Keywords: competences, curriculum development, BSc, MSc forestry programme, networking

Abstract: The Bologna conference in 1999 initiated far-reaching changes of the complete system of higher education in Europe and started a process of a dimension not known hitherto. An internet search with the keyword “Bologna Process” with result easily in more than five million hits. Also in higher forestry education practically all study programmes are becoming due for fundamental revisions, which have already been started some years ago in many places and are in different stages of realisation now. The ideas of the Bologna process with, giving the new curricula at the University of Freiburg as an example.

It is not surprising that the Bologna Process and its consequences are discussed also at many conferences on forestry education, among others at the annual meetings of the Silva Network. The meeting in Wageningen in 2005 concluded (Lewark et al. 2006):

“The Bologna Process aims at an improved mobility by standardisation of structures of curricula. Even in following this direction – mostly with three plus two years for Bachelor and Master curricula – a huge diversity is likely to persist. The importance of the local situation seems to have a lasting impact on both the type of universities and the contents of the academic forestry education. There will be no uniformity, but different profiles of curricula in different places, which – with a growing mobility – highly increases the students’ opportunities for individual qualification profiles. The universities will cooperate, even share resources in joint activities like teaching, but they will also compete more than before.”

“Networks do become more important tools for international cooperation and for the international performance and image of universities and programmes. Next to organising meetings, this cooperation could find a form in a website comparing forestry and/or natural resource management curricula, thus continuing the initiative of the SILVA Network in the Wageningen 1997 symposium.”

1. The Bologna process

1.1 Dimensions and ideas of the Bologna process

One of the main driving forces of curriculum development leading to fundamental changes in many European countries today lies in the Bologna process. In particular and probably most obvious there were

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changes from a one stage curriculum to a Bachelor-Master system as shown for Freiburg (cf. 2.2), but many other ideas and initiatives are connected with the Bologna process.

The Bologna conference in 1999 initiated far-reaching changes of the complete system of higher education in Europe and started a process of a dimension not known hitherto. An internet search with the keyword “Bologna Process” with result easily in more than five million hits. The Bologna process has been named after the University of Bologna, one of the oldest European universities, dating back to the year 1088. In Bologna the second of the biennial now so-called “Bologna conferences” has been held and led to the Bologna declaration.

Figure 1: The Bologna process aims at creating a European Higher Education Area (EHEA) and is described in ten dimensions


“Ministers reaffirm the importance of the social dimension of the Bologna Process. The need to increase competitiveness must be balanced with the objective of improving the social characteristics of the European Higher Education Area, aiming at strengthening social cohesion and reducing social and gender inequalities both at national and at European level. …

Ministers take into due consideration the conclusions of the European Councils in Lisbon (2000) and Barcelona (2002) aimed at making Europe ‘the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion’ and calling for further action and closer co-operation in the context of the Bologna Process.”

Also in higher forestry education practically all study programmes are becoming due for fundamental revisions, which have already been started some years ago in many places and are in different stages of realisation now. Some concepts, chances, risks and obstacles will be dealt with in this paper, using the
1.2 State of Bologna process in 2007 – stocktaking

For the Bologna conference in London 2007 a stocktaking has been done using scorecards, which gives an overall picture of the state of the process as well as a detailed account of the state in the 46 member countries of the Bologna process according the issues implementation of the three-cycle degree system, quality assurance, recognition of degrees and study periods and linking higher education and research (Anon., 2007a). The results are well documented on state level as well as aggregated for all states (Rauhvargers, 2007).

![Stocktaking on the Degree System](image)

**Figure 2: The state of implementation of degree systems in the Bologna process in the 46 signatory states according to the stocktaking process (Rauhvargers, 2007)**

Conclusion 1 from the stocktaking report states (Anon., 2007a):

“The stocktaking results show that there has been considerable progress towards achieving the goals set by the Ministers in Bergen. … The Bologna Process has driven the process of higher education reform at national level. Higher education institutions, their staff and students, business and social partners, and international organisations are more actively engaged as partners in implementing the Bologna Process than was previously the case. The sharing of expertise has contributed to building capacity at both institutional and national levels so that there has been measurable progress across all participating countries.

