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**THE BOLOGNA PROCESS – A CHALLENGE TO INNOVATION IN FOREST POLICY  
AND ECONOMICS EDUCATION AND RESEARCH**

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The Bologna process will thrust forestry and forestry education into the context of an evolving global economy as well as worldwide concerns about environmental protection and climate change. It stimulates the integration of forestry into the framework of sustainable land-use practices and the combination of forest management experience with new scientific knowledge and research methodology. Forest professionals need a comprehensive educational background if they are to tackle rapidly changing social, economic and political problems. At the same time they need to understand the evolving and locally specific social and cultural aspects of forestry. This demands a joint approach to forest management, environment protection and landscape conservation. Maintaining the natural resource base and managing forests in a sustainable manner will require teaching programme combining policy and law, business economics and management, and forest resource and environmental economics components.

**Key words:** land use practices, natural resources protection, wood production, environmental services, forest ecosystem management.

**Introduction**

The Bologna process presents an opportunity to foster innovation, cooperation and competition in science. It establishes a common ground for university teaching and research in Europe by introducing comparable academic grades and quality standards. It encourages mobility among students, teachers and researchers worldwide and adopts a three-cycle educational system with the accumulation and transfer of credits, as in North America. The Bologna process offers a chance to modernize the content and subjects of forestry teaching, to expand socio-economic empirical research on environmental and natural resources management, and to link teaching and research more closely to the applied natural sciences. This means, foremost, putting more emphasis on societal problems and restructuring and expanding the contribution of the social sciences in university forestry curricula, particularly in the fields of forest policy and forestry economics.

Systems approach to political and economic decision making for the protection, use and management of renewable natural resources.

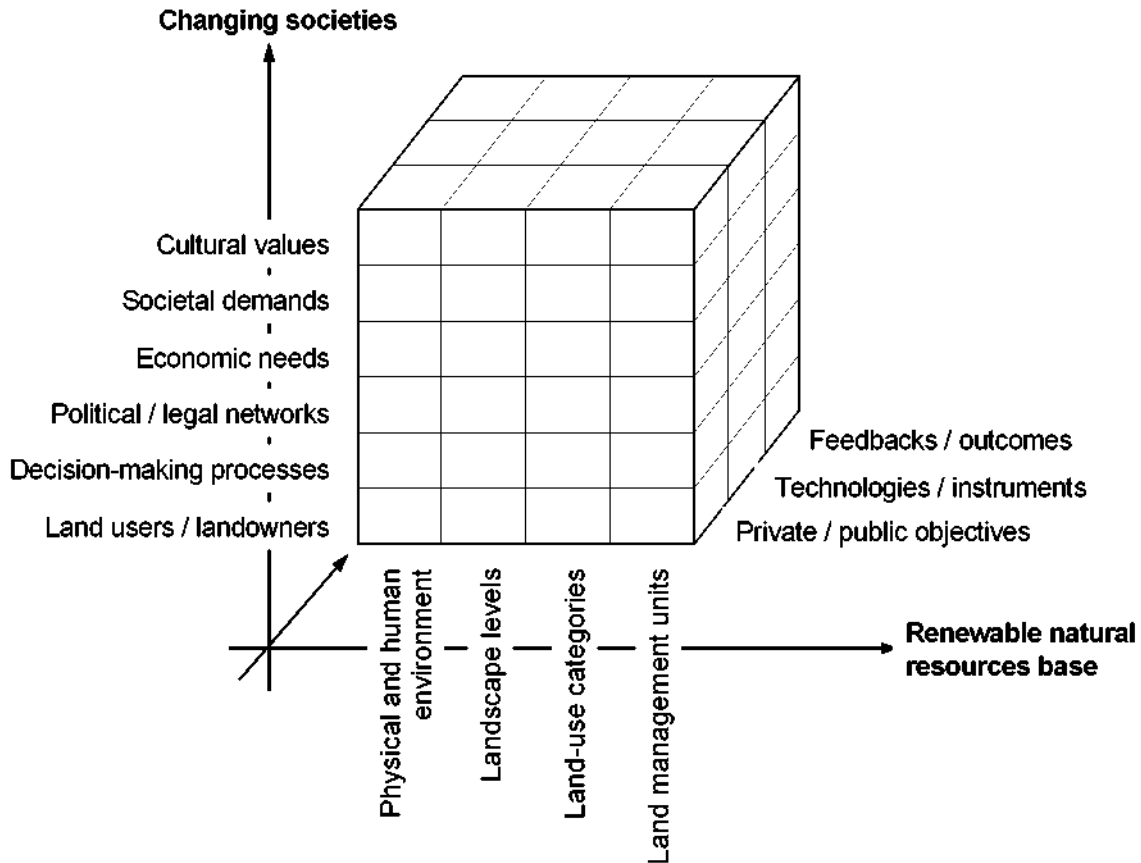
The design of innovative socio-economic teaching and research programmes in forestry must be based on the specifics of managing renewable natural resources. The focus of such programmes should be on the following:

- sustainability as the guiding principle for maintaining and developing the natural resource base;
- multifunctional and locally adapted land management solutions that address increasing economic, societal and environmental demands;
- interplay between natural processes, technological solutions, societal behaviour and political decision making;
- improvements in land management through developing effective institutions and involving stakeholders;
- use of appropriate market-based instruments and coordinated public policy networks; and
- multidisciplinary approaches among the natural and social sciences that lead to a common scientific basis in dealing with economic development, societal needs and values, and cultural change.

