ENGREF and the Faculty of Forest and Environmental Sciences¹⁵, University of Freiburg, Freiburg im Breisgau, Germany. The purpose of this paper is to explain briefly the organisation of this double diploma programme and focus on my own experiences in this context.

The double diploma in forestry is a binational study programme. It is based on a partnership between the two institutions in France and Germany, in combining two of their study programmes on the basis of equivalence in order to gain additional value. The students can begin their studies in their home country – the French in France, the Germans in Germany – and finish them at the partner university, obtaining the diplomas of both universities. Most of the students’ basic knowledge is recognized as been acquired at the partner university, such as basic courses in chemistry, biology or engineering sciences. Once in the foreign country, the students have to choose between courses offered by the university and obtain a precise amount of credit points. When the participants have successfully completed this second part of their studies and obtained the diploma of the partner country, the home university delivers its diploma too.

The programme benefits from the patronage of the German-French University of Saarbrücken¹⁶: On the one hand the partner universities are supported with means of organisation and on the other hand there is financial support to the students. To apply successfully for the double diploma programme extraordinary language skills in either German or French are required (depending on the native language). The courses are held in the language of each university (there are no courses taught in English). Another condition is the achievement of the preliminary exam at Freiburg University respectively the second year of ENGREF.

¹² A French student in Germany.

¹³ ENGREF homepage: <http://www.agroparistech.fr/-Ecole-interne-ENGREF-.html>

¹⁴ Link of the Freiburg University for the double diploma: <http://www.doublediplome.uni-freiburg.de/>

¹⁵ Freiburg University homepage: <http://www.ffu.uni-freiburg.de>

¹⁶ Deutsch-Französische Hochschule - Université Franco-Allemande, homepage: www.dfh-ufa.org

From the officials' perspective this programme is quite successful. It has been running for five years, and nine students of each country took part or are at the moment (2007) enrolled. From a student's perspective benefits are numerous as well. First of all, the double diploma provides professional benefits: language skills can easily be improved, especially in the field of forestry. Additionally, students can profit from other specialised orientations, like the tropical course in Nancy and the more technical orientation of the French school in general. In Freiburg students can choose between quite a number of one-week courses and a great variety of topics, ranging from specialised entomology courses to classes in methods of empirical social research. By training themselves in very different matters students can easily find out about their professional or even personal interests.

Moreover, students may have different opportunities concerning internships, they can look for institutions in France and in Germany on the one hand, on the other hand they can present an international background as often preferred by international institutions. As the double diploma does not yet exist for a long time, statistics detecting the placement of former participants may not be reliable, but both partner institutions and the students themselves assume that the chances on the labour market have increased. They can in particular apply for jobs in the German or French speaking countries in Europe and throughout the world.

But apart from improved career perspectives other aspects of a binational curriculum make it very attractive too. First of all, living in another country is a special experience in terms of meeting foreign people and being confronted with another culture. Living in a foreign country requires intercultural skills that will serve in a personal as well as in a professional sphere. The partner universities have two very different systems. The French one is in fact no university but a Grande École, an engineering school. The studies are more "framed" in comparison to the relative freedom of decision for students at the University of Freiburg ("Academic Freedom"). One can really experience the difference, as a French student in Germany as well as a German student in France, which helps develop adaptive competences.

Some negative aspects of this intercultural study course are, however, related to these fundamental differences. It can be difficult to adapt to a different system of learning and teaching. As a result, the study-system may appear less transparent, and so the range of possibilities offered may not be efficiently used by the students. The difference concerning the professional level of the students can also lead to difficulties. Some participants noted the higher level in France as tools and methods are concerned, e.g. statistics, mathematics, computer skills like Excel. They felt relatively handicapped and deplored a lack of preparation. Also technical and organizational difficulties can result from the cooperation of two institutions, especially in two different countries.

In my opinion however, this study programme is an incomparable opportunity regarding the benefits one can gain from it. The double diploma is a very special and intensive cultural experience as well as an enormous professional enrichment. Unfortunately, this programme is only running for German and French students.

68 Double degrees

However, it shows the dynamic of the life sciences universities in Europe. In this sense, it is an important factor that can improve the international profile of a university.

