



Working Paper

## Public policy impacts on European forest sector development

**Author(s):**

Schmithüsen, Franz Josef; Sasse, Volker; Thoroe, Carsten

**Publication Date:**

2007

**Permanent Link:**

<https://doi.org/10.3929/ethz-a-005960765> →

**Rights / License:**

[In Copyright - Non-Commercial Use Permitted](#) →

This page was generated automatically upon download from the [ETH Zurich Research Collection](#). For more information please consult the [Terms of use](#).

*Working Papers*  
*International Series*

07/1

*Forest Policy and Forest Economics*  
*Institute for Human-Environment Systems*  
*Department of Environmental Sciences*

***Public Policy Impacts on European  
Forest Sector Development***

***Franz Schmithüsen, Volker Sasse and  
Carsten Thoroë***

*Source:*

*Dubé, Y.C.; Schmithüsen F., Eds., 2007:  
Cross-sectoral policy development in forestry,  
163-173.*

*Oxford U.K., CAB International / Oxford  
University Press.*

Zurich 2007

**ETH**

Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

*Working Papers International Series Forest Policy and Forest Economics*  
*Swiss Federal Institute of Technology (ETH), Zurich, Switzerland*

*Series Editor: Prof. Dr. Franz Schmithüsen, Department of Environmental Sciences*  
*E-mail: franz.schmithuesen@env.ethz.ch*

## **Content**

Introduction	3
Biodiversity and nature conservation	5
Globalisation, innovation and market structures	6
Countries with economies in transition	7
Regional and rural development	8
Energy and environment	9
Impacts on policy and market developments	11
Probability of policy scenario areas occurrence	11
Policy impacts on forest sector parameters	12
Conclusions	15
References	16

## Public policy impacts on European forest sector development

*Franz Schmithüsen, Volker Sasse and Carsten Thoroé*

### Introduction

Under the auspices of the United Nations Economic Commission for Europe Timber Committee and the European Forestry Commission of the United Nations Food and Agriculture Organization (FAO), a series of studies have been undertaken over the past fifty years on the trends and prospects for the forest and forest industries sector. The most recent contribution to this series is the new European forest sector outlook study (UNECE/FAO, 2005). During its preparation, it was decided to carry out a special policy study providing information on relevant public policy domains that have an influence on the future development of forests and of the forestry sector (Thoroé *et al.*, 2004).

The policy study was initiated by a team of specialists, representing officially nominated national correspondents, major stakeholder groups in the forest sector, and outlook specialists. Its objectives were as follows:

- (1) To identify public policy scenario areas with major impacts on the European forest sector;
- (2) To identify driving forces, the stakeholders involved, and the changes expected to result from those forces;
- (3) To provide guidance for alternative (to the baseline policy scenario) projections of roundwood supply and demand for forest products.

The work started in 2001 with an intensive survey of publications and an analysis of policy documents by the secretariat, to provide a base for further analysis. Possible forest sector developments and relevant policy domains, as derived from the literature review, were initially structured into 19 scenario areas (*Table 1*), describing policy issues with relevance to the forest sector in Europe. The main criteria for defining policy scenario areas are significance in terms of policy domains, regional applicability and specifics of the role of stakeholders.

During an initial inquiry, experts familiar with forest sector development in Europe were asked to indicate their expectations about the importance of the identified policy scenario areas. On the basis of ranking provided by the experts, 13 scenario areas were marked with a high priority during the inquiry and retained for further analysis. A second round of expert assessment was organized in the form of a 'Delphi inquiry'. This was addressed to a broader group of forest sector stakeholders from various countries and international organizations. They were asked (1) to evaluate the probability of occurrence of each of the policy scenarios; (2) to estimate the expected impacts, in terms of variation from a business-as-usual baseline policy scenario, on various forest sector parameters (forest area, production, trade and consumption of forest products); and (3) to identify the specific driving forces for each of the expected policy scenarios. The analytical outcomes were grouped into five policy scenario packages. The main reason for this grouping was to combine similar scenario areas in terms of issues, concerned stakeholders and policy experts dealing with these issues.

**Table 1 – Impact on forests and the forest industry sector by policy scenario area**

Policy scenario area	Impact 1 to 5 (highest to lowest priority)	Rank	Standard deviation	Level			
				Local	National	Regional	Global
Nature conservation	2.09	1	0.98	x	x	x	
Nature-oriented forest management	2.09	1	1.02		X	x	x
Promotion of social/environmental benefits from forestry	2.14	2	0.76		X	x	
Competitiveness	2.17	3	0.92		X	x	x
Stabilization in Eastern Europe	2.46	4	1.20		X	x	
Changes in land use	2.48	5	1.09	x	X	x	
Energy policy	2.50	6	1.20		x	x	
Global trade liberalization	2.54	7	1.15		x	x	x
EU enlargement	2.64	8	0.74		x	x	
Waste management	2.67	9	0.98		x	x	
Innovations in wood-processing technologies and in wood products	2.79	10	1.08		x	x	
Climate change	2.79	11	1.26			x	x
Consequences of international negotiation processes	2.82	12	1.40		x	x	x
Pollution	2.91	13	1.16		x	x	
Social and demographic developments	2.96	14	1.25	x	x		
Changes in institutions and administration of the forest sector	3.02	15	1.39		x		
Innovations in harvesting and transport	3.15	16	1.09		x		
Trends in renovation and modernization of housing facilities	3.20	17	1.09		x		
Innovations in information technologies	3.26	18	1.30		x		

Source: Thoroé *et al.* 2004: page 13.

