14 Policy Developments Affecting Demand, Supply and International Trade of Forest Products: a European Perspective

(Keynote Address)

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Introduction

The topic of forest policy related to private forests is of high importance in most countries today. This paper aims at presenting a European perspective on policy developments affecting demand, supply and international trade of forest products, and is divided into three sections. The first gives an overview of main findings from a recent study 'Institutional and legal framework for forest policies in the East European and Central Asia region and selected OECD countries – a comparative analysis'. The second section presents results from two empirical studies from Europe on the impacts of environmental regulations in forestry, and the third section discusses some of the main factors influencing forest policy developments in Europe. Finally, some concluding remarks are given on future research needs.

I would like to emphasize that demand, supply and trade of forest products are a result of the interplay between at least the following four main factors:

1. The present setting of the forest sector (forests, forestry, forest industries).
2. Population and economic growth.
3. Technological change.
4. Policies and institutional aspects.

Thus, when we focus on the fourth of these factors, we should bear in mind that both demand, supply and trade of forest products are heavily influenced by all of these factors and that they interact both in space and time in rather complicated ways.

Main Findings from a Recent Study

This section outlines some of the important results from the study 'Institutional and legal framework for forest policies in the ECA region and selected OECD countries – a comparative analysis'. The study is presented in Solberg and Rykowski (2000) and is a report prepared for the World Bank's Group on Forest Policy Review and Strategy Development. The main purpose of the study was to draw out possible lessons of OECD (Organisation for Economic Cooperation and Development) and ECA (East European and Central Asia) country experiences regarding forest regulations, institutions, concessions policy, financing and resource pricing. I will briefly report seven major findings from the study which are of relevance here:

1. A broad range of literature exists which gives only a description of various forest policy instruments in use. However, very few studies exist which analyse the effectiveness and cost efficiency,

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not to say the costs and benefits, of various policy instruments. And even fewer studies exist which evaluate alternative policy instruments as applied in two or more countries. Statistical testing of hypotheses about the impacts of forest policy instruments hardly exist. One must therefore, to a large degree, rely on piecemeal or anecdotal information.

2. The impacts of one single policy instrument usually depend upon which other policy instruments it operates within. Of the three main types of policy instruments (laws and institutional incentives, information, and economic incentives), combinations of appropriate law/institutional instruments and economic ones, have proved to be effective in several Western European countries and have provided the most flexibility. The impacts of the informational policy instruments (extension service, education and research) are more long term, but also important when properly done.

3. Policies in other sectors than forestry are of great importance for forestry. In particular, policies related to agriculture and land-use, energy, transport, environment, trade and the general economy, such as general fiscal and monetary policy, are important because they may affect forestry. When considering forest policy changes, it is vital to include analyses of policies in these other sectors, as those policies might be significantly more important than those planned to be introduced in the forest sector. The concept of National Forestry Programmes (NFP) now being discussed a lot in Europe, is of great interest in this context.

4. Clearly defined property rights and transparent and fair legal arrangements are a prerequisite for good resource management, and for the other policy instruments to have any effect.

5. When public goods, often having no fair market prices, are involved, one should be extra careful when designing policies based purely on market incentives, particularly if irreversible impacts may occur. In the new ownership situation in several of the Eastern European and Central Asian countries, one main challenge is to create an appropriate legal framework (including sufficient sanction mechanisms) that encourage private forest management to secure vital public environmental services from forestry.

6. Forestry is characterized by many stakeholders and complicated ecological, economic, institutional and social relationships which often are dynamic and stochastic by nature. It is, therefore, particularly important to avoid situations where one (or just a few) stakeholder(s) becomes too dominant in the markets for economic goods as monopolists or monopsonists, or in the institutional/organizational 'market'.

7. Comparing OECD and ECA countries on forest policy issues, it seems that they differ particularly on the following points.