13 SOME THOUGHTS ON THE CHALLENGE OF TEACHING HETEROGENEOUS GROUPS

TILL WESTERMAYER

Abstract

Classroom heterogeneity (in other words: diversity) is identified as challenge of growing importance for learning and teaching in higher education in forestry. The increase in heterogeneity in student groups is illustrated using the indicators nationality, previous degree and gender for international master programmes in forestry at Freiburg University, and it is illustrated using mainly gender as indicator for the diploma programme, showing that the challenge of heterogeneity is not confined to international programmes. Individualization and globalization are identified as “generators of heterogeneity”; their effects are discussed in regard to changes in the organization of forestry and in regard to the Bologna process. The text comes to the conclusion that a new style of teaching and learning (moving away from knowledge transfer to project-orientated learning) is necessary for dealing productively with heterogeneity.

Introduction

Compared to other fields of study, higher education in forestry for a long time was quite well defined: one studied forestry to become forester and (mostly) a member of a forestry administration. One effect of this situation was relatively homogeneous groups of students: their biographical experiences, motivations and occupational goals were quite similar. This has changed: higher education in forestry now has to face the challenge of heterogeneity. I will illustrate this using the example of master programmes in forestry at Freiburg University. Then the relevance for “standard” (diploma or bachelor) programmes is discussed. I identify some “generators of heterogeneity” and conclude with four imperatives, challenging established ways of teaching and learning.

Heterogeneity in this text refers to the degree of diversity in a group of students. This includes their cultural background (for which nationality can be used an indicator), gender, and existing knowledge and experiences (in the case of master programmes the previous bachelor degree is one possible indicator). To illustrate the challenge, I will use these “visible” factors, but it would be wrong to reduce heterogeneity to them¹⁷.

¹⁷ Other factors – motivations, the social background – lack in accessibility, especially if one wants to compare the current with historical situations. For Freiburg University, even the alumni surveys (Kaiser, 1991, Kaiser *et al.*, 1993, Gerecke and Ihwe, 1997, Lewark *et al.*, 2006) do not provide such data easily. Some data for the German system of higher education as a whole can be found in Isserstedt *et al.* (2007).

Heterogeneity in international master programmes at Freiburg University

Extremes of heterogeneity can be found in international master programmes¹⁸. At the Faculty of Forest and Environmental Science at Freiburg University, in addition to the Erasmus Mundus programme “European Forestry”, three such programmes are or were offered to potential students (cf. FFU, 2007). This was the *MSc* “Sustainable Forestry and Land Use Management” (SuFo), which was established in 1998 and closed for new applications in 2004 (SuFo, n.d.). SuFo was an integrated programme, i.e. students enrolled in the master programme mainly attended courses that were also part of the diploma curriculum. The teaching language for most of these courses is German, so command of the German language was necessary. In 2005, SuFo was replaced by two new international master programmes, the *MSc* “Forest Ecology and Management” (FEM) and the *MSc* “Environmental Governance” (MEG) (FEM, 2007; MEG, 2007; Memmler *et al.*, this volume). These have specialized curricula and consist of exclusive modules for master students, taught in English. Whereas FEM aims at knowledge and skills necessary for the management of complex ecosystems (and thus resembles SuFo), MEG focuses on governance mechanisms and social perspectives for sustainable development, targeted at “future leaders” (MEG, 2007; Memmler *et al.*, this volume).