Fig. 1 provides a schematic presentation of a systems approach to analyzing the conditions for sustainable management, protection and preservation of the renewable natural resource base. The Y dimension shows the dynamics of social change and the driving factors that determine the prevailing use of renewable natural resources. Significant aspects are cultural values, societal

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demands, economic needs and opportunities; political and legal networks setting the conditions for resource use; and decision-making processes involving landowners, land users and other stakeholders. The X dimension indicates the spatial impacts of resource use and management on the physical and human environment as a whole, at landscape levels, for different land-use categories and individual land management units. The z dimension presents the interplay between private and public goals, available technologies, policy instruments, and the feedbacks and results that are obtained.



**Fig. 1 – Human environment systems interactions in sustainable natural resources management ([8], modified)**

Forest teaching and research should enable university graduates and future engineers to grasp the dynamics of cultural change and their meaning for societal demands on forests and forestry. Students need integrative social and cultural knowledge to assess opportunities and new approaches in managing natural resources in a specific situation and at a given time. At the ETH we have been looking at evolving societal demands as well as the great variety of culturally specific situations in which forest management develops. Our new program for teaching and researching “cultural aspects of forests and forestry” has proven attractive to our students and inspired a considerable number of diploma theses that provide new and interesting findings.

A second aspect of a systems approach to managing forests and forestry in a broad social, environmental and land-use perspective is thus the historical dimension of change. It is, in fact, my firm conviction that the structure and content of any academic teaching and research programme in forestry should be anchored in a profound understanding of the long-lasting cultural processes that have influenced forest distribution and forest uses over centuries [9]. This understanding will enable forestry professionals, educators and researchers to be aware of the dynamic human interactions and the manifold societal impacts in environmental, natural resources and land management. And only the cultural context can explain the great variety of problems and solutions in time and space as well as the need to develop specific approaches.

Teaching requirements in forest policy and law

Public policies and law provide the necessary political framework for balancing private and public interests and are changing in response to new societal demands. No longer is it sufficient to address only wood production and forest protection and management. Today's social and environmental demands and policy objectives extend to human induced effects on climate change, preservation of biodiversity, and to nature and landscape protection. National and local political problems have to be addressed, as well as the continental and worldwide concerns of citizens and governments. The fundamentally new aspect of forest related policy decision making is that it must devote equal attention to economic efficient wood production, societal and cultural values, and environmental protection.

Forest policy goals are incremental and involve the economic potential of forests for industrial wood production and processing, their availability as multifunctional social resources in urban and rural areas, their importance as varied and complex ecosystems, and their essential role in maintaining biodiversity of flora and fauna. The process of modernizing national forest policies and legislation has gained considerable momentum across Europe – western, central, and eastern – since the 1990s. In countries in transition to open civil society and market economies, functioning democratic institutions are being built, and new political and legal frameworks addressing agriculture and forestry, nature preservation and environmental protection are being established [1, 6].

Fig. 2 shows a systems approach to identifying the broad regulatory issues and content of forest policy and law. Protection regulations refer to conserving and preserving the environment and biodiversity, nature and landscapes, soil and water resources, and the cultural and spiritual values associated with trees and forests. Land-use regulations provide for zoning of forestland, control of forest clearing, protection of a country's permanent forest estate, and the establishment of new forest resources through reforestation and afforestation. Utilization and management regulations determine the rights and responsibilities of forest owners with regard to the sustainable production of wood and non-timber forest products, environmental and recreational services, and multifunctional forest use and management systems.

Forest policy has been a traditional university course since the 19th century, when university forestry programs were established. However, the focus of modern policy teaching and research needs to be based much more on the disciplinary foundations of the political sciences than has generally been the case. Education in this field must combine knowledge of political science concepts, models and methodologies with analysis of political decisions about forestland management options in the context of protecting the environment and addressing climate change. New scientific concepts and methodologies are available, new research is going on, and the literature is continually growing. The challenge is to combine specific knowledge of forestry problems with a strong methodological foundation in political science. A wealth of forestry-specific knowledge has been accumulated in the past that can be used for demonstration and problem analysis of the problems of today. It is essential to use this knowledge in a more comprehensive educational and research context.