At the same time the European students also evaluate the state of the process, with students’s eyes (Anon., 2007b): The student voice:

“…in some countries student representatives are not regarded and treated as equal partners by Governments, institutions and other stakeholders.
Some ... principally regard students as troublemakers, no matter what they say or do. Only in a few countries, a sustainable partnership exists”.

1.3 Dominance of ministers versus participation of universities

The Bologna process has been started and is being organized top-down, i.e. by the European Ministers of Higher Education and the national representatives of the rectors or presidents of the universities. Accordingly the stocktaking is done on national level and represents general descriptions on developments going on. It goes without saying that there are huge differences between countries and between universities within countries. So the analysis of the situation in forestry education needs a much closer look and may reveal deviations of the shape of a single forestry curriculum from the general situation in a country.

The top-down approach also touches the self-understanding of universities with a certain “academic freedom”, which together with traditions and structures again is different in different countries. More and more detailed regulations have to be considered in the creation of the new curricula. This may improve the learning/teaching situation by modernized approaches, but it may also downlevel and homogenize it.

In the case of Freiburg a block teaching system (teaching modules of one to three weeks length) has been successful over ten years. Opposed to didactical development it had to be substituted by a traditional hour based system again, as compatibility with other curricula at the university was wanted. That consequently meant less learner orientation and project based learning, which had been an achievement of the curriculum introduced ten years before. Also there was less flexibility in learning and teaching methods, as every modul had to be fixed in the regulations. Waiting for regulations on state level before decisions on faculty level, or changing again after decisions have been overthrown by these regulations was an additional problem, perhaps a “children’s disease”.

1.4 ECTS, workload, mobility

A common European labour market for university graduates is another 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 – this includes language skills, intercultural competence and 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.

SILVA Network (cf. section 4) has worked for mobility of students and teachers from its start. Now there seems to be a new challenge, as first experiences with the Bachelor curricula, at least with forestry students in Germany, indicate, that international mobility is going back as compared to before.

On the structural level an instrument for acknowledgement of study credits as well as performance and exam results has been created through he ECTS (European Credit Transfer and Accumulation System). Use of ECTS is in different stages of realisation as seen from the stocktaking report (in Freiburg introduced already in 1995).

Connected to ECTS and the general ideas of Bologna process are so-called workloads of students as new bases for constructing curricula instead of teaching hours of teachers, which is another great innovation. On the way to realize this and harmonize conditions in different European countries we find different lengths of teaching periods as well as different times of these teaching periods. So 60 credits for a fully and succesfully studied academic year means different things in different countries.
2. Changes of forestry curricula

2.1 Competence orientation

“While the 2007 stocktaking found that there has been good progress on specific action lines and indicators, it is not enough to look at these in isolation because all aspects of the Bologna Process are interdependent. There are two themes that link all action lines: a focus on learners, and a focus on learning outcomes. If the Bologna Process is to be successful in meeting the needs and expectations of learners, all countries need to use learning outcomes as a basis for their national qualifications frameworks, systems for credit transfer and accumulation, the diploma supplement, recognition of prior learning and quality assurance. This is a precondition for achieving many of the goals of the Bologna Process by 2010.” (from conclusion 2 of the stocktaking report states (Anon., 2007a)

Competences connected to tasks in forestry become more and more exemplary, as completeness of knowledge for all possible challenges in the working life is less feasible then ever. Generic competences are gaining weight. Because of developments on the labour market preparing students for occupations outside of forestry is necessary and must have consequences for curricula of higher forestry education.

This also means that it is not sufficient any more to characterize forestry curricula in terms of contents assuming that the competences going with these subjects are commonly agreed and self understood. Schuck (2007) as well as earlier Huss & Schmidt (1998) have analyzed and discussed missions and objectives of higher forestry in this respect.