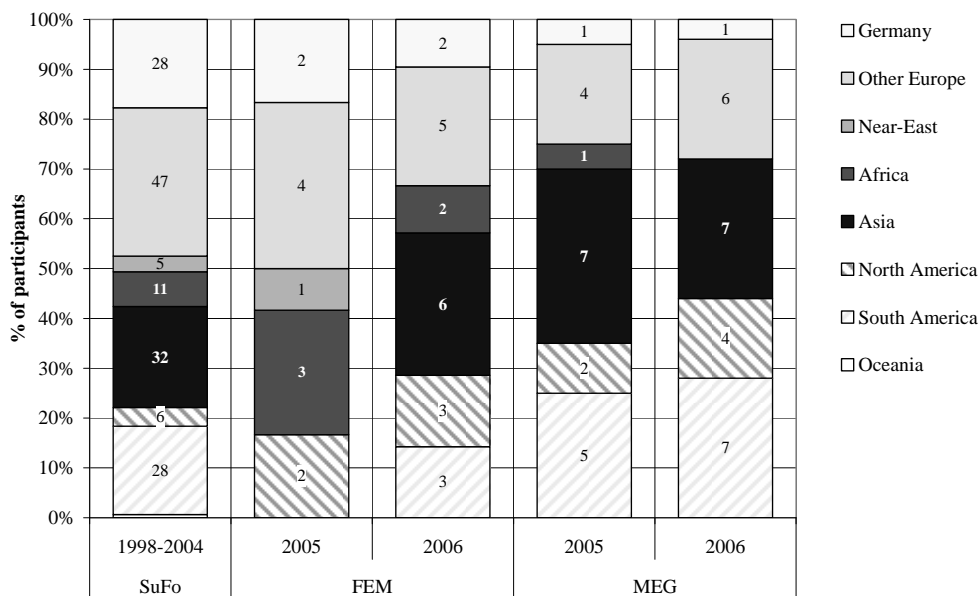


Figure 1: Students in the master programmes by nationality¹⁹.

¹⁸ With “international master programme” I refer to programmes of higher education in which students graduate with a master’s degree, and for which the target group and the scope of the programme are international.

¹⁹ Data for Figure 1 – 3 were kindly provided by the office of the Faculty of Forest and Environmental Sciences; I aggregated and analyzed the data. Numbers inserted into Figure 1 and 2 are absolute numbers.

Regarding heterogeneity, almost half of the 158 participants who were enrolled in the SuFo programme between 1998 and 2004 were from Europe (including Russia) (Figure 1, left column). A fifth of the students came from Asia and South America, respectively. Africa, North America or the Near East region were represented only by small numbers of students. The right side of Figure 1 shows the composition for FEM and MEG, respectively. In both cases the composition is markedly different in comparison to the old SuFo programme. The share of students from Europe is clearly smaller, whereas the share of participants from Asia and North America (supposedly because of the switch to English as teaching language) is higher. This is especially true for MEG; here participants from Germany and from other European countries are now a clear minority. Except for Australia, all continents are represented in the MEG student community. In part the relative equal representation of different world regions is the result of the admittance policy of the MEG programme²⁰. But with a look at the list of applicants, even without such a policy the result would be very similar: widely varying cultural backgrounds of the students, leading to a wide variety of assumptions about normality in the classroom²¹.

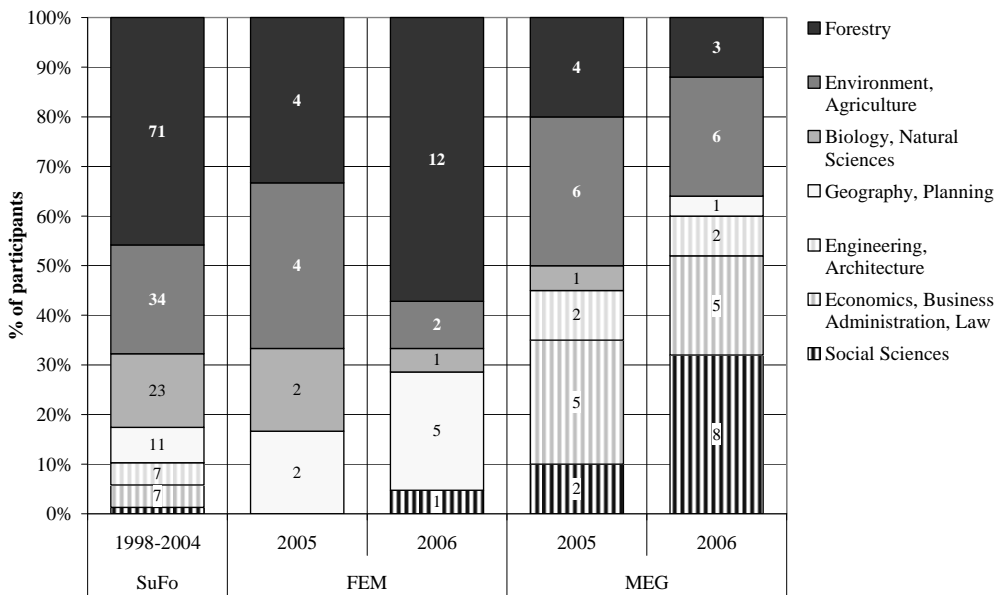


Figure 2: Students in the master programmes by previous bachelor/diploma degree.