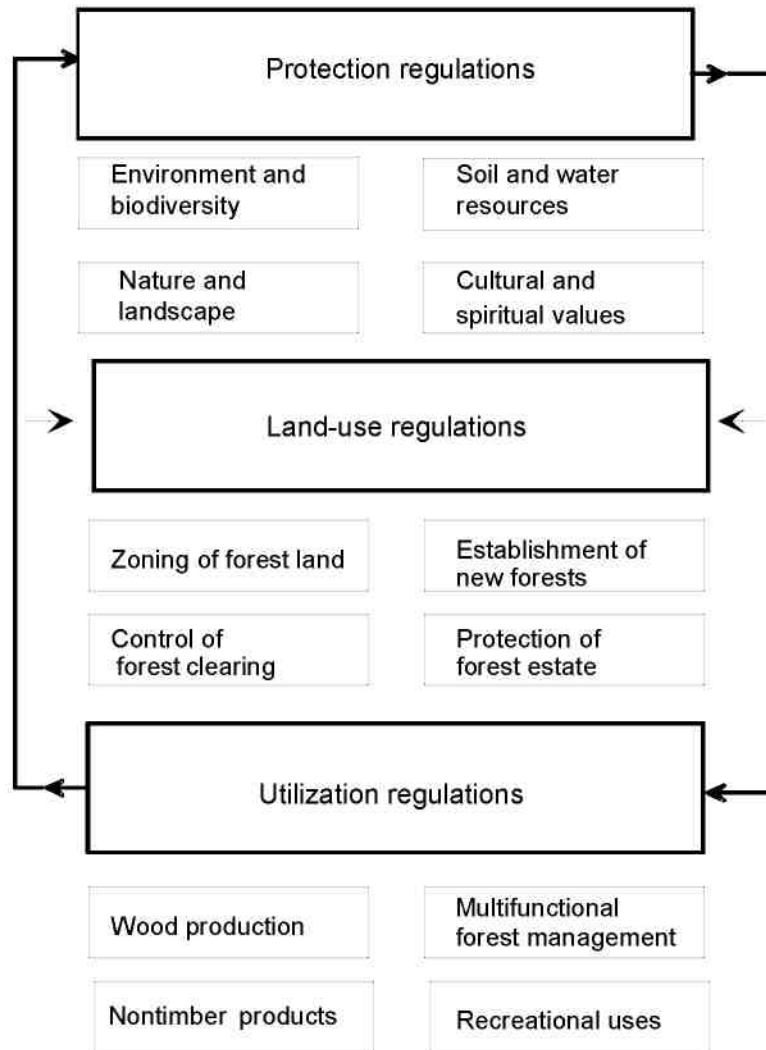
Primary teaching subjects in a modern forest policy course relate to the following broad themes:

Forest conservation, protection and management are economic, political, social and cultural phenomena, and sustainability is the basis for maintaining and utilizing natural renewable resources.

Important conflicts over forests exist between divergent private and public interests. Such conflicts relate to controversial strategies and management goals for industrial wood production, protecting the environment, and nature and landscape preservation.

Forest policy as well as other forest related public policies form an aggregate of multiple conflict regulation processes and imply a multitude of political arbitration and decision-making processes among private and public stakeholders in utilizing the forest resource.

Political systems and constitutional values, political institutions and political actors, and law and jurisdiction are the foundation of political arbitration and decision-making processes.



**Fig. 2 – Forest policy and law regulations ([5], p. 10)**

The students need a solid knowledge of the functioning of the political system in a democracy and the constituting political steps determining changes in forest policy and law, as for that matter, in other political domains such as energy, water, environmental and landscape policies. The political framework for the formation of a particular public policy and for its implementation can be analysed in three fundamental dimensions. The institutional dimension (polity) determines the constitutional framework for political decisions. The process dimension (politics) identifies the policy actors (stakeholders), their interests and conflicts, their political power, and ways to resolve conflict. The policy dimension deals with concrete political problems and solutions, addressing specific needs and values and determining goals and measures. It is important to understand the policy cycle, the choice of policy instruments, and the role of public policy programmes.

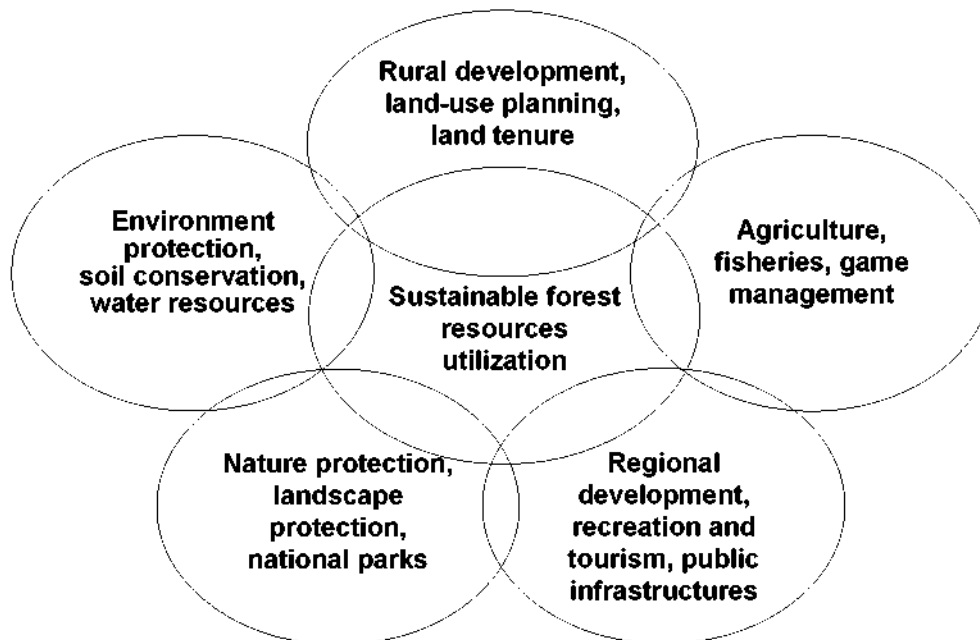
Governance has become important in politics as a reaction to policy failures due to rigid and ineffective top-down decisions of the state. The word denotes a shift from hierarchic and top-down political processes to a more participatory and self-organizing style of policy making. It thus characterizes a more open and democratic relationship between the state and civil society, including citizens, stakeholders, and private institutions such as associations, corporations and social communities. Policy actors in this context include concerned interest groups, private enterprise and industry representatives, and nongovernmental organisations (NGOs). Active communication among all actors within the political system and processes leading to formally agreed problem solutions are essential elements of modern governance. And governance becomes operational through market transactions, societal self-regulation, negotiation processes and agreement on

criteria, indicators and performance standards, as well as through contractual arrangements for the delivery of goods and services.