Quantitative steering parameters were elaborated as an input to the econometric modelling of forest product markets and the simulation of developments of forest resources (e.g. gross domestic product growth rates, income, price elasticity, changes in forest cover). The respondents' answers were systematically differentiated between three major sub-regions: European Union/European Free Trade Association countries, Central and Eastern European countries and countries belonging to the Community of Independent States.

The following sections of the paper focus on the findings of the research described above. It presents the profile of the public policy scenario packages and areas, the assessment of the probability of their occurrence, their likely impacts on specific forestry parameters, and the driving policy and market forces that are likely to influence the future development of the European forest sector.

Five policy scenario packages, each of them with a number of policy scenario areas, were identified and retained for further examination:

- Biodiversity and nature conservation,
- Globalization, innovation and market structures,
- Countries with economies in transition,
- Regional development,
- Energy and environment.

### **Biodiversity and nature conservation**

Conservation of biodiversity has been identified as an important objective in promoting sustainable forest management and an increase in forest area. In effect, the need to conserve biodiversity is one of the principal elements of several international agreements. At the global level, the most important of these to mention are the Convention on Biological Diversity and the Forest Principles, or the non-legally binding authoritative statement for a global consensus on the management, conservation and sustainable development of all types of forest adopted in 1992 at the United Nations Conference on Environment and Development (UNCED). At the pan-European level, the 1993 Helsinki Ministerial Conference on the Protection of Forests in Europe adopted resolution H2 'General Guidelines for the Conservation of the Biodiversity of European Forests'. Subsequently, the Lisbon Ministerial Conference in 1998 endorsed the work programme 'Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems 1997–2000'. With a communication from the Commission to the Council and the European Parliament in 1998, the European Community biodiversity strategy was adopted, establishing a general framework for appropriate European Union policies and instruments to meet the obligations of the corresponding UNCED Convention.

Due to the interplay between biodiversity preservation and sustainable wood supply, the commercial interests of wood producers and the demands of other forest land users are affected. A number of relevant stakeholder groups with differing interests are involved. Forest owners want to maximize the benefits, financial or otherwise, of their ownership. While private owners manage their forest for profitability, public owners could cover additional expenditure for biodiversity measures from public budgets. Government authorities responsible for policy making are involved, both at the national and local levels, mainly because of their responsibilities for providing society with non-wood products and services.

Non-governmental organizations (NGOs) – both those representing specific forest sector interests, such as forest owners and the wood-processing industries, as well as nature protection NGOs – play an important role in policy formation. Forest laws are being adapted to take account of countries' international commitments, and measures are being introduced to encourage their application in privately as well as publicly owned forests. Three policy scenario areas, and for each of these a set of the most relevant driving forces, have been identified to assess the impacts on the forest sector over the long term (*Box 1*).

### **Box 1 - Biodiversity and nature conservation**

#### 1.1 More emphasis on nature conservation and promotion of biological diversity of forest ecosystems

Driving forces:

- 1.1.1 Increasing the area protected for nature conservation, reduction of harvesting in such areas;
- 1.1.2. Building of ecological networks including core areas, corridors, buffer and restoration areas;
- 1.1.3 Diversification of species composition and structure of ecological communities in forests;
- 1.1.4 Intensified fire protection.

#### 1.2 More emphasis on nature-oriented forest management

Driving forces:

- 1.2.1 Eliminating/reducing clear-cutting, extending selection system of harvesting;
- 1.2.2 Planting endemic/indigenous species, combinations of coniferous and broad-leaved species;
- 1.2.3 Increasing rotation lengths;
- 1.2.4 Abandonment/reduction of drainage systems;
- 1.2.5 Reduction of use of chemicals (e.g. biocides) in forests.

#### 1.3 Demand for certification of forest management and wood products

Driving forces:

- 1.3.1 Certification of forest management;
- 1.3.2 Certification of forest products;
- 1.3.3 Certification in wood-processing industry.

### **Globalization, innovation and market structures**

In an increasingly competitive climate, it has become unavoidable for companies operating at the international level to take advantage of the possibilities of locating their operations in an optimum way in relation to their markets and sources of inputs in order to reduce costs. In practice, this has often meant transferring production, or part of it, to places with a favourable mix of factors (labour, capital, know-how, energy, raw materials, etc.). The downside has included closure of industries in some traditional producing areas with loss of jobs, and social and environmental abuses such as the use of child labour and uncontrolled emissions of pollutants. The capacity of a country's population and industrial sector to benefit from globalization is associated with the ability to develop new technology or to adopt it by importing it from elsewhere. This is linked to a country's capacity to attract and utilize effectively the appropriate factors of production, notably capital.

