



Comparative analysis of wood market between the Baltic countries, Sweden, Poland, Germany, Finland and Denmark



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Abstract

The Project consists of the comparison of the wood markets in the countries around the Baltic Sea (Poland, Germany, Denmark, Sweden, Finland, Estonia, Latvia, and Lithuania).

After a short introduction into the present situation on the Global market in general and the position of the biggest companies situated in forest industry a particular analysis of the markets will be done in the term of comparative confrontation.

In the shadow of coming integration by the frames of EU this kind of draw up will describe position of the wood market and forestry itself and the possible changes in the free flow of the services, goods and capital in the European Community.

Also special characteristics in the possibilities of the countries in transition to move into the broad market of integrated Europe will be considered in relation to its potential stock and potential productivity.

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Introduction

I. Free trade in services, goods and capital

Free trade in services, goods and capital is one of the basic requirements for joining a single market such as the EU.

By free trade in services we mean that any person or company established in the EU has the right to offer services anywhere within the EU. No restriction is permitted unless this is justified in certain exceptional cases. There also can be no discrimination against a citizen of one EU country in favor of another simply on the grounds of nationality.

The right of establishment is another right that is given to all EU citizens. They are entitled to take up and pursue activities as self-employed persons as well as set up and manage other commercial activities such as companies in any EU country.

The difference between free movement of services and the right of establishment is usually related to duration. In the first case, services are offered on a one-off or temporary basis by an individual or company that remains based in its own country rather than setting up mill in the country where it offers the service. In the case of freedom of establishment, the individual or company actually moves to another country and establishes itself there on a more permanent basis. Both possibilities are allowed under EU law.

The economic activities that fall within the scope of the meaning of 'services' include all types of services, which are rendered as an economic activity, whether of an industrial or commercial character, craftsmen and professionals. In addition, there are a number of EU laws, which specifically regulate free trade in financial services, in particular, banking, insurance, investment services and securities markets.

In each case, the implications of EU membership will be free trade in services and therefore more competition in the provision of services both for local operators who are in Poland and for local operators that want to penetrate the EU market. So far, the EU market was not open for Polish service providers. This will change upon membership and Polish firms will be able to offer their services abroad. Equally foreign firms will be able to offer their services in Poland.

As with free trade in goods, more competition will present threats and opportunities for local services providers. And it will also present consumers with the benefits of competition, namely, wider choice, better quality and cheaper prices.

When an individual or company offers services or establishes itself abroad, this must be done in accordance with the national laws that apply in that country. This means that the individual or company must respect the laws in that country whether those relating to registration, licenses, taxation or social security. Free movement does not mean free for all. It simply means that EU citizens or companies have a right to operate on the same basis as individuals or companies in that country.

One of the problems faced by local business operators is the cost of bureaucracy with businesses having to put up with a maze of government controls, permits, licenses and having to deal with different government departments in each case. Although, trade licensing is a purely national and not EU matter, Poland is currently taking steps to revise the situation and introduce a new law, which should streamline trading, licenses into a simplified structure

II. Globalization

The forestry sector is in the grips of globalization, while at the same time attempting to make forestry development sustainable. Both trends are major conditioning factors for livelihoods, employment and working conditions. Forests need to be socially beneficial in order to contribute to the objective of sustainable development. Moreover, benefits derived from the existence and management of forests and accruing to people living in and around them may actually be a precondition for the conservation of forests. Forestry livelihoods, employment and working conditions should be discussed in the light of two powerful political and economic developments: globalization and sustainability.

Globalization is clearly gaining momentum in forestry and accelerating the structural changes that have taken place over recent decades. Falling tariffs and regulation facilitating and encouraging foreign direct investment are important driving forces. Globalization presents advantages and provides new opportunities, but also comprises risks. The far-reaching and rapid changes caused by globalization have also led to concerns over repercussions on employment levels and forest-based livelihoods, over job security, working conditions and rights at work (ILO, 2001a)

III. Objectives

The aim of this work is to confront the global wood market with the market in the respective countries with the focus on the main branches of forest industry. Also the major trends in the wood trade are juxtaposed with the productivity and potential stock in each of the countries. This work is a purely descriptive monograph with the objective to illustrate the main forest industry actors in the region and to some extent the possibilities for the development of the international forestry.

Material and methods

The project is based on already existing sources of data and statistical descriptions of each of the countries.