²⁰ Personal communication, Sept. 2007.

²¹ One could argue that most of the participants belong to a “global class” or “global elite”, which shares similar values and defines itself rather about global networks than about the connection to the locale (cf. Castells, 1996). Some of the students in the international master programmes have indeed biographies spanning three or four countries or even continents; others emphasize the local background (and wish to become part of this “imagined community”). But even in the “global class”, the influence of specific biographical experiences results in very different values and assumptions.

Another indicator for heterogeneity is the previous degree. Bachelor's or diploma degrees in the master programme are influenced by formal requirements, but these leave way for some variety. For the SuFo programme, almost half of the students come from forestry (Figure 2), and a large share of the other half is made up by bachelor's degrees in fields like agriculture, environmental studies or biology – subjects that are related relatively close to forestry. Degrees in social science and economics together represent only five percent of the students. The mix of previous degrees in FEM looks similar to that of the old programme. In the MEG programme previous degrees vary widely. Here the share of students with a background in social sciences or economics is roughly the same as the share of students from forestry, agriculture or environmental studies. No specific qualification dominates clearly. Thus, one cannot assume easily what is already known by most of the students and what is new for whom.

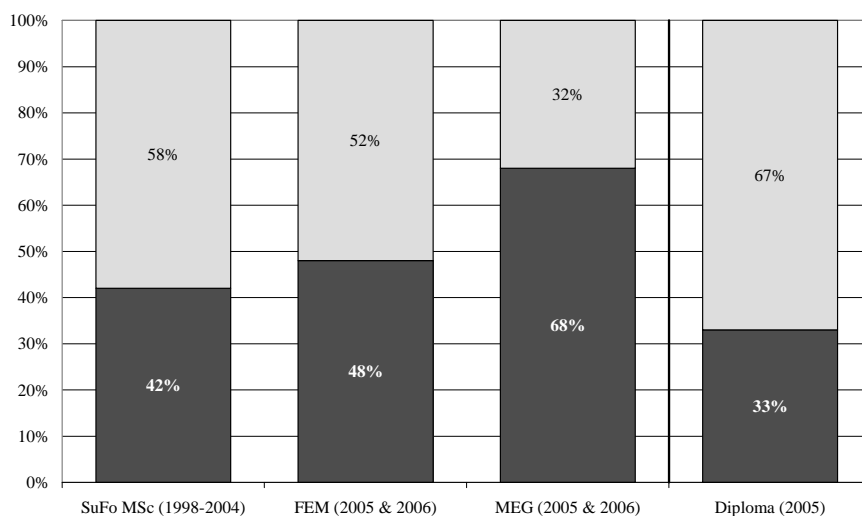


Figure 3: Gender ratio in study programmes (male = light, female = dark)²².

The last indicator I want to discuss is gender ratio: Are the numbers of male and female students more or less equal, indicating heterogeneity, or is the distribution skewed and dominated by one gender, indicating homogeneity? Figure 3 shows the gender ratios for the three master programmes, compared with the current situation in the diploma programme. In SuFo and FEM, the gender ratio is almost balanced. Rather untypical for higher education in forestry in Germany up to today, in the MEG programme two thirds of the students are women. In so far as gender is closely linked to different socializations and biographical experiences, the ratios for all three master programmes indicate that male and female students are interested in these programmes, and that one has to include male and female realities in teaching if one wants to reach all students.

²² Master programmes: total enrollment, diploma programme: students enrolled 2005. Source for the diploma programme data: Kühnel, 2006.

Heterogeneity as challenge for diploma and bachelor programmes

International master programmes illustrate the challenge of heterogeneity. One could argue that this challenge is confined to international programmes, and that it does not affect the “standard”, domestic diploma or bachelor programmes. Indicators for heterogeneity show that, even if the causes are partly different, diversity is the new reality for these programmes, too.