Most of the industrially advanced countries in Western Europe fall into the group of technological innovators, whereas some of the Central and Eastern European countries belong today to the group of technological adopters. The ability or inability to benefit from technological developments appears to be a major factor leading to the widening gap between rich and poor countries. The reversal of this trend requires the application of development strategies to ensure that the latter also have better access to technological innovation. Major stakeholders in the processes of globalization and innovation are the forestry enterprises and those in the wood-processing industries and trading enterprises, as well as their employees and their representatives, the trade unions. Governments – and in particular those departments dealing with company law, industrial development and negotiations on international trade – are also concerned. Scientific and educational institutions have a significant role to play in the development of new technology and its transfer and application. The European Union, because of its programmes on innovation, and international organizations and financial institutions involved in development assistance and capital transfer, have a direct interest as well. Two scenario areas and related driving forces were retained in the globalization policy scenario package (*Box 2*).

### **Box 2 - Globalization, innovation and market structures**

#### 2.1 Impact of globalization on the competitiveness of the European forest and forest industry sector

Driving forces:

- 2.1.1 Increasing international flows of capital;
- 2.1.2 International relocation of capacities;
- 2.1.3 International merging of companies.

#### 2.2 Intensified innovations and changes in competitiveness of wood products

Driving forces:

- 2.2.1 Innovations in harvesting techniques and facilities;
- 2.2.2 Innovations in wood-processing technologies;
- 2.2.3 Development of new products, e.g. engineered wood;
- 2.2.4 Progress in transport and logistics;
- 2.2.5 Innovations in information technologies;
- 2.2.6 Introduction of new non-wood commodities;
- 2.2.7 Development of new fields of application.

### **Countries with economies in transition**

The twelve countries of the Community of Independent States and the fifteen countries in Central and Eastern Europe are in the process of transition from planned economies to various forms of market economy, following the breakdown of their former political regimes at the beginning of the 1990s. The countries with economies in transition account for 85% and the Russian Federation alone for 77% of the total forest and other wooded land area in Europe (1150 million hectares). These countries' share of Europe's wood processing is more modest: in the case of sawnwood production, their share was about 35% in 2000 and less for other product groups.

The pace of transition, including the restitution and privatization of some forests and industries, has varied considerably from country to country, depending on the policies adopted, the potential for change and the need to seek access to external markets, especially in Western Europe. In the Russian Federation, for example, the forests have remained under state ownership, while much of the wood-processing sector has been transferred to private or joint stock companies. In Slovenia, 70% of forests are now privately owned. The proportion in Poland, at 17%, is much the same as before the transition began, while in Slovakia it is 44% and will rise further. Privatization and restitution have resulted in a considerable increase in the number of small-sized forest units, many of which are owned by persons without sufficient forestry experience. Some have been tempted to exploit their forests for short-term gain without consideration of the environmental consequences or sustainability.

The principal stakeholders in the process of integration of the former planned economies into the global market are the populations of the countries involved and their governments, institutions, industries and trading companies. Also involved are countries and international organizations providing assistance to the process, in particular the European Union and its member countries, who will also decide on its enlargement, the European Bank for Reconstruction and Development and the European Investment Bank. Other stakeholders are companies in partner countries, including those interested in direct foreign investment in the countries with economies in transition as well as certain NGOs, particularly those concerned with environmental protection. A large part of the forest-product trade in the countries with economies in transition is conducted with companies located in the European Union, which is consequently affected by business cycles in these countries. Two policy scenario areas have been defined for this scenario package (*Box 3*).

### **Box 3 - Countries with economies in transition**

#### **3.1 Strengthening policies to develop the market framework in countries with economies in transition**

Driving forces:

- 3.1.1 Recovery of forest and forest industry sector in countries with economies in transition;
- 3.1.2 Changing ownership of forest land (e.g. privatization and restitution).

#### **3.2 Progress in European Union enlargement**

Driving forces:

- 3.2.1 Accession of the Central and Eastern European countries to the European Union;
- 3.2.2 Accession of other European countries.

### **Regional and rural development**

Many governments, as well as the European Union, have spent large sums in policies to preserve social structures in rural areas, mainly through the subsidization of agriculture. Partly as a result of this, and partly through market forces, productivity has increased greatly, to the point at which employment in agriculture has fallen to account for only a small percentage of the total national labour forces and, especially in the European Union, food production exceeds demand. The need to react to this situation has been recognized for some time, and moves have been initiated to reform the European Union's Common Agricultural Policy. The practical difficulties of implementing such a major change in policy have proved immense, however, not least in finding ways to avoid damaging the social fabric in rural areas and to

maintain employment and living standards. It has been envisaged that increased forestry activity, including afforestation, could be one of the solutions in certain areas. The fact that the social and environmental functions of the forest are mostly not income-generating (hunting, the commercial harvesting of non-wood forest products and some forms of recreation may be exceptions), coupled with the fact that in most western European countries the major part of the forest area is privately owned, raises the issue of how the provision of those functions is to be financed.