Governance is based on functioning political networks between the public and private sector, including the following:

- cooperation between the state and specific target groups;
- participation of citizens and NGOs in the processes of policy making and policy implementation;
- coordination, inclusiveness and integration of relevant sector policies;
- multilevel transactions between private and public organizations;
- decentralization and transfer of public authority and responsibilities to lower governmental levels in accordance with the principle of subsidiarity;
- programmes based on jointly agreed and precise objectives, monitoring of performance and evaluation of results; and
- business standards for public administration to ensure effectiveness and efficiency.

Another important aspect in modern forest policy teaching results from the fact that there are many transversal and cross-sectoral public policies and regulations that have multiple impacts on forest and natural resource utilization—sometimes conflicting with the overall goals of sustainability and rational use of the natural resource base (Fig. 3).



**Fig. 3 – Multiple public policy impacts on forest resource utilization ([5], p. 13, modified)**

Public policies of relevance in this context may address agriculture, game management and fisheries and the protection of public and private infrastructure. Also having a growing impact on forestry are policies dealing with nature preservation, landscape protection, national parks, environmental protection and soil and water resources. Policies addressing rural development, land-use planning, land tenure, regional development, recreation and tourism have considerable influence on forest utilization as well.

It follows that forest policy alone cannot regulate exclusively anymore the public framework for using and managing forests. It is important to analyse the full range of relevant public policies and those political interventions enhancing their positive impacts on forest conservation and forestry development, as well as reducing those policy effects having negative effects on forest development. A more systematic consideration of cross-sectoral effects and policy links has been

one of the important concerns of the international community since the Rio Conference 1992 and its follow-up processes.

National and international governance networks addressing sustainable forest management, environmental protection and natural resource utilization have today increasingly multilevel political dimensions (Fig. 4). They extend from the global level of the United Nations and from continental and supranational levels, such as the European Union, to the national level, sub-national levels in countries with federal political systems, and to municipal and local community and association levels. The combined demands on forest management from such multilevel policy making must be met foremost by landowners and land users, and the political impacts on forestry have to be assessed for individual ownership units, ecosystems and the landscape.

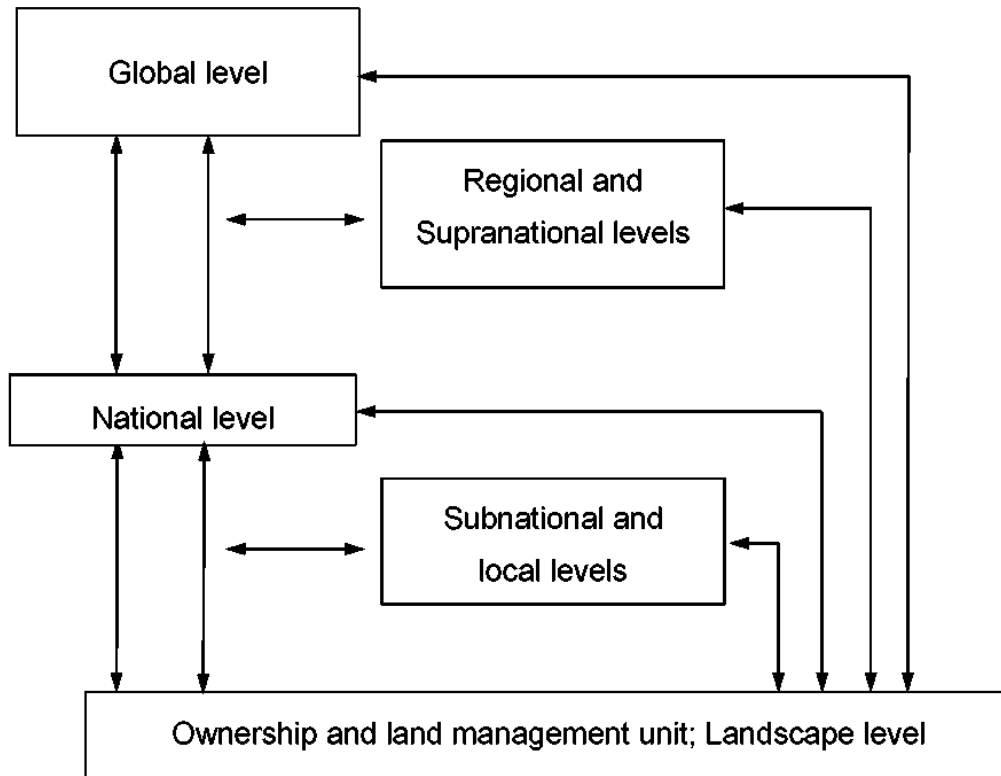


Fig. 4 – Multilevel governance networks ([5], modified)