- Ownership and land tenure systems are in general more settled and thus less up for discussion in OECD countries.
- The legal framework in most of the ECA countries needs change, in particular regarding how to combine environmental and market issues.
- In several of the OECD countries, the legal restrictions on private forest owners are relatively flexible, but the forest authority is in a relatively strong position to guarantee their implementation. In several of the ECA countries, it is the opposite: legal restrictions are very high, but the forest authority is rather weak regarding implementation and sanction possibilities.
- Forest owner cooperation and arenas for public participation and conflict resolution are less developed in the ECA region.
- Corruption seems to be a greater problem in some of the ECA countries.
- Economic incentives are used more in OECD countries, although to varying degrees.
- Extension service for private forest owners is inadequate in most ECA countries, particularly for new private forest owners having very limited forest management experience.

Two Examples from Europe

Example 1: Economic costs of environmental regulations

The first example deals with economic costs of environmental regulations in Norway. The regulations analysed could hypothetically be brought about by a certification scheme or by law enforcement. The analysis was done by three department colleagues of mine and reported in Hoen *et al.* (1998) and Eid *et al.* (2001), and is based

on a dynamic optimization forest model for the whole of Norway and for the country divided into ten regions. The objective function of the model is to maximize discounted net present value under various environmental constraints (see Hoen *et al.*, 1998; Eid *et al.*, 2001, for more details). The environmental constraints are:

1. Minimum area 'set-aside' of existing old forests (5% is chosen).
2. Maintaining a minimum area covered by old forests through time (10% in the base scenario).
3. Retention of trees at final harvest (10 trees ha^{-1}).
4. Restricted treatment (i.e. here, 20% of the non-restricted potential revenue from treatment) is assumed within border zones areas surrounding water, streams, agricultural lands, hiking trails and woods (a border zone of 15 m is assumed in the results shown here).

Figure 14.1 shows the harvest quantity decline if all four of these constraints are imposed for the whole country.

Table 14.1 shows the reduction in net present value resulting from imposing all four constraints simultaneously; 19.6% reduction at 1.5% p.a. real interest rate of return, and 23% p.a. at 3.5% p.a. real interest rate.

Table 14.2 shows the regional differences and the effects of each of the four types of constraints. It can be seen that reducing treatments in the border zones and preserving 5% of the old forest are the most costly constraints. It can also be seen that to impose all constraints simultaneously is less costly than summing up the costs of each constraint evaluated independently, because some treatments contribute to meeting more than one constraint.

Example 2: The relative importance of market and environmental factors

The second example deals with the relative importance of environmental and market factors at the European level. It is a preliminary result from a

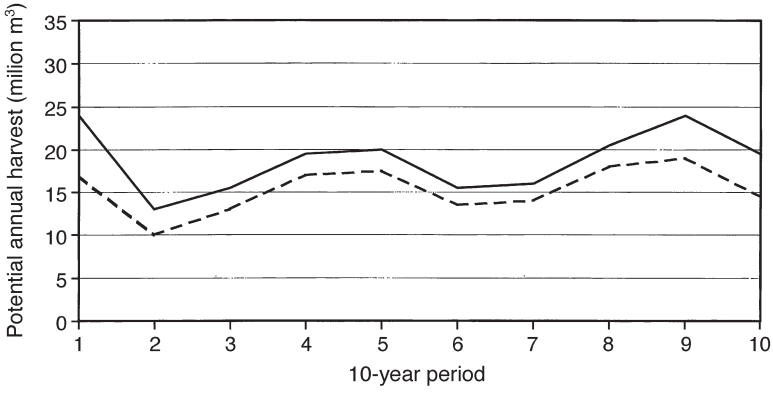

Fig. 14.1. Potential annual harvest level with no constraints (—, reference) and with all constraints implemented simultaneously (- - - -). Source: Eid *et al*. (2001).

Table 14.1. Net present value (NPV) for the reference alternative, and reduced value with all constraints implemented simultaneously.