The main stakeholders in this policy scenario package are the owners of land, including forest owners, whether state, municipal, private or other; national and local authorities; forest services in their policy-making role and their counterparts dealing with other sectors of rural and urban development; farmers and other land users; those employed in the countryside, including farm and forestry workers, their labour unions, and NGOs concerned with nature protection and landscape management. Members of the general public, both town and countryside dwellers, are also stakeholders in their role of 'consumers' of the benefits that forests and landscapes provide. Three policy scenario areas have been considered within this policy scenario package (*Box 4*).

#### **Box 4 - Regional and rural development**

##### 4.1 Incentives for social/environmental benefits from forestry and wood products use

Driving forces:

- 4.1.1 Economic incentives for protective and recreational services of forests;
- 4.1.2 Economic incentives for nature-oriented management of forests;
- 4.1.3 Economic incentives for conversion of forests.

##### 4.2 Changes in agricultural, rural and regional development policies

Driving forces:

- 4.2.1 Changes in rates of subsidization in agricultural production and exports;
- 4.2.2 Extension of Common Agricultural Policy elements, i.e. afforestation of agricultural land;
- 4.2.3 Implementation of forestry measures in agriculture, e.g. biomass production;
- 4.2.4 Promotion of forest and forest industry sector as an integral part of rural development.

##### 4.3 Social and demographic developments

Driving forces:

- 4.3.1 Migration of rural population;
- 4.3.2 International emigration/immigration;
- 4.3.3 Ageing of population.

#### **Energy and environment**

UNCED in 1992 adopted the Framework Convention on Climate Change, in which signatory countries supported measures to bring the causes of climate change under control, notably by slowing down or arresting the net emissions of greenhouse gases. This could be achieved by greater efficiency in the use and conservation of energy, by increasing the use of alternative fuels (alternative to fossil fuels), and by taking measures to re-absorb the carbon dioxide

(CO<sub>2</sub>) from the atmosphere. Forestry and the forest industry sector could play a role in all of these. For example, the production of sawnwood and wood-based panels requires considerably less energy than that of competing construction materials, such as steel, concrete, glass and plastics, and the former have good thermal insulation properties and come from a renewable resource. The burning of wood is generally considered to be neutral so far as its impact on the environment is concerned, because the main emission is CO<sub>2</sub>, which is taken back into biomass by the process of photosynthesis. And if established on a sufficiently large scale, plantations act as net carbon sinks. The use of wood for housing and for energy generation has a long tradition in rural areas of Eastern European countries, which could influence the forest sector in these countries.

The principal stakeholders in this policy scenario package are governments, which have the responsibility of setting the environmental standards for the production and use of energy, the producers and users of all types of energy, consumers and consumer groups, the wood-processing industries and users of wood products, such as the construction sector. Environmental NGOs play active roles in raising public awareness of the issues involved and in putting pressure on the policy makers. The forestry sector is a major stakeholder as a provider of wood fuel and, potentially in the future, in the sequestration of carbon. In this policy scenario package, three policy scenario areas have been identified (*Box 5*).

#### **Box 5 - Energy and environment**

##### 5.1 Promotion of renewable energy sources

Driving forces:

- 5.1.1 Emphasizing use of wood biomass as a source of energy;
- 5.1.2 Taxing fossil energy sources and utilization;
- 5.1.3 Abandonment of nuclear power stations;
- 5.1.4 Promotion of energy saving technologies.

##### 5.2 Improvement of waste management and emission control

Driving forces:

- 5.2.1 Increasing recycling of waste paper and waste wood;
- 5.2.2 Implementation of best practices in wood-processing industry;
- 5.2.3 Implementing/extending integrated pollution control;
- 5.2.4 Rationalizing use of wood products;
- 5.2.5 Reduction of harvesting and transport losses of roundwood.

##### 5.3 Climate change

Driving forces:

- 5.3.1 Impacts of climate change on forest growth;
- 5.3.2 Acceptance of forests as natural sinks for the compliance of emission reduction;
- 5.5.3 Acceptance of wood products as carbon sinks.

## **Impacts on policy and market developments**

Respondents were invited to indicate which driving forces were most probably having an impact on policy and market development in the five identified policy scenario packages and to ascertain to what extent regulatory instruments (laws and regulations), economic instruments, and market forces would be of importance. The most significant driving forces identified for the scenario package 1, 'biodiversity and nature conservation', are the reduction in harvesting volumes caused by an increase of nature reserves and other protected areas (regulation and/or incentives); the elimination/reduction of clear-cutting areas and the limitation/prohibition of chemicals in forests (laws and regulations); the promotion of selective harvesting systems and silviculture practices close to nature (incentives and/or market forces); and the certification of sustainable forest management as well as environmentally friendly wood-processing technologies (market forces).