#### Teaching requirements in forest business economics

**Sustainable wood production:** Wood production remains the backbone of commercial forestry practices and of a sustainable forest sector. New technology offers opportunities to improve the productivity and profitability of wood production through rationalization and reduction of production costs, and efficient business management must focus on the entire value-added chain between forestry activities, industrial wood processing and changing end-markets demands. Innovative business and management teaching in forestry will explore the ongoing modernization of industrial production units based on comprehensive, cost-effective strategies. One has to be aware, in fact, that the forestry and wood-processing sector in Europe is already highly competitive in world markets and is expanding rapidly. If the industry succeeds in building on its present strengths and reducing its weaknesses, sustainable wood production and modern wood-processing technologies can deliver new products and services to intermediate end-user markets.

**Multifunctional land management:** At the same time it is urgent to generate additional income from marketable environmental and recreational services. Forestry students and professionals thus have to understand the economics of industrial wood processing as well as the economics of multifunctional land management. It is concerned with actual and prospective business opportunities and a wide range of present and future consumer wants and preferences as the driving

forces within a market economy. The analysis focuses on short- and medium-time perspectives and on economic growth in a spatial perspective reaching from local to national and to international.

Comprehensive disciplinary foundation: The programme in forest business economics requires a comprehensive disciplinary foundation in the concepts, models and methodologies of the management and economics sciences. It has to convey an understanding of the special production and marketing conditions within forestry and the wood-processing sector. And it should be well grounded in the current literature as well as the results of applied economic research. Development of an entrepreneurial spirit, strategic thinking and human relations abilities are the main goals in teaching the students. Primary subjects are the end markets that drive business, process management and strategic innovation techniques, measures to foster competitive wood production, and new approaches in marketing environmental and recreational services. Students, teaching staff and professionals need to understand the complex management processes of enterprises in a free-market economy. They have to know how to optimize production within the entire value-added chain and to understand the primary role of markets and marketing. At the same time they should be able to evaluate the options and constraints of industrial production of the wood industry versus multifunctional forestry production systems providing a wide range of goods and services.

Major teaching subjects: Important standard chapters of management and economics to be included in this programme are business politics, human resources and organisational development, accounting systems and methods, financing and investment, logistics and production processes, and strategic planning and controlling. The translation and subsequent publication by the economics faculty of the University in Belgrade of Entrepreneurship in the Forest and Wood Products Industry – Principles of Business Economics and Management (Fig. 5) is based on the original version in German, published in 2003 as a leading textbook and reference in our field [7].



**Fig. 5 – Serbian translation of the textbook «Entrepreneurship in the forest and wood products industry» [10]**

This new book can make a significant contribution in modernizing the teaching programmes of the forestry faculties in the Balkan region. The authors hope that the book will be a standard teaching text for bachelor's and master's students as well as a standard reference for forestry and wood-processing professionals. We are thankful to all colleagues who have contributed to make this

publication a reality. Special thanks are due to the capable translator, Vesna Ivanovic, and to Assistant Professor Dragan Nonic for his initiative and valuable contributions.

From sellers' to buyers' markets: The fundamental change in modern market economies is the change from sellers' to buyers' markets (Fig. 6). From an economy of scarcity, in which demand surpassed the available offer, we have moved in many countries to an economy of surplus, in which the offer exceeds apparent demand. Whereas production of goods and services was the limiting factor in the past, developing new markets for new products is now the primary issue. Stimulating demand and focusing on consumer preferences have become the driving forces of competitive business activities. New product development and design to meet new consumer wants and preferences and identification of new market segments and regions are now the entrepreneurial challenge.

	<b>Seller' Markets</b>	<b>Buyer' Markets</b>
<b>Development Stage</b>	Economy of scarcity	Economy of surplus
<b>Relationship of offer to demand</b>	Demand > offer Client more active than producer (excess demand or deficit in supply)	Demand < offer Producer more active than client (supply surplus)
<b>Limiting factor</b>	Production of goods and services	Selling of goods and services
<b>Primary effort of enterprise</b>	Rational use and expansion supply and production capacity	Stimulation of demand and focusing of preferences on own market offer
<b>Long-term focus of basic entrepreneurial function</b>	Logistics and technology	Markets and marketing

Fig. 6 – From sellers' to buyers' markets ([3], p. 133, translated)

A SWOT (strengths and weaknesses, opportunities and threats) analysis of the wood-processing sector was undertaken by the European Community in 2000 (Fig. 7).