		All constraints simultaneously		Renounced capital yield of the first year	
Interest rate (% p.a.)	Reference NPV (mill. NOK)	NPV-reduction (mill. NOK)	NPV-reduction (%)	(mill. NOK)	(NOK ha^{-1})
1.5	185,590	36,400	19.6	546	85
2.5	106,800	22,910	21.5	573	89
3.5	78,820	18,130	23.0	634	99

$1 = approximately 9 NOK.
Source: Eid *et al*. (2001), Hoen *et al*. (1998).

Table 14.2. Economic impacts – constraints simultaneously and individually.*

Region	Reference NPV (mill. NOK)	All constraints simultaneously	Individual constraints				
			Preserve 5%	Old forest 10%	Retention of trees	Border zones	Summarized
Østfold	5,740	78.5	91.8	95.8	99.0	86.7	73.3
Oslo and Akershus	8,960	77.5	90.8	96.0	99.1	86.4	72.3
Hedmark	23,900	78.1	90.3	95.4	99.1	87.9	72.7
Buskerud and Vcstfold	13,670	79.2	91.7	97.6	99.0	87.3	75.6
Oppland	13,090	79.2	90.0	97.8	99.0	99.2	75.9
Telemark	8,080	80.1	92.4	99.5	98.9	87.6	78.4
Aust- and Vest-Agder	8,540	79.5	91.6	99.2	98.9	87.8	77.5
Rogaland and Hordaland	4,880	81.2	93.0	100.0	99.1	88.2	80.3
Sogn & F. and Møre & R	6,390	81.4	92.9	100.0	99.0	88.5	80.4
Mid-Norway	13,540	74.9	89.8	99.0	99.0	84.3	72.1
Norway	106,800	78.5	91.1	97.6	99.0	87.2	74.9

*At real term interest rate 2.5% p.a.
Source: Eid *et al.* (2000), Hoen *et al.* (1998).

forest sector project at the European Forest Institute conducted by Dr Alex Moiseyev and myself, using a global partial equilibrium approach where forest supply, forest industry, production, transport, import and export are integrated in one global model. The model is detailed for Europe (each country in Europe is included as a region, whereas North America is included as five regions, South America as two regions, and Asia as four regions). The following scenarios are analysed:

0. Base scenario (most likely scenario).
1. 25% increase in annual forest growth (only in Europe).
2. 25% increase in annual forest growth (for the whole world).
3. 20% reduction in the standing stock of available timber in Europe due to increased protection of forests for environmental reasons.
4. Inelastic roundwood supply (reduced from 0.7 in base scenario to 0.5).
5. Elastic roundwood supply (increase from 0.7 in base scenario to 0.9).
6. High GDP growth (3.5% p.a. instead of 2.5% in base scenario).
7. Low GDP growth (1.5% p.a. growth instead of 2.5% p.a. in base scenario).

What are the impacts of these scenarios relative to the base scenario? Several impact results are interesting, but as an example, I will just focus here on the impacts on the sawlog harvest in Europe and on sawlog prices in one particular European country – Finland.

The annual sawlog harvest in Europe would increase most under scenario 1 (after 15 years the difference between this scenario and the base scenario is about 23 million m^3 or about 6%). Under the other scenarios the corresponding estimate is less than 15 million m^3 – or less than 4%.

The impacts on sawlog prices in Finland would be considerably higher:

- Compared to the base scenario the sawlog price in scenario 3 after 15 years is increased by 13% (from 57 to 64 US$ m^{-3}).
- Compared to the base scenario, sawlog prices in scenarios 1 and 2 after 15 years are reduced by 25% (from 57 to 43 US$ m^{-3}).
- The corresponding sawlog price impacts of the other scenarios are less than ± 4% after 15 years.

I must emphasize that these results are rather preliminary, and should be interpreted with care. However, they illustrate the importance of the uncertainty regarding environmental regulations and biological growth development as compared to the uncertainty in some vital economic factors.

Main Factors Influencing Forest Policy Development in Europe

If I should be pressed to answer the question: 'What are the main factors influencing forest policy development in Europe?' I would respond by emphasizing the following four factors:

1. *Forest certification and forest environmental issues*. These issues are, and will most likely remain, important. Vital here is the interrelationship between what the market can do through certification and what additional governmental regulations are necessary. The status of research in Europe on willingness to pay for forest products coming from certified forestry, indicates that consumers are not very willing to pay. Thus to produce a common good, such as biodiversity, governmental regulations may be warranted.