2.2 The example of the forest sciences curricula at the University of Freiburg

The study programmes at the University of Freiburg show a typical transformation from a one cycle (diploma curriculum, 9 semesters) to a two cycle system (6 plus 4 semesters for Bachelor and Master curricula) (Figure 3), further a diversification from a faculty with one curriculum till 1999 to a merged faculty (forestry, geography and hydrology in a Faculty of Forest and Environmental Sciences) with a multitude of curricula (Figure 4) (Fink, 2005, 2008).

The third cycle according to the Bologna terminology is also undergoing changes: from the PhD student as a junior scientist primarily working on his or her PhD thesis to a third cycle student with a standardized schedule and an obligation of taking courses and earning credits – a change of approach from a system traditional in Germany to a system with a British tradition, which is still under discussion.

4. Networking and the role of SILVA Network

“International organisations dealing with forestry education have many important tasks to perform in order to support Forestry Education Institutions in the adaptation to a new phase.”

“At meetings, international organisations can provide neutral fora to national and international experts to share and discuss experiences. These international fora are often a unique occasion of dialogue for professors or experts to meet with people from different geographic areas - which is not very common - and to learn about complete different situations.” (Romeo & Souvannavong 2004).
Figure 3: As shown here for Freiburg in many European countries the curriculum system recently changed from a one stage curriculum to a Bachelor-Master system (after Fink 2005)

Figure 4: Diversification of curricula at the University of Freiburg (after Fink 2008)
SILVA Network, ANAFE and SEANAFE, the IUFRO Education group, unit Education, gender & forestry and the group Education and Research in Silviculture are examples of such networks. Participants of these international organisations or networks in most cases are universities or single faculties, in other cases networks, learning mostly is done during meetings and from proceedings. But the work done in the networks is very much depending on personal initiative of individuals, which is a strength and a limitation. It is certainly a big challenge to link the networks, which needs much travelling. It seems to be typical that the networks have more active and less active phases, they emerged and sometimes even are abandoned.

The European network on forest science education on university level is SILVA Network (www.silva-network.eu) with close to fifty member faculties in 25 European countries (Lewark, 2008). The first ten years of SILVA Network have been described by Pitkänen et al (2004). During the second decade, from 1997 to 2007, SILVA Network has been based at the University of Joensuu, with Paavo Pelkonen as president, and further grown and developed.

The International Partnership on Forestry Education (IPFE, www.ipfe.info) was started in North America as a reaction to declining student numbers, in order to share resources and experiences and serve as a network of networks.

One students’ network deserves special mentioning: IFSA, the International Forestry Students’ Association, which is a very dynamic network cooperating with all the other networks mentioned (www.ifsa.net).

5. Objectives and reality of the Bologna process – a résumé

The Bologna process will create a new landscape of higher education in Europe. This landscape, the overall picture is only partly recognizable from the level of a teacher in any of the numerous forestry curricula throughout Europe. He or she will participate in this process, if all works well, in a curriculum commission creating the new curricula and new learning/teaching modules or adapting existing ones. In doing this he or she will come across many aspects of the Bologna process with impact on his or her working and teaching (and probably also researching) situation – some of them have been discussed here, based on the experience of the author at Freiburg, but also in accreditation and quality assurance processes elsewhere.

It is not surprising that the Bologna Process and its consequences are discussed also at many conferences on forestry education, among others the annual meetings of the Silva Network as platforms for exchange of ideas, information on ongoing processes and experiences. The meeting in Wageningen in 2005 concluded (Lewark, Schmidt and Bartelink, 2006):

“The Bologna Process aims at an improved mobility by standardisation of structures of curricula. Even in following this direction – mostly with three plus two years for Bachelor and Master curricula – a huge diversity is likely to persist. The importance of the local situation seems to have a lasting impact on both the type of universities and the contents of the academic forestry education. There will be no uniformity, but different profiles of curricula in different places, which – with a growing mobility – highly increases the students’ opportunities for individual qualification profiles. The universities will cooperate, even share resources in joint activities like teaching, but they will also compete more than before.”