**Strengths**

- Expanding raw materials basis
- High-level technology, know-how and expertise
- Excellent access to large and sophisticated markets
- High density of innovative industrial clusters

**Weaknesses**

- High raw materials and labour costs
- Limited investment and reinvestment
- Insufficient entrepreneurial research
- Resistance to restructuring and rationalization
- Lack of wood-using culture

**Opportunities**

- Wood as life-style product
- Integrated problem solutions
- Cooperation in industrial clusters
- Geographic and infrastructural synergies
- Integration and optimization within whole supply chain
- Decentralization to cost-competitive areas

**Threats**

- Regional and intercontinental competition
- Lack of innovation for products and problem-solving services
- Competition from nonwood materials
- Lack of environmental acceptability sensibility end users

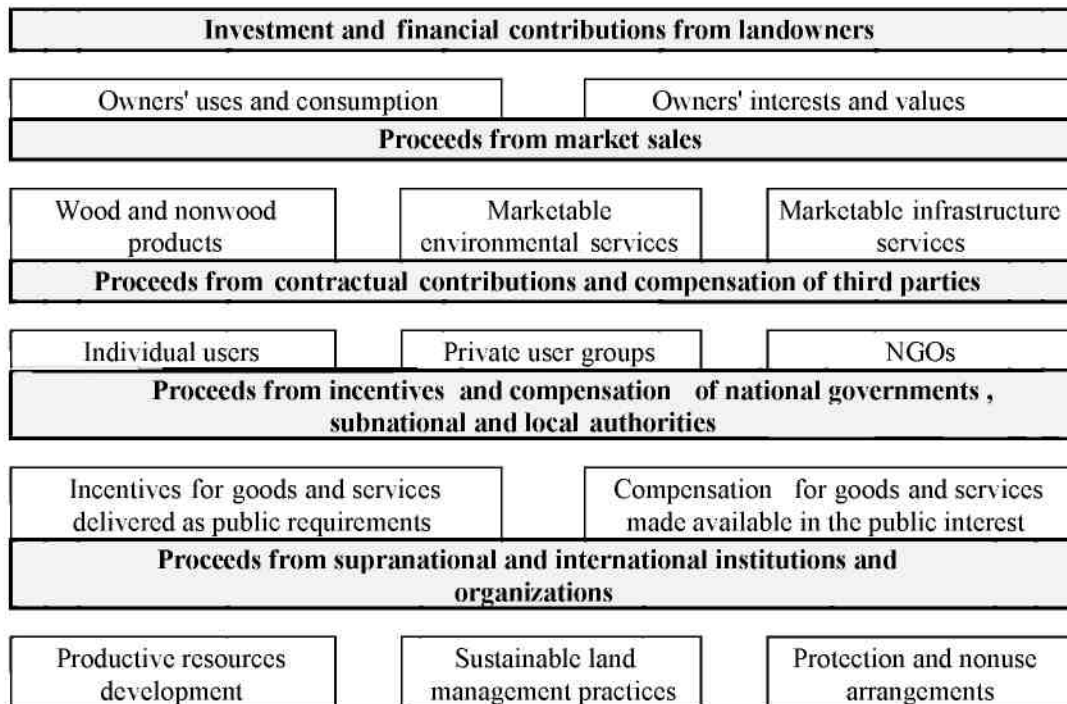
Fig. 7 – Strengths, weaknesses, opportunities and threats of the wood-processing sector in the European Union ([2], p. 44, modified)



The strengths lie in an expanding raw materials basis, the availability of high-level technology and expertise, access to large and sophisticated markets, and a high density of industrial clusters. Weaknesses are the high costs of raw materials and labour, insufficiency of entrepreneurial research and development, resistance to restructuring and rationalization of business, and in many European regions, lack of a wood-using culture. New opportunities include the promotion of wood and wood products as “life-style products,” development of integrated solutions in construction and building, use of geographic and infrastructural advantages in expanding markets, and transfer of production activities to cost-competitive regions. Threats are in particular global competition, lack of innovation in products and services, and competition from other high-tech materials.

New financial strategies: Another important issue, to be addressed in teaching and research, is the need to develop new financial strategies for multifunctional forest management practices providing multiple forest goods and services. Combined forest financing is based on the principle that the private and public interests using the resource must share costs and benefits equally. Fig. 8 presents a systems approach in identifying investments and current financial contributions for multifunctional forestry. It indicates different combinations of wood production, non-timber forest products, and environmental and infrastructural services.

Proceeds from market transactions are the backbone for financing forestry operations. They derive from sales of wood and non-timber products, technical services for third parties, and environmental and infrastructural services for which markets exist or can be developed. Proceeds from third parties result from contractual obligations and payments made by individual users, private user groups and NGOs for specific services and may include incentives and compensation for protecting infrastructural facilities or for preserving forest areas with high ecological values.