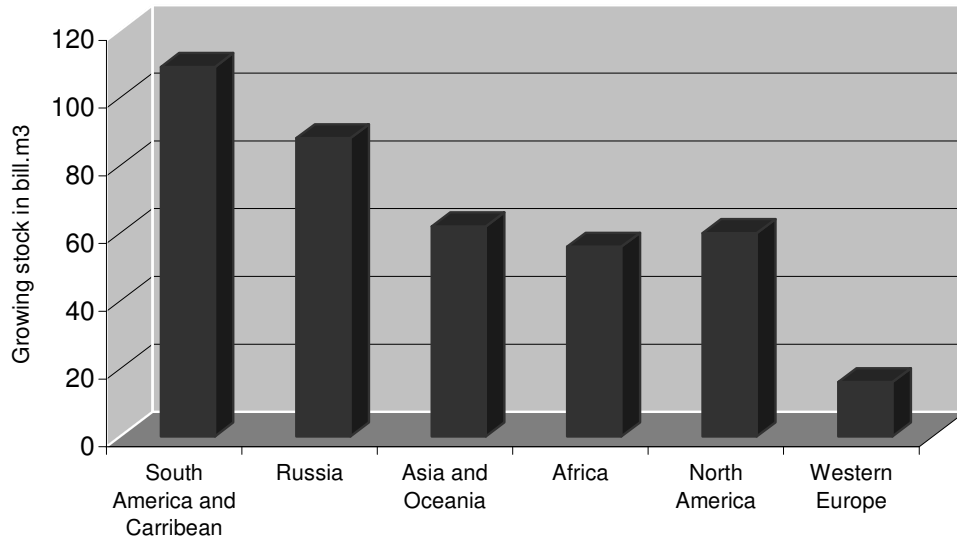
Because of broad range of the subject the project will be limited to the most important issues characterizing wood market and forestry. The crucial elements will be:

- general view on the country (land area, forestland, ownership structure, species composition etc.)
- potential stock in each of the countries
- potential productivity in each of the countries
- analysis of the most important branches of wood industry

The main source of information is the Internet, Statistical data of each of the countries, domestic and foreign literature available in English, information gathered during studies in Poland and Sweden.

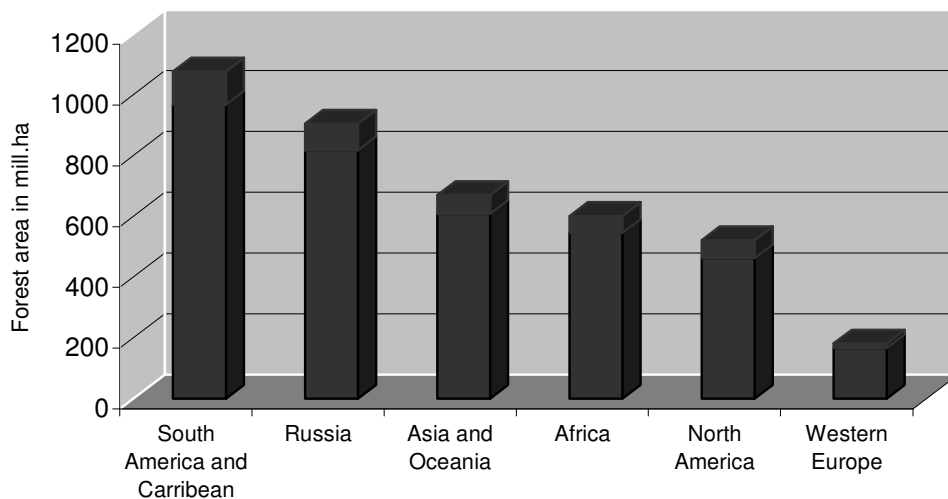
The short overview of the present situation on the Global wood market in general and the position of the biggest companies situated in forest industry (graph 1-16, table 1-2 and picture 1-2).

I. Global Forest Resources



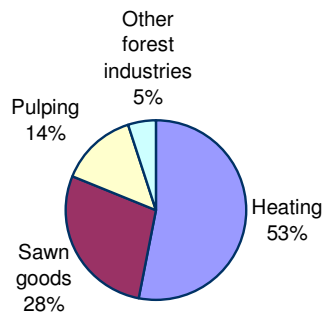
Graph 1. Global Forest Resources. Total Growing Stock 391 bill. m³ (SOURCE: FAO)

II. Global Forest Resources

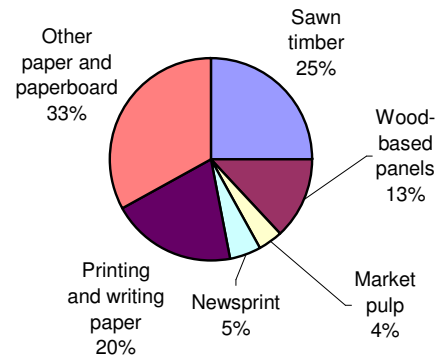


Graph 2. Global Forest Resources. Total Forest Area 3565 mill. ha (SOURCE: FAO)