One example for growing heterogeneity is the increasing participation of women (Figure 4). In Germany, forestry was not only a male field of occupation, but until lately, it was also a dominantly male academic discipline. From the 1970s onwards, female participation in the forest science diploma programme in Freiburg climbed to around 10 percent. This was perceived as a significant change; female participation became visible. But female students were still seen as something exotic. After 1990, their percentage grew to the third of all students enrolled in the diploma programme, finally changing the atmosphere of male dominance in the classroom. Reasons for this long-term development include legal rulings enforcing constitutional gender equality, changes in the admission requirements as well as changing values in the society (cf. Kühnel, 2006 for requirement details).

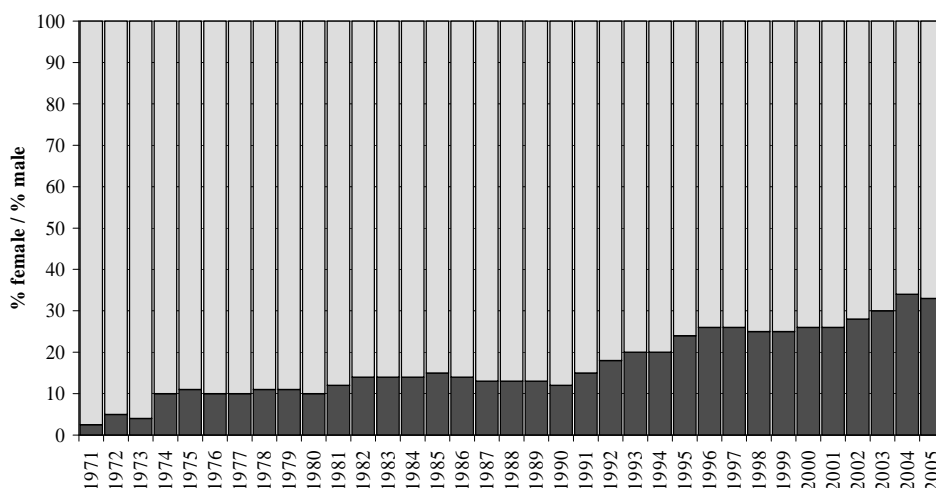


Figure 4: Gender ratio, diploma programme enrolment (male=light, female=dark)²³.

The increase in female participation is not the only indicator that heterogeneity becomes a challenge for “standard” programmes, too. One could also look at the increasing number of foreign students coming to Germany. For university enrolment in general, the share of foreign students doubled from 6 percent in 1970 to around 13 percent today (Isserstedt and Schnitzer, 2005). In absolute numbers,

²³ Source: Kühnel (2006), who used the official student statistics of Freiburg University. From 1998 onwards this includes the (comparatively small) number of students enrolled in the SuFo master programme.

this means a growth from 25.000 to 180.000 foreign university students. Even without specific data for forestry programmes, there is no reason to assume that these programmes are exempt from this trend. Another “generator of heterogeneity” can be found in changes in the interests and motivations of forestry students complimentary to the broadening of the occupational field. Also, the disentanglement between training requirements of forestry administration and university leads to differences in occupational experiences and skills, e.g. it is no longer necessary to absolve an internship in forestry before starting to study forestry.

Bringing these trends together, it becomes increasingly clear that a “one size fits all” system of teaching does not work in such a setting – neither in the international master programmes as an extreme case of heterogeneity nor in the “standard” programmes.