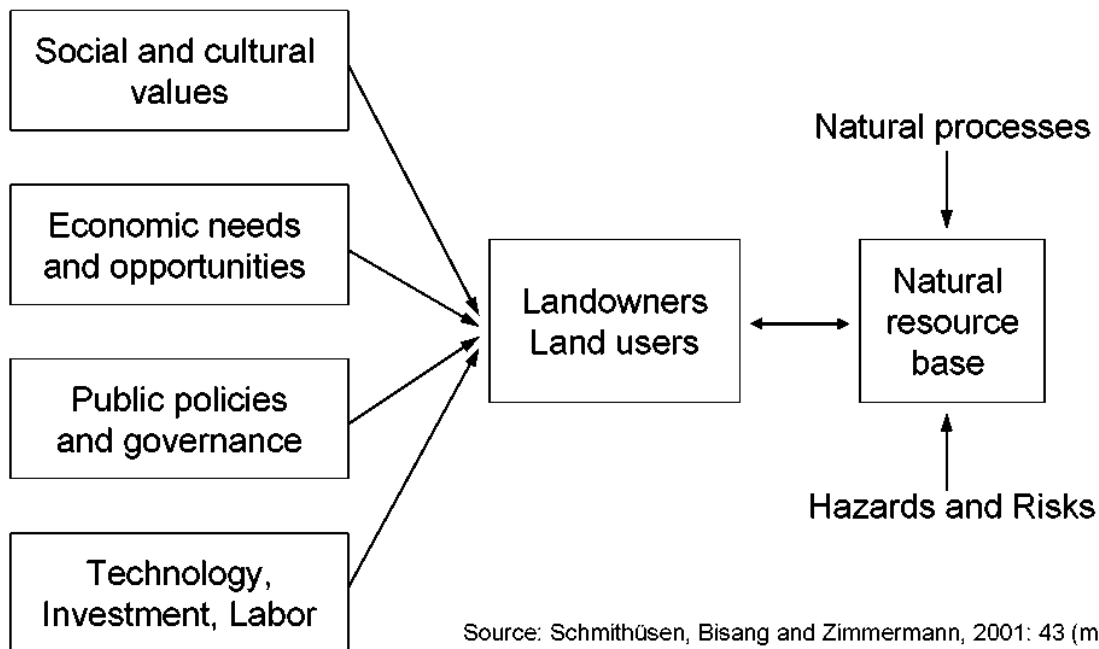
**Fig. 8 – Financing multifunctional forest management for wood, non-timber products and environmental services ([5], p. 36, modified)**

National, sub-national and local authorities may provide similar incentives and compensation: for instance, for managing protection forests under a special regime, for nature and landscape protection, or for environmental services provided in the public interest. Supranational and international institutions and organisations, such as the European Union, may create special programmes to co-finance structural improvements for productive forest resource development

through afforestation and reforestation, and for fire prevention, detection and suppression. Cooperation among small-scale landowners in sustainable management practices and rural development measures intended to enhance the self-sufficiency of the local population provide other possibilities to finance joint public and private multifunctional forest management systems.

Teaching requirements in forest resources, environmental and ecological economics

Role of forest owners: Landowners and land users play an important role: they determine whether the renewable natural resource base is maintained or degraded (Fig. 9). Forest owners have both the right and the responsibility, considering the range of actual and potential societal and economic demands, to decide on management goals and forestry practices. Forestry professionals must be aware of the economic needs and opportunities that influence forest owners' use and management. But it is also important to grasp the social and cultural values that prevail at any given time and understand their implications for a particular locality, country or region. Promoting sustainable uses of the natural resource base is today the overarching goal of political interventions. Technology, investment and labour determine the level and combination of goods and services that can be made available to private consumers and the community as a whole.



Source: Schmithüsen, Bisang and Zimmermann, 2001: 43 (modified)

**Fig. 9 – Drivers of the behaviour of landowners and land users ([4], modified)**

Innovative university forest education must take a systems approach to explaining the impact of economic and societal factors on the natural resource base. Resource economics, environmental economics and ecological economics are three economic disciplines that can widen the perspective, understanding and professional qualifications of university graduates. The concepts and methodologies of these three disciplinary approaches within economics are an indispensable basis for teaching economics in the field of sustainable forestry and renewable natural resources management.

Resource economics deals with optimization of production and consumption processes in a dynamic and intertemporal allocation perspective. Resource economists develop models of the conditions for an optimal consumption of resources and for correcting suboptimal consumption practices. Environmental economics analyses in particular the positive and negative external effects of production and consumption and how to internalize these externalities to improve utilization processes. It is primarily based on a static resources allocation analysis dealing with actual competitive use of environmental resources. Ecological economics deals with dynamic systems in evolution and with human preferences reflecting broad ecological opportunities and aversion to

environmental constraints. The timeframe of the processes studied extends from short to very long, and its scale extends from local to global, and the focus is on sustainability as a combination of economic, environmental and social factors.

Multidisciplinary approach: The three economic disciplines take a multidisciplinary scientific approach. Combining their theoretical concepts and methodologies in a problem-oriented research and teaching approach helps students understand the complex and pressing issues of society with regard to forest utilization, ecosystem management and the role of forests in maintaining a livable environment. The teaching focus is on understanding in a reasoned and scientific manner the economic values related to sustainable use and management; analysing human behaviour toward forests, nature and landscape in economic terms; and developing economically efficient solutions for a wide range of ecological problems.

Primary teaching subjects encompass the following:

- multiple cross-sectoral links as well as positive and negative conditionality between economic decisions and their impacts on natural environmental processes, especially on soil, water and climate;
- intertemporal effects of alternative use and management strategies on present as well as future stocks of renewable natural resources;
- economic implications of positive and negative externalities in production and consumption as influencing the behaviour of firms and individuals;
- economic and social aspects of providing public goods and managing common property resources to meet collective economic, societal and political demands and respect culturally derived attitudes and beliefs;
- dynamics of changing private and public consumer demands based on an optimization of economic strategies combining production, protection and preservation outputs;
- identification, quantification, valuation and monetarization of environmental, social and cultural services and benefits that result from multifunctional forest management, environmental protection, and nature and landscape preservation.