III. Global wood marked

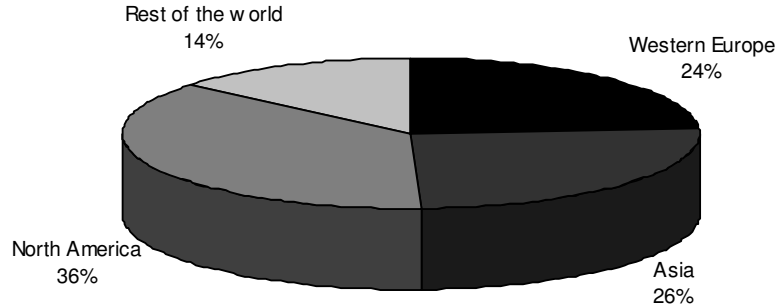


Graph 3. Global Wood Consumption
Approx. 3275 mill.m³ in 2000
(SOURCE: FAO)



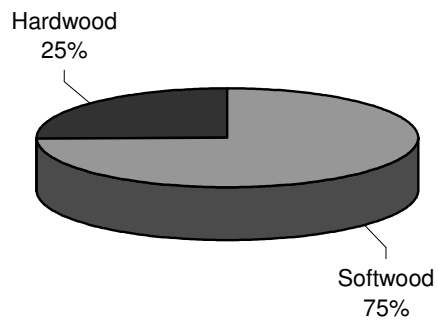
Graph 4. Global Forest Industry
Production value 450 bill. USD
(SOURCE: FAO, PPI)

IV. Production Value of the Global Forest Industry

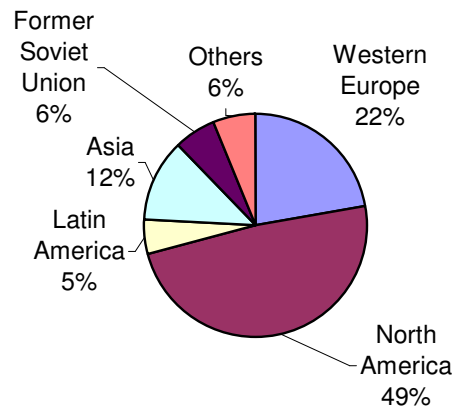


Graph 5. Share of the production value of the Global Forest Industry by region.
Total 450 bill. USD (SOURCE: FAO, PPI)

V. Global wood products marked

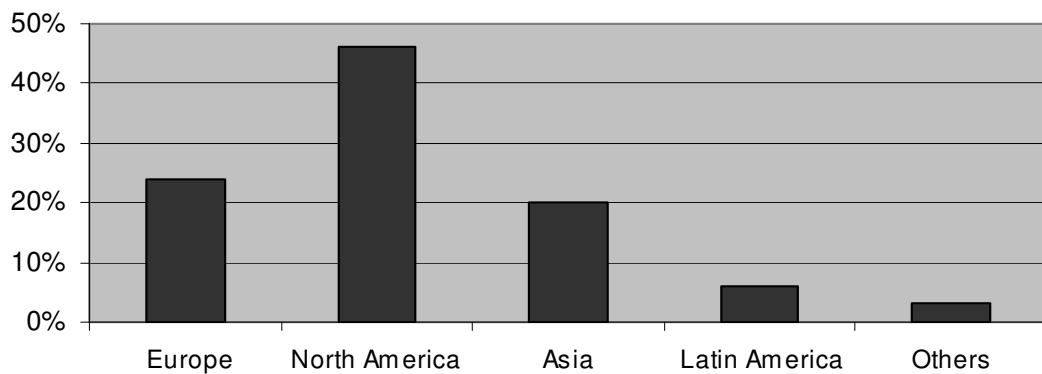


Graph 6. Global Production of Sawn Goods 1999
Softwood 323 mill. m³,
Hardwood 109 mill. m³



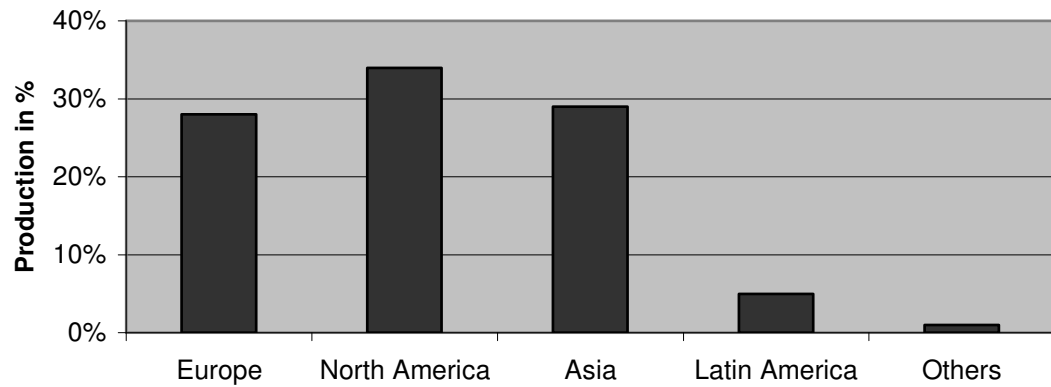
Graph 7. Global Sawn Softwood Production by Region
Total 323 mill. m³ (SOURCE: FAO)