The policy scenario areas in package 2, 'globalization, innovation and market structures', have been qualified as largely market-driven. Trade policies opening national markets and liberating international trade, high-quality research and educational facilities to foster innovation, and competitive market access have to set the frame conditions for private sector activities.

The inquiry findings referring to policy scenario package 3, 'countries with economies in transition', confirm that the main driving forces result from an overall recovery of the economy, from a restructuring of the public sector, from privatization of forestry operations and industrial wood processing, and from the restitution of former private forest holdings. Building up an appropriate market framework in the countries with economies in transition needs to be induced by a balanced combination of new laws and regulations, economic instruments and private sector market forces.

Driving forces for changes in policy scenario package 4, 'regional development', are expected to come from a reduction of subsidies in agriculture and a move to market forces. Incentives for protective and recreational services of forests have been considered as an important economic instrument to regional development policies.

The replies concerning package 5, 'energy and environment', indicate that all three scenario areas are presumably very important as driving forces. This refers in particular to measures implementing pollution control, promoting higher levels of wood utilization by private and public consumers, fostering sustainable forest management and more efficient wood processing, as well as responding to the political demand to use production forests and afforestation/reforestation as CO<sub>2</sub> sinks in order to comply with internationally agreed emission reductions. More efficient utilization of forest resources, higher levels of wood processing and consumption, and recycling of waste are expected to be mainly market-driven. The determination of emission standards and effective pollution reduction, on the other hand, first and foremost require consistent public policy frameworks and a concerted use of regulatory and economic instruments.

## **Probability of policy scenario areas occurrence**

*Table 2* shows the estimates of probability (in percentages), structured by policy scenario areas, packages and sub-regions. It summarizes the results of the research process outlined in the introduction, as well as the review provided by the meeting of expert working groups. An assessment of 100% probability means that, in the opinion of the inquiry addressees and the

working group experts, a given policy scenario is most likely to occur. An estimate of 20–30%, on the other hand, means that the probability of occurrence of a given policy scenario is low.

It is striking that the only three scenario areas indicated in Table 2 with the highest probability rating throughout the European region are those in policy scenario package 5, ‘energy and environment’. At the other extreme, demand for certification of forest management and wood products obtained a relatively low rating in all sub-regions. On a weighted basis, the policy scenario areas with the highest probability ratings were 5.1 (renewable energy resources), 5.2 (waste management and emission control) and 5.3 (climate change).

These were followed by policy scenario areas 1.1 (nature conservation and biological diversity), 2.2 (innovation and competitiveness), 4.2 (agriculture, rural and regional development policies), 4.3 (social and demographic developments), 1.2 (nature-oriented forest management), 2.1 (globalization and European competitiveness), and 4.1 (incentives for social and environmental benefits). One may also note the policy scenario areas 3.1 (policies to develop the market framework) and 3.2 (E U enlargement policies), with their high scores in the Central and Eastern European countries and the Community of Independent States sub-regions.

Without overlooking the other policy scenario areas entirely, this list can provide guidance on which policy scenario areas should receive particular attention in considering impacts on forestry and wood processing. Policy scenario areas by sub-regions with an estimated probability of 70% and higher are expected to occur in most of the countries in the sub-region and will have significant impacts on the future development of the European forest sector.

### **Policy impacts on forest sector parameters**

Estimating the extent of future policy impacts on specific forest sector parameters was probably the hardest part for the respondents and the expert working groups. Estimates were made of the policy impacts and market developments in each scenario area for the following four sector parameters:

- Area of forest available for wood supply
- Roundwood removals and production of wood products
- Consumption of forest products
- Trade (exports and imports).

With regard to the parameter ‘area of forest available for wood supply’, it can be stated that on the whole, no drastic changes in comparison with the baseline assumptions are to be expected. A lower growth rate has been estimated due to policy impacts from policy scenario area 1.1 (nature conservation and promotion of biological diversity) in the European Union/European Free Trade Association and Central and Eastern European countries sub-regions, and from policy scenario area 1.3 (certification of forest management and wood products) in all sub-regions. On the other hand, the policy effects of policy scenario area 4.2 (agriculture, rural and regional development policies) are assessed as having a positive impact on forestry land use, causing higher growth and increased production in the European Union/European Free Trade Association and Central and Eastern European countries sub-regions. Positive effects on wood production in the Central and Eastern European countries and those with economies in transition are also expected from developments in policy

scenario area 3.1 (strengthening policies to develop the market framework in countries with economies in transition).