### **Conclusions**

The social, economic and political processes linked to forest management and environmental protection, as well as the importance of the forestry and wood-processing sector, have evolved and become multilayered. Forest conservation and forestry development are today not only national and local concerns but even worldwide issues. This requires an interdisciplinary view of forest systems that addresses the multiple and spatially differentiated uses of renewable natural resources. Forest and landscape dynamics are the result of complex interactions between physical and ecological conditions and changing societal needs and values, new economic opportunities, and evolving political institutions.

A comprehensive teaching and research approach is essential for understanding the multiple and locally, nationally and internationally varying dimensions of all relevant outputs from forestry, striking a balance between private and public, and achieving a rational distribution of investments and maintenance costs among those benefiting from wood production and environmental services. One has to understand the many possible interactions between the production of private goods and services from forests on the one hand, and the maintenance of the flow of public goods and services from forests on the other hand.

Exploring the dynamically changing relationships between forest, landscape and society requires empirical analysis and concrete experience in a given space and time with the aim of better understanding the prevailing institutional conditions, the ongoing political and social processes, and the actors involved. In investigating such relationships one comes to understand the interface between alternative land uses at different spatial scales as well as the societal changes that determine the manifold interactions.

With regard to innovation in forest policy and forest economics teaching and research specifically, the following conclusions are to be emphasized:

Academic teaching of socio-economic aspects in forestry curricula needs to be based on a systems approach, analysing forestry problems in the overall context of natural resource use, sustainable land management practices and environmental protection.

Forest policy teaching requires a solid disciplinary basis in the theoretical concepts, models and research methodologies of political science. Academic courses in forest policy and forest law should offer, for instance, a comprehensive knowledge of public policy making, governance networks and multilevel political processes.

Forest economics related to private and public land management should focus on a comprehensive understanding of entrepreneurial decisions and management strategies. Knowledge of business economics, analytical skills, social capabilities and leadership are primary teaching goals.

Professional foresters need to understand public values related to environmental, recreational and landscape services. The leading concepts, theories and research methodologies of resource economics, environmental economics and ecological economics, as they relate to the use and management of forests, have to be included in forestry curricula.

Social and cultural developments in modern societies as well as the historical dimensions of societal changes in attitudes towards forests are an integrating part of academic programmes for university forestry students. Knowledge of the dynamic changes in humans' relationship to forests, nature and environment is the primary focus of teaching.

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*Шмітхузен Ф.*

**БОЛОНСЬКИЙ ПРОЦЕС – ЗАКЛИК ДО ІННОВАЦІЇ В ЛІСОВІЙ ПОЛІТИЦІ, ЕКОНОМІЧНІЙ ОСВІТІ ТА ДОСЛІДЖЕННЯХ**

*Інститут рішень щодо навколишнього середовища, відділ екологічних наук, Швейцарського Федерального Інституту Технологій, Цюріх, Швейцарія*

Болонський процес призводить лісове господарство і лісову освіту в контекст розвитку глобальної економіки, а також всесвітньої турботи про захист середовища та зміни клімату. Це стимулює інтеграцію лісового господарства у мережу невиснажливого землекористування і поєднання досвіду лісового господарства

та нових наукових знань і методології досліджень. лісовим професіоналам потрібні всебічні загальноосвітні знання, якщо вони мають утриматися на тлі швидко мінливих соціальних, економічних і політичних проблем. У той же час їм потрібно зрозуміти локальні й культурні аспекти лісового господарства, що розвивається. Це потребує об'єднаного підходу до управління лісами, захисту довкілля і збереження ландшафтів. Для підтримки основи природних ресурсів і лісів, в яких ведеться господарство, у невиснажливій формі необхідна викладацька програма, що об'єднує політику, закон, ділову економіку і управління, складові лісових ресурсів і екологічної економіки.

**Ключові слова:** практика землекористування, захист природних ресурсів, лісова продукція, екологічні послуги, управління лісовими екосистемами.

*Шмитхузен Ф.*

**БОЛОНСКИЙ ПРОЦЕСС – ПРИЗЫВ К ИННОВАЦИИ В ЛЕСНОЙ ПОЛИТИКЕ, ЭКОНОМИЧЕСКОМ ОБРАЗОВАНИИ И ИССЛЕДОВАНИЯХ**

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Болонский процесс приводит лесное хозяйство и лесное образование в контекст развития глобальной экономики, а также всемирной заботы о защите окружающей среды и изменениях климата. Это стимулирует интеграцию лесного хозяйства в систему неистощимого землепользования и сочетание опыта лесного хозяйства, новых научных знаний и методологии исследований. Лесным профессионалам нужны всесторонние общеобразовательные знания, если они должны удержаться на фоне быстро меняющихся социальных, экономических и политических проблем. В то же время им нужно понять локальные и культурные аспекты развивающегося лесного хозяйства. Это требует объединенного подхода к управлению лесами, защите окружающей среды и сохранению ландшафтов. Для поддержания основы природных ресурсов и лесов, в которых ведется хозяйство, в неистощимой форме требуется программа преподавания, которая объединяет политику, закон, деловую экономику и управление, составные части лесных ресурсов и экологической экономики.

**Ключевые слова:** практика землепользования, защита природных ресурсов, лесная продукция, экологические услуги, управление лесными экосистемами.

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