VI. Global Production of Pulp



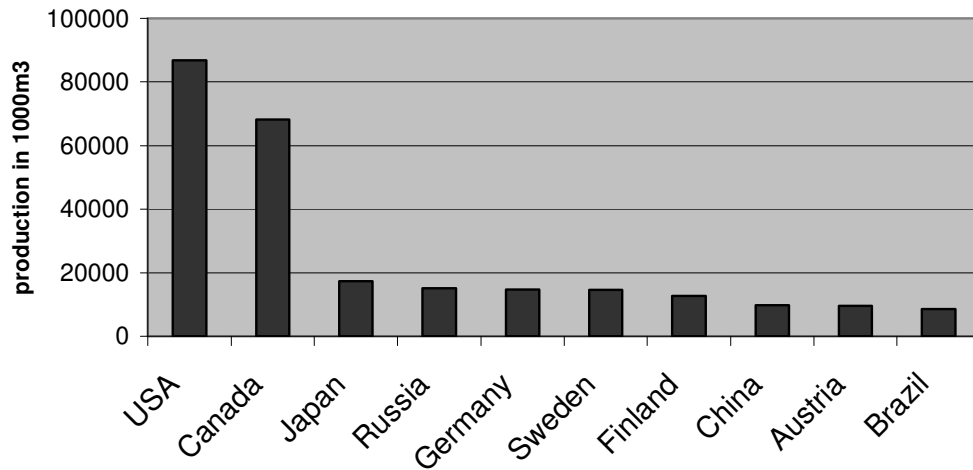
Graph 8. Global production of pulp by region 1999. Total volume 179 mill. tons
(SOURCE: FAO, PPI)

VII. Global Paper and Paperboard Production



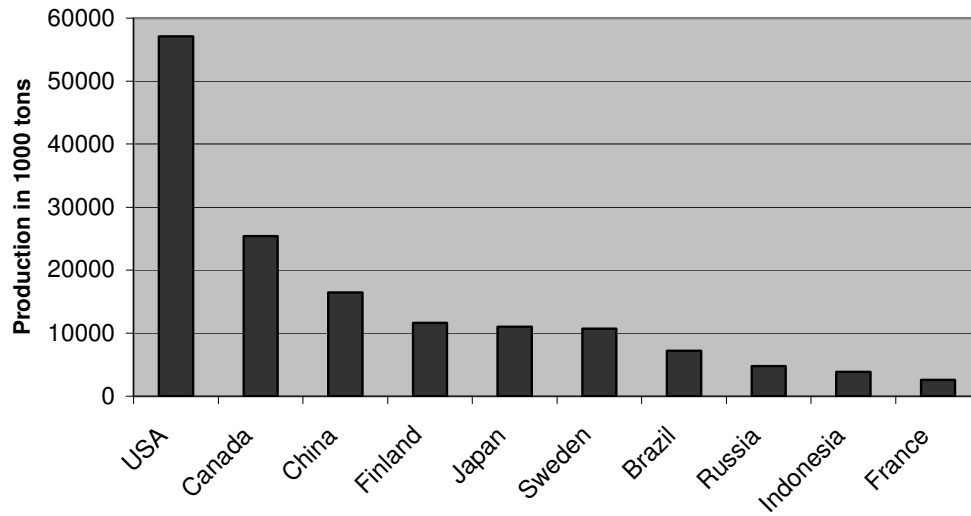
Graph 9. Global paper and paperboard production by region in 1999. Total vol. 316 mill. tons (SOURCE: FAO, PPI)