**Table 2 – Probability occurrence estimates <sup>(1)</sup> of policy scenario areas (%)**

Package	Policy scenario area	EU-EFTA	CEE	CIS
1. Biodiversity, including nature conservation				
1.1	More emphasis on nature conservation & promotion of biological diversity of forest ecosystems	>90	50–70	50–70
1.2	More emphasis on nature-oriented forest management	North >90; South 50–70	50–70	50–70
1.3	Increasing demand for certification of forest management & wood products	~50	20–30	20–30
2. Globalization, innovation and market structures				
2.1	Impact of globalization on the competitiveness of the European forest & forest industry sector	50	60	70
2.2	Intensified innovations and changes in competitiveness of wood products	60	70	75
3. Countries with economies in transition				
3.1	Strengthening policies to develop market framework in countries with economies in transition	75 (2)	90	80
3.2	Progress in European Union enlargement	80 (2)	100	50
4. Regional development				
4.1	Incentives for social/environmental benefits from forestry and wood products use	65	60	50 (2)
4.2	Changes in agricultural, rural and regional development policies	80	80	40 (2)
4.3	Social and demographic developments	50	70	90 (2)
5. Energy and environment				
5.1	Promotion of renewable energy resources	100	100	100
5.2	Improvement of waste management and emission controls	100	100	100
5.3	Climate change	100	100	100

(1) Identified by the respondent of inquiry II and revised by the working groups at the December 2001 meeting of the Team of Experts; (2) Secretariat estimates

EU-EFTA: European Union-European Free Trade Association; CEE: Central and Eastern Europe;

CIS: Community of Independent States.

Source: Thoroë *et al.* 2004: page 16.

Effects on the parameter ‘roundwood removals and production of processed products’ are anticipated in a rather similar manner. The estimated impacts for most of the policy scenario

areas are fairly consistent with the projected baseline developments. Only in a few cases are additional growth (higher or much higher) or decrease (lower) in comparison with the baseline assumptions considered as likely. In the longer-term perspective, increasing nature conservation measures, mainly in the European Union/European Free Trade Association sub-region, could slow down roundwood removals, a trend that should be seen in relation with the possible reduction of the forest area available for wood supply. Positive impacts on an increase in the production of processed wood products are estimated for policy scenario package 2 (globalization, innovation and market structures) for all sub-regions. Similar expectations have been articulated in relation to policy scenario package 3 (countries with economies in transition), indicating a higher growth potential as consistent with the recent dynamic developments for the sub-regions of the Central and Eastern Europe countries and countries with economies in transition. With regard to further strengthening of policies to develop appropriate market frameworks and further progress in European Union enlargement policies, the positive effect of roundwood removals has been assessed as high and the effects on the production of processed forest products as much higher than at the baseline. For policy scenario areas 5.1 (promotion of renewable energy resources) and 5.3 (climate change), important positive policy impacts were articulated by the respondents.

The inquiry results for the parameter ‘consumption of forest products’ indicate that all policy scenario areas in package 2 (globalization, innovation and market structures) will have some impact, although a limited one, on the consumption of wood products in the European Union/European Free Trade Association countries and a more pronounced impact in the countries with economies in transition. A rather low impact is estimated for the policy scenario areas in packages 1 (biodiversity, including nature conservation) and 4 (regional development). On the other hand, the respondents are of the opinion that the impacts of policy scenario area 3.1 (strengthening policies to develop the market framework in countries with economies in transition) are likely to increase the consumption in the European Union/European Free Trade Association sub-region and even more in the Central and Eastern European countries.

No significant impacts on the parameter ‘trade (exports and imports)’ are expected from the scenario areas in package 1 (biodiversity including nature conservation) and in package 4 (regional development). ‘Much higher’ trade is estimated for policy scenario area 3.1 (strengthening policies to develop the market framework in countries with economies in transition), probably affecting all sub-regions. The same observation refers to policy scenario 3.2 (European Union enlargement), again for all sub-regions. Policy scenario area 5.1 (promotion of renewable energy resources) could have a significant impact on forest-product trade in Europe as a whole.

## Conclusions

The study provides evidence for the growing and complex framework of public policies dealing with multiple economic, social and environmental benefits from forest land use and wood production in modern societies. Scenario areas such as biodiversity conservation and multifunctional nature-oriented forest management receive a fairly high estimation with regard to their probability of occurrence, but a rather low assessment of the anticipated impact. On the other hand, the empirical inquiry results provide indications that the main public policy impacts for future developments in the European forest sector are likely to come from cross-sectoral policy scenarios focusing on changes in agriculture and regional policies, globalization of trade and liberalization of consumer markets, and from environmental and energy policies. Changes in such policy areas will increasingly influence the sector's market framework in the future. Based on the assumptions about the anticipated impacts of the five policy scenario packages that have been identified, the study depicts two broad alternative trends that are significant for policy formation and implementation.