Generators of heterogeneity

How is heterogeneity generated? The interlinked processes of individualization and globalization can be found behind this trend. Individualization (cf. Beck, 1986; 2000) refers to the replacement of institutional influence with individual decisions in western societies. Whereas in former times strong institutions like the church, marriage or the working place structured the life-course of the individual, it is now up to them to plan their lives and to decide between multiple options. This means more freedom, but also growing insecurities. The opening up of options is interlinked with new demands and with a growing trend towards “self-economization” (cf. Voss and Pongratz, 1998; Sennett, 2006). For our discussion, two effects are of special importance: one is the increased emphasis on individual efforts to stay employable (including life-long learning); the other is the replacement of strict gender segregation with a more flexible regime where female professional careers become normality. Globalization (cf. Appadurai, 1990; Castells, 1996; Giddens, 2000) goes even further, especially of course because of its global scope. Some of the relevant effects include the growing integration of the global market for goods and services²⁴, the influence of transnational corporations and world-wide financial transactions. The form and attitude of nation states change, including the shift of sovereignty to regional entities like the European Union, and the copying of market mechanisms and ideologies by states that assume that they have to become efficient in a global competition. Finally, cultural globalization through global communication networks and brands changes values and life-styles²⁵.

²⁴ As Castells (1996) shows, global market integration does not really extend to the labor market, which has global scope only in low-skill work migration at one end and in the flow of the global elite (e.g. managers of transnational corporations or international non-governmental organizations) at the other end – the “future leaders” the MEG programme wants to reach.

²⁵ While cultural globalization often is discussed in terms of homogenization, “glocalisation” (Robertson, 1995) – the creation of hybrids between global networks and local cultures – describes the effects much better. Nevertheless, globalization also includes the emergence of a new “global class” with a “free-flowing” life-style (cf. Castells, 1996).

The actual case makes the effects even better visible. The transformation of German state forest administrations from bureaucracy to public service providers (Nüsslein, 2005) is closely linked to globalization: to new definitions of the state as well as to the importance of global markets. In effect, the number of state employed foresters is shrinking drastically since the 1970s. Simultaneously with vanishing employment opportunities, employment as forest administration officer became possible for women in principle with changing gender regimes and individualization. In reaction to the stronger entrepreneurial orientation of forest administrations as well as to the necessity for alumni to find (or invent) new forest-related jobs and niches, the occupational field of forestry broadened, distancing forestry studies and forest administrations. The occupational field now includes environmental NGOs, education for sustainability, forest-related industries and forestry contracting, consulting, and communications.

The higher education policy of the EU, especially the Bologna process (cf. EU, 2007), can serve as a second example. This “globalization policy” introduces an orientation on employability, competitiveness and performance benchmarks. The organization of higher education changes dramatically, e.g. with creating incentives for international master programmes. All this generates heterogeneity²⁶.

Lessons for teaching and learning

Even without room for a detailed discussion, the trends I discussed make clear that heterogeneity in the classroom is becoming new reality for higher education in forestry. Teaching and learning have to change accordingly. As conclusion, I will present four imperatives. Take them not as ultimate solution, but as food for thought.

- *Do not assume specific backgrounds, knowledge or motivations!* One cannot take for granted that everyone has experience in, e.g., boreal forestry or wants to become a forest administration official. Of course, no module is completely self-sufficient. But now teachers and lectures should take precautions to make sure that their assumptions about existing knowledge are met by reality.
- *Put student projects and multilayer material with “hooks” (and with something new) for everyone in the centre!* Moving away from the idea that teaching is about the delivery of well-defined knowledge, student projects and group work become central instruments. To work with heterogeneous groups, such projects should relay on multilayered material, e.g. texts that have “hooks” for different degrees of previous knowledge and experience. Selecting such texts and developing projects that involve everyone means more time needed for preparation. Beware: a teaching style that consists of group work only becomes boring really fast.

²⁶ One could even argue that the introduction of an international master programme as such generates heterogeneity in educational institutions as a whole.

- *Change from “teacher” to “motivator/trainer/expert/...”!* Project-orientation means that lecturers have to change their role: from being teacher to motivating and coaching. Still, students expect conclusive expertise, and rightly so. It also has to be considered that new roles and paradigms in the classroom are old news for some students, but an unexpected and unusual item for others, especially in an intercultural setting.
- *Make productive use of diversity, but don't enforce stereotypes!* I think it is necessary to see heterogeneity as a something positive, not as a problem. Productive use of diversity could mean to bring together already existing knowledge in situations where students teach each other. A potential problem lies in enforcing stereotypes: not every German is punctual, not all female students want to work with children.

To conclude: A new paradigm of teaching and learning in a diverse and intercultural setting needs not only a thoughtful preparation of course material and curricula, but also flexibility and an open mind – and students who are willing to accept this.