VIII. Major Sawn Softwood Producers



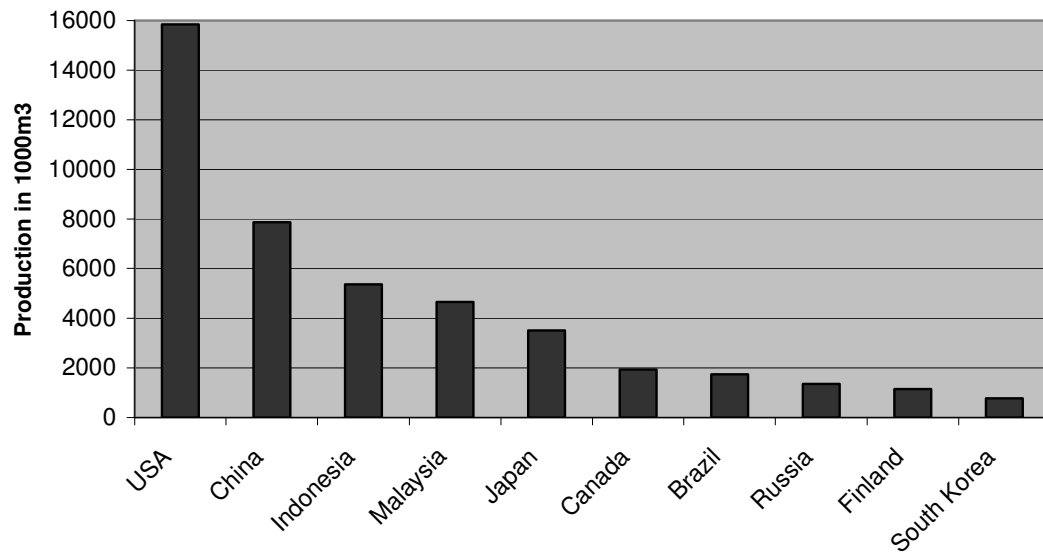
Graph 10. Major Sawn Softwood Producers 1999. Global Production 323 mill. m³ (SOURCE: FAO)

IX. Major Pulp Producers



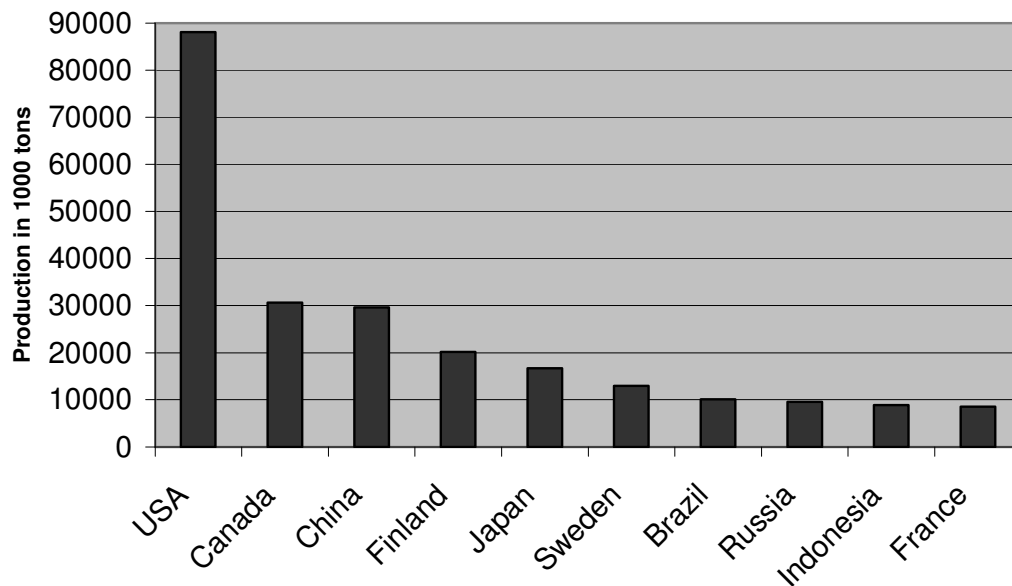
Graph 11. Major Pulp Producers on the world in 1999 (SOURCE: PPI)