The *conservation trend* assumes further forest sector-specific progress towards biodiversity and nature conservation in forests, nature-oriented forestry management and certification of forestry practices. There will be increasing public pressure for further reduction of negative effects on forest stands from air pollution, as well as for more efficient environmentally friendly techniques in wood processing and waste management. Agriculture and regional policies will shift gradually towards incentives for forest land use in order to maintain and increase social and environmental benefits. The sustainable energy trend anticipates a significant increase of the use of renewable energy sources based on policy, technological innovations and changing attitudes among consumers. The forest area for wood supply is expected to increase, particularly due to additional short-term plantations. Regulatory as well as incentive measures for reducing the pollution contributing to climate change will become increasingly important.

The *globalization trend* focuses on macroeconomic assumptions of accelerated international trade and further market liberalization. This assumes additional economic growth, caused by a significant move towards technological progress and strengthening human capital, an increase in the resources devoted to research, and strong efforts to provide a high level of education and training. The macroeconomic assumptions for the European Union/European Free Trade Association countries are that policies aimed at accelerating technological progress and enhancing human capital will have to deal in particular with public environmental concerns. Given the high stock of capital per employee, combined with a comparatively low marginal productivity of capital, the increase in gross domestic product has been assessed as rather slow in the immediate future. For the two sub-regions of Central and Eastern Europe and the Community of Independent States, accelerated progress towards the market economy in conjunction with economic, social and political stabilization is to be expected. Policies enhancing savings and investment, improving human resources, and facilitating technological catching-up will lead to accelerated convergence. The policy scenario area 'strengthening policies to develop the market framework in countries with economies in transition' did in fact receive the highest values in terms of expected probability of occurrence and impacts.

Taken together, the findings of the policy study allow the following conclusions:

(a) Natural and economic potentials in Eastern Europe and in Russia in particular, in combination with further progress towards a market economy are expected to result in further growth in the forest sector in Europe. This trend will have a notable impact on forest-product trade as well as on forest land use.

(b) Forest sector stakeholders should realize that important forest-related decisions are also being taken in other policy domains. They have to engage in dialogue with stakeholders in other policy areas such as energy, trade, environment, renewable resources, and regional development. They have to highlight to politicians and citizens the benefits from sustained forestry land uses and timber utilization and the way in which these contribute to economic and social advancement.

(c) It is essential to combine the innovative energy of the European forest industries and to create concerted actions among all forest-sector branches. The goal is to make the necessary initial investments available for new infrastructure and innovations in forestry, wood processing and recycling.

(d) We live in a period of globalization of companies, NGOs, and international economic, social and environmental agreements and processes. A more proactive approach to promoting European experience in sustainable forestry management is warranted in a worldwide context.

## References

Thoroé, C., Peck, T., Guarín Corredor, H. and Schmithüsen, F. (2004) The Policy Context of the European Forest Sector. Geneva Timber and Forest Discussion Paper 34, United Nations, Geneva, 109 pp.

UNECE/FAO (2005) European Forest Sector Outlook Study 1960–2000–2020 – Main Report. Geneva Timber and Forest Study Paper 20, United Nations, Geneva, 231 pp.

**Working Papers International Series Forest Policy and Forest Economics;  
Swiss Federal Institute of Technology (ETH), Zurich, Switzerland  
Editor: Prof. Dr. Franz Schmithüsen, Department of Environmental Sciences  
E-mail: franz.schmithuesen@env.ethz.ch**

- 07/1 Schmithüsen Franz / Sasse Volker / Thoro Carsten  
Public Policy Impacts on European Forest Sector Development.  
Source: Dubé, Y.C.; Schmithüsen, F., Eds., 2007: Cross-sectoral policy development in forestry, 163-173. Oxford U.K., CAB International / Oxford University Press. (16 pages)
- 06/6 Schmithüsen Franz  
Forêts tropicales et mondialisation: Les mutations des politiques forestières en Afrique francophone et à Madagascar, 2006 : 25-31. Paris, Harmattan. (9 pages)
- 06/5 Schmithüsen Franz  
The Role of Forest Policy and Law in Managing the Natural Renewable Resource Base. Forstwissenschaftliche Beiträge Tharandt – Contributions to Forest Sciences, Nr. 28: 157-170, Stuttgart, Ulmer. (16 pages)
- 06/4 Schmithüsen, Franz / Seeland, Klaus  
European Landscapes and Forests as Representation of Culture. Cultural Heritage and Sustainable Forest Management – The Role of Traditional Knowledge. Source: Volume 1; 217-224 (2006). Ministerial Conference on the Protection of Forests in Europe, Warsaw, Liaison Unit. (12 pages)
- 06/3 Wild-Eck Stephan / Zimmermann Willi / Schmithüsen Franz  
Extension for Private Forest Owners – Insights from a Representative Opinion Poll in Switzerland. Source: Small-scale Forest Economics, Management and Policy (2006) 5 (2): 161-174. (14 pages)
- 06/2 Dubé, Yves C. / Lange, Glenn-Marie / Schmithüsen, Franz  
Cross-sectoral Policy Linkages and Environmental Accounting in Forestry. Published in Journal of Sustainable Forestry, Volume 23 (2006), Number 3: 47-66. (16 pages)
- 06/1 Sasse, Volker / Schaaff,, Constance / Schmithüsen, Franz  
Coordination of Policies Related to Forest Management. Source: Forest Science Contributions Forest Policy and Forest Economics No 35 (2006): 116-125, Zurich, Swiss Federal Institute of Technology, ETH. (12 pages)
- 05/12 Magnago Lampugnani, Vittorio  
The Construction of Nature – Central Park Revisited. (16 pages)
- 05/11 Magnago Lampugnani, Vittorio  
Die Konstruktion von Natur – Central Park neu besichtigt. Schweizerische Zeitschrift für Forstwesen 156 (2005) 8 : 288-296. (17 Seiten)
- 05/10 Corvol, Andrée  
Mutations et enjeux en forêt de Soignes: les années 1900. Source : Journal forestier suisse 156 (2005) 8 : 279-287. (18 pages)
- 05/9 Le Master, Dennis C.  
Environmental Policy Making and Landscape-Scale Management. Swiss Forestry Journal 156 (2005) 8: 274-278. (14 pages)