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14 GENERAL DISCUSSIONS: FROM TEACHING TO LEARNING

Participants discussed in three small groups given topics related to the papers presented during the full meetings. Results were presented to the general meeting and below.

Working group I Reporter Aki Villa

Group I mainly discussed two topics, namely

What is the role of students in the development of the higher forestry education institutes (HFEI)?

- Surveys as part of the evaluation of the teaching and learning processes are needed.
- A need exists to improve Quality Assurance work in HFEIs.
- Surveys should be voluntary, not compulsory.
- Use students' competencies in development work for Quality Assurance.
- Use students in curriculum development.
- Compose group of curriculum development out of an interesting mix of students, staff and Advisory Board (including representatives from the industry).
- Are students influencing the way we are teaching them?
- Is there an upper limit to student participation in the development work mentioned above?
- Transferable or generic skills, e.g. communication, leadership etc. are important learning outcomes for students.
- Students are learning in different ways. To make them all happy, offer a mixture of learning methods.
- Students should learn according to their individual learning style and teachers should adapt to these different styles or at least be aware of them.
- Are university teachers aware of learning methods used in comprehensive and secondary schools and the prerequisites for their students enrolling in universities?
- Teaching methods should support critical learning (not too much pointless PowerPoint learning). Use a mixture of different learning methods, e.g. blackboard, working groups/discussions (minimise free-riding of students and teachers, construct group working so that it is seen as an added value to students).
- More diverse and complex teaching methods may have high transaction benefits for student and teachers. Here a transaction means an interactive context-bound construction of knowledge between different student-student and student-teacher combinations.

- There should be incentives for teachers to improve their teaching (e.g. make a more balanced weighting of awarding between teaching and research merits).
- Teachers teaching badly should be corrected. Teachers need didactic supervision.

What is the potential role of the Silva Network in this development of the higher forestry education institutes (HFEI)?

- Collect good practice “manuals” from course level to programme level for the benefit of the members of the SILVA Network. Could perhaps the ICA-Quality Assurance group play a role in this development?
- Student representatives from the HFEIs within different forestry disciplines should be integrated regularly to activities of the SILVA Network.
- Changing teachers’ attitudes in our home universities in an ‘informal way’.

Working group II

Reporter Martin Ziesak

Before the group went into details on questions about “From learning to teaching” some more general aspects were elaborated. It is clearly a reflection of a general trend, that we now are discussing this movement ‘from teaching to learning’. Additionally it has to be noted, that the differences between European countries in this process are pretty large. This became rather evident by descriptions from the participants from the Moscow State Forestry University.

When the focus shifts from teaching to learning, of course influencing teaching methods, three aspects will change:

- Teaching needs to have a project approach.
- Teaching should use a problem solving approach.
- Teaching is enriched by using a more challenge based approach.

In order to reach this, a definite need for staff development was diagnosed. However, a lack in the system hampers this move ‘from teaching to learning’, as the merits for university staff members primarily go to good research but not to good teaching.

Regarding the process of evaluation of teaching it was agreed, that this has to be carried out not only by students, but additionally also by colleagues. A comparison to the article reviewing process was made, where experienced colleagues provide valuable and often detailed hints for improvements. This kind of “peer reviewing” should be introduced to the teaching evaluation process.

SILVA Network can play a quite useful and evident role in this process, as can be seen from its mission statement: SILVA Network wants to “facilitate educational co-operation” in the field of forestry. In addition as a further and well established tool the “Erasmus Teaching Staff Mobility Program” has to be mentioned here.

Working group III

Reporter Dianne Wästerlund

The group discussed which forces drive the change from content based education to competence based education. In some home countries of the participants, this change can be linked to the changing role of forestry in their country, while for other participants it is the Bologna process that requires and encourage such change of focus. The results of these changes can therefore vary considerably from a mere change in the formulation of the course plans to changes in content and pedagogical aspects. The group agreed that competence based education requires a stronger interaction by the teachers: interactive studies require interactive teaching. Yet within the universities quite a number of structural barriers can be found that limit such efforts. There is often a power balance between departments that may be a limiting factor; also the mode in which educational funds are distributed can hamper interaction between teachers.