X. Major Plywood producers



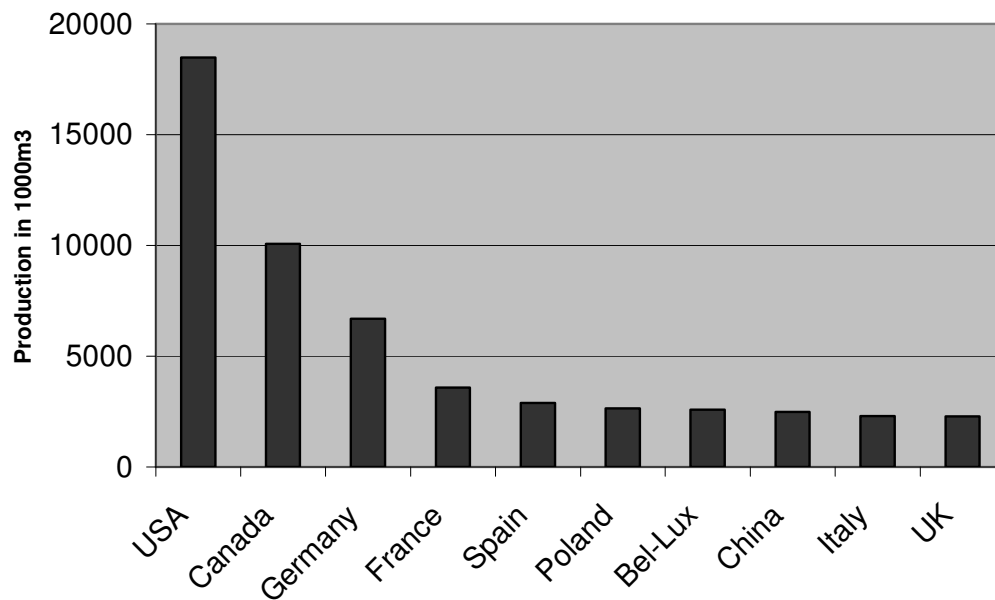
Graph 12. Major Plywood producers on the world in 1999 (SOURCE: PPI)

XI. Major Paper and Paperboard Producers



Graph 13. Major Paper and Paperboard Producers on the world in 1999 (SOURCE: PPI)

XII. Major Particle Board producers



Graph 14. Major world particle board producers in 1999. Global production 75 mill. m³ (SOURCE: FAO)

XIII. Main Forest Industry Companies

Table 1. Sawn Goods Producers (FAOSTAT, 2000. <http://apps.fao.org>.)

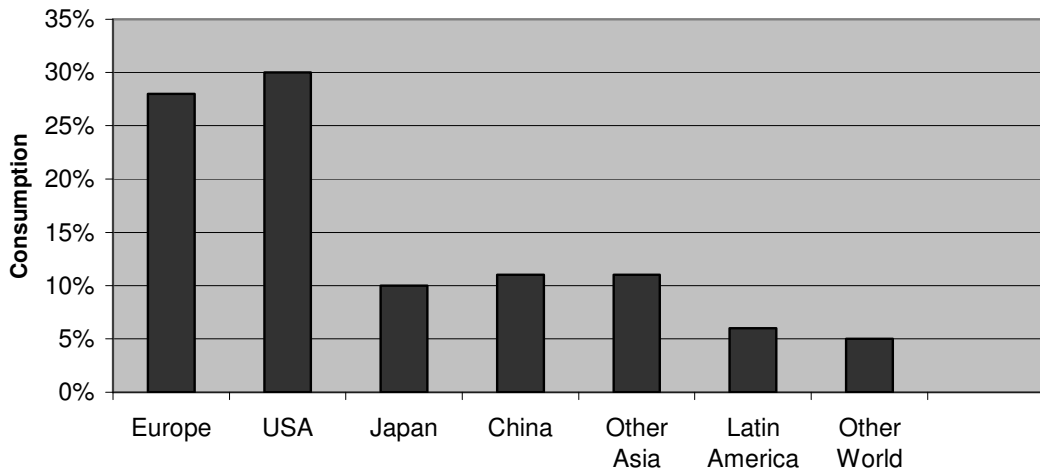
World	Capacity 1000m ³ /year	Europe	Capacity1000m ³ /year
Weyerhaeuser+			
Coast Mountain Hardwood	14270	Stora Enso Timber	5315
International Paper+		Finnforest	2350
Champion International	9435	UMP-KymmeneWoodProducts+Aureskoski	2000
Georgia-Pacific	6130	Moelven Treindustri+Forestia	1700
Canfor	6130	AssiDoman	1200
Stora Enso Timber	5315	Klausner	1025
Abitibi-Consolidated+Donohue	4335	Sodra Timber	1000
West Fraser Timbe	3520	Vapo Timber	770
Slocan Forest Products	3300	Scaninge (SCA+Graninge)	770
Sierra Pacific Industries	3240	Klenk	730
Louisiana-Pacific	2805		

FAOSTAT, 2000. <http://apps.fao.org>.

Table 2. Paper and Paperboard Producers (FAOSTAT, 2000. <http://apps.fao.org>.)