“Recent developments indicate that competition among universities will get a stronger international dimension in the coming years, both from a quantitative point of view (student numbers), and a qualitative one (quality of education and research). On the other hand, universities can take advantage of international cooperation. An important condition for mutual benefits is to take advantage of each others niche
expertise. This means: do not try to cover the whole world (Europe) in your curriculum, but foster your local speciality.”

“Apparently, there is no such a thing as the Forestry curriculum. National, regional or local conditions will and should strongly determine the contents of forestry curricula. Not only the economically important issues like forest cover and importance of the forest industry for the BNP but also socially and politically important issues like the focus on production (among others timber) and reconstruction after the (second world) war or some political change-over, and richness and amount of leisure time play a role. Ecological conditions (e.g. boreal versus Mediterranean) are also reflected in the various curricula.”

“Curricula contents should reflect societies’ needs. The growing number of curricula on nature conservation and natural resource management can hence largely be explained by changing emphases in societies on the preservation of the natural environment, where forestry generally is considered one of the land-use types. The question should thus not be whether forestry and natural resource management can co-habit in one curriculum. Whether the focus is on natural resource management in general, or on forestry in particular, is largely a matter of focus, determined by local (regional) conditions. In the boreal zone, for instance, wood production (an important part of forestry) plays a key role from an economic point of view, which may legitimate the development of ‘pure’ forestry curricula. In many Western European countries, characterized by high population densities and high pressure on nature, more emphasis is put on the conservation of natural resources, including forests. Adapting curricula is thus not only a matter of responding to pan-European development like the Bologna-declaration; it should strongly be related to what is considered the backyard of the university (e.g. region, country), which is echoed in the needs of societies.”

Further, “networks do become more important tools for international cooperation and for the international performance and image of universities and programmes. Next to organising meetings, this cooperation could find a form in a website comparing forestry and/or natural resource management curricula, thus continuing the initiative of the SILVA-Network in the Wageningen 1997 symposium.

“Finally, future forestry and future nature management require both future (i.e. different from now) scientists and field officers who also speak the language of partners from other disciplines. Universities, when developing curricula, should take that into account.”

A main objective of the Bologna process is shortening the study time for the majority of students, who would be ready for the labour market with a BSc, whereas the others would go on with a master’s programme or come back for a master’s programme after some years of occupational experience. In reality it seems that the labour markets are not well prepared for BSc graduates in many European countries.

Many other topics have to be discussed including: quality assurance and accreditation or new subjects like forest & health or gender issues, among others. The role of e-Learning over the last ten years has been growing remarkably (Längin, Ackerman and Lewark, 2004), which opens new chances for interuniversity cooperation also in forestry courses.

The state and the universities primarily seem to want compliance with stipulations and are happy if the faculty meets them, but often do not care about the learning process. Didactical considerations with the paradigm of learner orientation play a minor role in the process, even if didactical centers are established on state and university level.
A crucial problem with evaluations and accreditations is, that the standards of quality in peer reviews will always reflect the insights and the level of consciousness of the reviewers (Cobb, 2007). If we have a dominance of structural approaches and little regard of learning processes, accreditation will also be done solely on the basis of structures.

Summing up at the end: Let’s see the big idea, the great innovative approaches to be realized, the big chances of the transformations according to the Bologna process. Among the things working nicely already I would name for instance ECTS (cf. 1.4). Another achievement is the chance of rethinking direction of study after the Bachelor study and perhaps continuing with a Master programme from a different field.

Let’s look at the problems on the way as pointed out as challenges, worthwhile to overcome, like the seemingly reduced international mobility of forestry students as compared to before. And let’s work together to improve education, students and teachers of the European countries and worldwide. Networks like SILVA Network, which has worked for mobility of students and teachers from its start, networks of forestry education with much personal knowledge of colleagues with similar questions, problems and backgrounds are helpful and at the same time very rewarding for those joining in.

6. References

The preceding text is based on several earlier presentations and contributions to conferences which are not listed here.


*All world wide web references: visiting dates in May 2008*