The group also discussed if such a strong focus on competence of the students is desirable or if there are risks that relevant basic content might not be included in the curricula. While the participants agreed that there might be risk for overseeing important content issues, the group also thought that the risk was small. The strong focus on competence should remain.

Evaluation of both courses and curricula was discussed. The participants shared experiences with evaluation practices at their university which differed a lot. The participants agreed that evaluations (both course and curriculum level) that are public (i.e. accessible for outsiders) would be a strong drive for development. The problem would be - according to the participants - which university/universities would start publishing students' evaluations on their web sides.

The timing of the evaluation was discussed too. An evaluation two years after graduation would be desirable because the student at that point would be able to judge better than directly after graduation, how well the curriculum prepared him/her for the demands of society and industry.

The participants agreed that SILVA Network should include students in their discussions as their contribution during meetings can be of great importance to the discussions within the SILVA Network. The role of the SILVA Network according the participants is to remain a network of university teachers and act as a forum for discussion on teaching university students.

15 CONCLUDING REMARKS

PAAVO PELKONEN

The participants contributed twelve presentations followed by extensive discussions in the main meeting. In addition, three working groups gave valuable summary reports which supplemented the presentations and were an important channel to synthesize the key topics of the meeting.

Three different challenges were identified for developing higher forestry education in Europe.

- Increasing competition of the global educational market (especially North-America, China and India);
- Integration and development of the European higher education area (competition from other fields, European quality assurance);
- Changes in the national labour markets (job opportunities moving from public to private sector, increasing integration and cooperation between industrial sectors).

The European academic forestry programmes are increasingly available for non-European students. International programmes are organised in many universities and the popularity of the programmes has been surprisingly high. Of course, they need to offer additional value above the existing programmes and to provide contents which are internationally relevant and willingly go beyond the borders of traditional forestry education. A good example is the international MSc programme “Environmental Governance” that has been developed in the University of Freiburg. Additionally, three Erasmus Mundus programmes in forest sciences show the proactive approach of the forestry universities and faculties since the field has been successful in the European wide Erasmus Mundus competition, covering all the academic educational fields. In addition to the MSc courses the flexible summer school concepts provide efficient tools to internationalise national aimed institutions and students.

The increased European cooperation in higher education needs to be based on quality of teaching and learning which is jointly recognised by the partner universities. The quality approach includes both curriculum development, with good teaching and learning practices, and institutional quality. Faculties are responsible, together with students, to develop programmes leading to degrees which meet the demands of the European higher education area and the modern labour market in Europe.

Quality assessment is a tool to improve transparency which is required for understanding the complex higher education system in Europe. One of the main aims is to lower barriers, which are preventing partnerships for flexible and

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objective oriented student exchange. The SILVA Network has been active in developing a quality assessment concept for the international MSc programmes of forest sciences. As one of the Standing Committees of ICA, SILVA has been participating in the development work in the consortium covering all the study areas in agriculture and related sciences. SILVA universities have an opportunity to be pioneers in offering international degree programmes with the European quality label.

For meeting the demands of the changing European labour market a new approach, with strong links to problem solving and challenge based project work, has to be adopted in teaching and learning. In general a move from teaching to learning would improve opportunities for students to meet the challenges of the future labour market. These challenges are related to the expected competencies of an individual employee and to his/her skills for advanced team work. The improvement of teaching and learning requires a new attitude in the valuation between research and teaching in the universities. High quality teaching and learning call for a new partnership between teachers and students and between teaching colleagues. For instance, in addition to the contribution of students, the programme evaluation should be carried out by experienced colleagues in a peer review process. This kind of new approach should form an essential part of quality improvement. The universities should improve their dialogue competence for opening confidence based channels with the various stakeholders of the modern European labour market. The input from different sources has to be taken into account in a balanced way for the benefit of competitive academic education in forest sciences.

The SILVA Network will play a useful and important role in the development of the European forestry education. According to its mission, the Network exists for facilitating educational cooperation in the field of forestry. Good cooperation and partnership between relevant stakeholders will direct competitive and attractive forestry education to meet the actual and future demands of different countries, the EU and the “global village”.

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