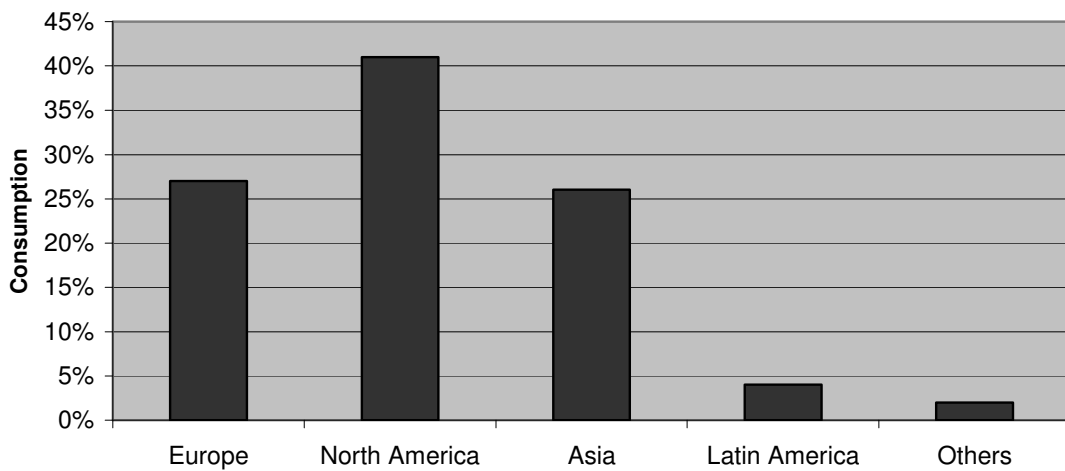
World	Capacity 1000tons/year	Europe	Capacity 1000tons/year
International Paper	16500	Stora Enso	12000
Stora Enso	14900	UMP-Kymmene	8400
Georgia-Pacific	10200	Metsaliitto	6700
UMP-Kymmene	9700	SCA	5500
Nippon+Daishowa	8900	Kappa Packaging+ AssiDoman Containerboard	3170
Smurfit-Stone Container	8800	Jefferson Smurif Group	2900
Abitibi-Consolidated	7000	Norske Skog	2800
Metsaliitto	6700	Haindl	2700
Oji Paper	6200	Sappi Fine Paper Europe	2300
Norske Skog	6000	Burgo	2200

XIV. Global Paper and Paperboard Consumption



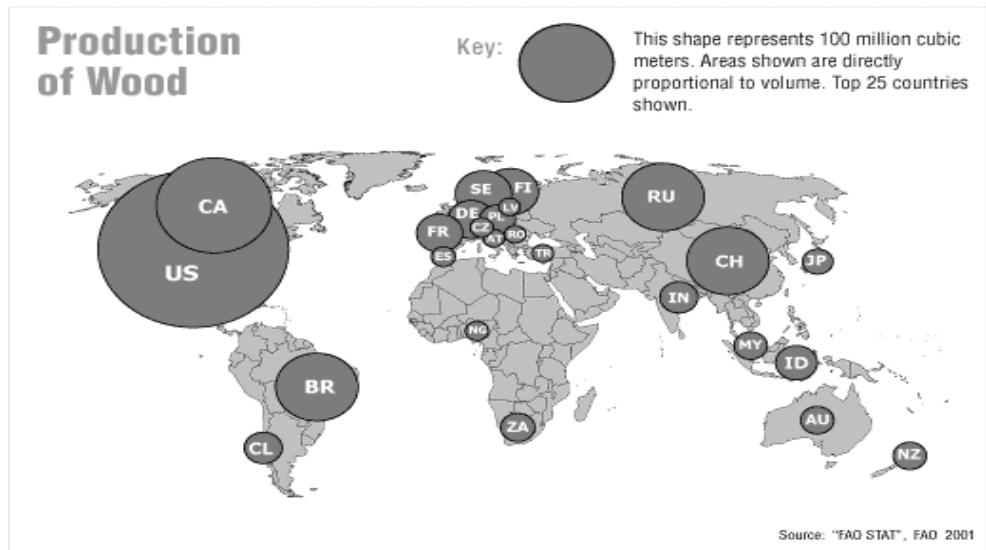
Graph 15. Global paper and paperboard consumption by region in 1999. Total 314 mill. tons (SOURCE: PPI)