- 05/8 Scholz Roland W. / Seeland Klaus / Zimmermann Willi  
The Interface between Forest, Society and Landscape – Views and Reflections on the Occasion of the Retirement of Professor Franz Schmithüsen. Source: *Swiss Forestry Journal* 156 (2005) 8: 257-260; 306-313. (23 pages)
- 05/7 Le Master Dennis c. / Sample Alaric V. / Schmithüsen Franz / Sedjo R. A.  
Economic Models of Forest Management, Multiple Use and Sustainability. (22 pages)
- 05/6 Schmithüsen Franz  
El Papel de la Legislación Forestal y Ambiental en Países de América Latina para la Conservación y Gestión de los Recursos Naturales Renovables. Publicado en *IUFRO World Series 2005*, No 16: 5-21, Vienna, IUFRO Secretariat. (22 pages)
- 05/5 Bouriaud Laura / Schmithüsen Franz  
Allocation of Property Rights on Forests through Ownership Reform and Forest Policies in Central and Eastern European Countries. *Swiss Forestry Journal* 156 (2005) 8: 297-305. (20 pages)
- 05/4 Schmithüsen Franz  
Comprender el impacto transversal de las políticas – Aspectos jurídicos y de políticas. Publicado en *Estudio FAO Montes No 142* (2005): 7-50, Roma FAO. (42 paginas)
- 05/3 Schmithüsen Franz  
Analyser les impacts des politiques au niveau intersectoriel – Aspects Juridiques et politiques. Publié dans *Etude FAO Forêt No 142*: 5-47; Rome, FAO (2005) (42 pages)
- 05/2 Lazdinis Marius / Carver Andrew / Schmithüsen Franz / Toenisson Kristjan / Vilkriste Lelde:  
Forest Sector Concerns in the Baltic States – Implications for an Expanded European Union. Published in *Society and Natural Resources* (2005) 18: 839-848. (10 pages)  
Lazdinis Imantas / Lazdinis Marius / Carver Andrew / Schmithüsen Franz / Vilkriste Lelde  
Elite Concerns in Forest Sectors of Estonia, Latvia and Lithuania. Published in *Baltic Forestry* Volume 11 (2005) 1: 97-104. (11 pages)
- 05/1 Schmithüsen Franz  
Forests, Landscape and Society. Address to the Ceremonial Gathering of the Faculty for Forest Science and Natural Environment, June 2005; Aristotle University of Thessaloniki. (15 pages)
- 04/8 Giudici Fulvio / Bertogliati Mark / Schmithüsen Franz  
I Patriziati in Ticino – Analisi di alcuni casi con riferimento al ruolo, l'organizzazione e i problemi legati alla gestione del territorio. *Dati, Statistiche e Società* N. 4 (2004): 51-58. (14 pages)
- 04/7 Bauer Josephine / Mathleena Kniivilä / Sasse Volker / Schmithüsen Franz  
Common Forest Legislation Issues in European Countries – Reforestation obligations, public access and use of non-wood forest products; Summary Report. Forest Legislation in Europe; *Geneva Timber and Forest Discussion Paper 37, UNECE/FAO*. (14 pages)
- 04/6 Kohler Volker / Schmithüsen Franz  
Comparative Analysis of Forest Laws in 12 Sub-Saharan African Countries. *FAO Legislative Study On Line No 37, 2004*. <http://www.fao.org/legal/prs-ol/paper-e.htm> (24 pages)
- 04/5 Schmithüsen Franz  
Les forêts: témoins des besoins du passé et espaces de développement futur. *Journal Forestier Suisse* 155 (2004) 8: 328-337. (21 pages)
- 04/4 Schmithüsen Franz  
Forest Policy Development in Changing Societies: Political Trends and Challenges to Research. *Towards the Sustainable Use of Europe's Forests – Forest Ecosystem and Landscape Research*, EFI Proceedings No 49 (2004): 87-99; Joensuu, Finland. (20 pages)