2. *International agreements*. We have in Europe two types: legally binding and non-legally binding (Gluck, 2000). Among the legally binding ones of potential importance for forestry in Europe, I would like to mention the Convention on Biological Diversity (from 1999); the UN Convention on Climate Change; and the Flora and Fauna Habitats Directive 92/43 of the EU, better known as Natura 2000, which forms the legal framework for the establishment of a coherent ecological network of special protection areas in all of Europe. In particular, the Convention on Climate Change has such a huge scope and potential that it may totally dominate a relatively small sector like forestry. The possible impacts on forestry and forest industries are uncertain, but might be positive both on the supply and demand side. On the other hand, the impacts of the Convention on Biological Diversity and Natura 2000 will most likely be negative for forest industries in Europe, although the magnitude of the impacts are unknown.

Regarding the non-legally binding initiatives (or so-called 'soft laws'), the most important one for European forestry is, in my opinion, the Pan-European Principles Criteria and Indication for Sustainable Forest Management signed in 1993 in Helsinki by 34 European countries. This was followed up in the Third Ministerial Conference on the Protection of Forests in Europe held in Lisbon in 1998 defining criteria, indicators and operational guidelines for sustainable forest management. The voluntary guidelines form the basis for the 'Pan-European Forest Certification' (PEFC) scheme.

3. *Policies in other sectors*. Particularly important here are the agriculture, energy and rural development policies. There is much uncertainty about the future of agriculture policies – especially with regard to the recent discussion related to foot and mouth disease, and the huge amount of agricultural subsidies going to EU states. The expansion of the number of EU members, with the addition of Poland, the Czech Republic and Hungary makes the CAP (the common agricultural policy) even more essential in this respect.

In addition there is the fact that the energy sector in Europe is rather inefficient. Already proposed deregulations of the energy markets indicate that energy prices in the EU are not likely to increase over the next 10–15 years. This will influence the demand for bioenergy. On the other hand, there is a so-called 'white paper' proposing that the EU should have 10% of the total energy consumption in each country coming from bioenergy. This would, if accepted, increase the demand for wood and chippings as energy sources.

4. Last, but not least, I would like to mention two factors which are not directly policy issues, but are factors which most probably will influence forestry in Europe and then, also possibly, the US forest sector. That is, first, the development of the Russian forest sector, which is very much linked to the general development of Russia. The second factor is the possibility of accelerated timber growth in Europe, the possible price consequences of which are illustrated in Example 2 above.

Some Concluding Remarks

This leads me to my final points, which are concerned with the role of research. Research has a vital role to play in all the matters previously described. As mentioned, most of the literature on forest policy instruments is of a descriptive nature, focusing on describing the various instruments used, but very little exists on their impacts. More research is urgently needed – in particular studies on the effectiveness, the cost efficiency and the distributional impacts of various policy tools. This should be done in several ways; for example by analysing the impacts of single policy instruments, and by comparing the impacts of alternative sets of

policy instruments in one country or as applied in two or more countries. This research should preferably concentrate on policy instruments which seem to have given *extreme* results – either very good or very bad – and the main reasons for these results. Examples of important questions to address are: Must certain necessary conditions be fulfilled to provide successful policy reforms? Are certain combinations of policy instruments preferable/not preferable? What are the transaction costs of various sets of policy investments? Forest economics has an important role to play here (Solberg, 1997). In my opinion, forest policy research in Europe has been dominated too much by non-economists (see, for example, Gluck, 1995; Tikkanen and Solberg, 1995). Sociology, political science and social anthropology are of course important, but policy analyses call for interdisciplinary research where sociology, political science, social anthropology and economics are combined, with varying degrees of intensity according to the problem being investigated. It is time that forest economists got more involved in policy analysis.

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