XV. Global Consumption of Pulp



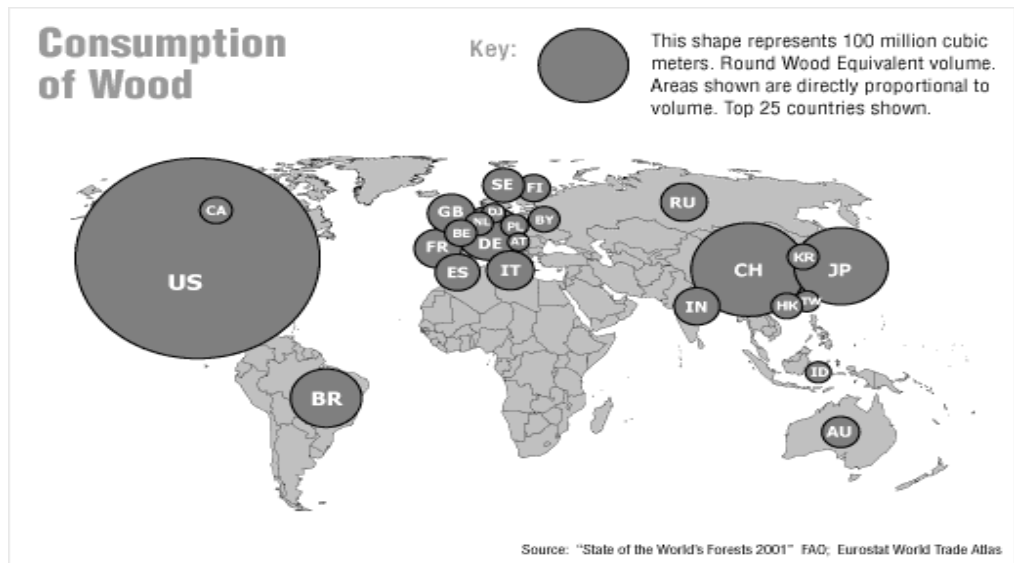
Graph 16. Global consumption of pulp on the world in 1999. Total 180 mill. Tons (SOURCE: PPI)

XVI. Global wood production



Picture 1. Wood production on the world in 2001

XVII. Global wood consumption



Picture 2. Wood consumption on the world in 2001

Results and discussion

I. Evaluation of forestry and wood industry in national economy in each of the countries.

Poland

Poland area reaches 312 684 km². Forest accounts for a bit less than one third of the land area and has been gradually increasing in recent decades (table 3). More than nine tenths of the forest is available for wood supply, and a similar proportion is classed as semi-natural, the remainder being divided between forest undisturbed by man and plantations. Considerable areas of forest are protected in some way, but only some of them, such as Białowieża primeval forest, are excluded from harvesting. Four fifths of the growing stock volume is made up of coniferous species, of which Scots pine is by far the most important; oak is the major broadleaved species (table 4 and 5). Despite widely occurring tree damage due to insect attack, fungi infection and other causes, which has had the effect of reducing the average rate of growth, growing stock has been gradually increasing. More than four fifths of forests are publicly owned, mainly by the State, the rest being held in small parcels by a large number of private individuals.

1. General data

- Total land area and forest area

Table 3. Total land area and forest area in Poland. (Budna, E., Grzybowska, K., 2000: Lesnictwo 2000 (Forestry 2000). Główny Urząd Statystyczny (Central Statistical Office). Warszawa, 290 pp.)

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (2000)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Poland	30,442	9,047	17.2	0.20	29.7	0.0	70.3
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition

Table 4. The composition of forest in Poland

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
5955	1377	1610	66,6	15,4	18

Table 5. Main tree species in Poland. (<http://www.lasypanstwowe.gov.pl>.)

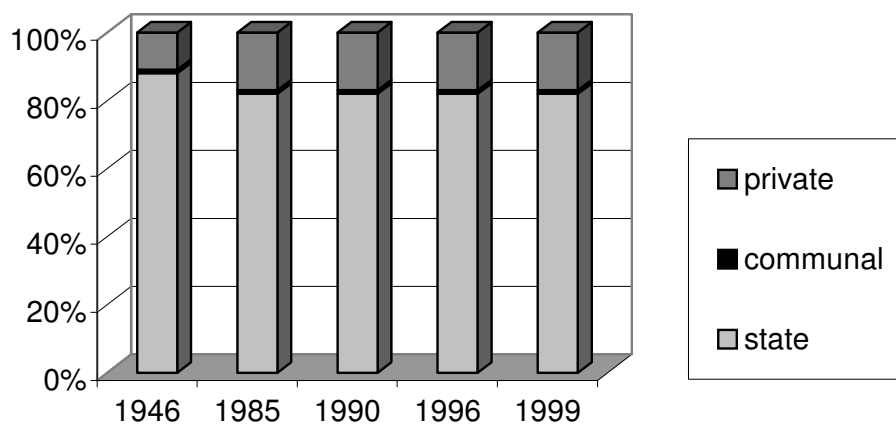
Tree species	Amount in %/
Pine + larch	70
Spruce	6
Birch	6
Oak	6
Beech	5
Alder	4
Fir	2
Other broadleaved	1

- **Forest productivity**

Table 6. Standing volume and growing stock

Standing volume of trees (growing stock & dead trees)	Growing stock
1000 m ³ over bark	
1998335	1973531

- **Types of forest ownership**



Graph 17. Situation of forest ownership in Poland

- **Lumber producing area**

Table 7. Potential productivity in Poland

Annual fellings	Annual removals
1000 m ³ over bark	
32212	26212

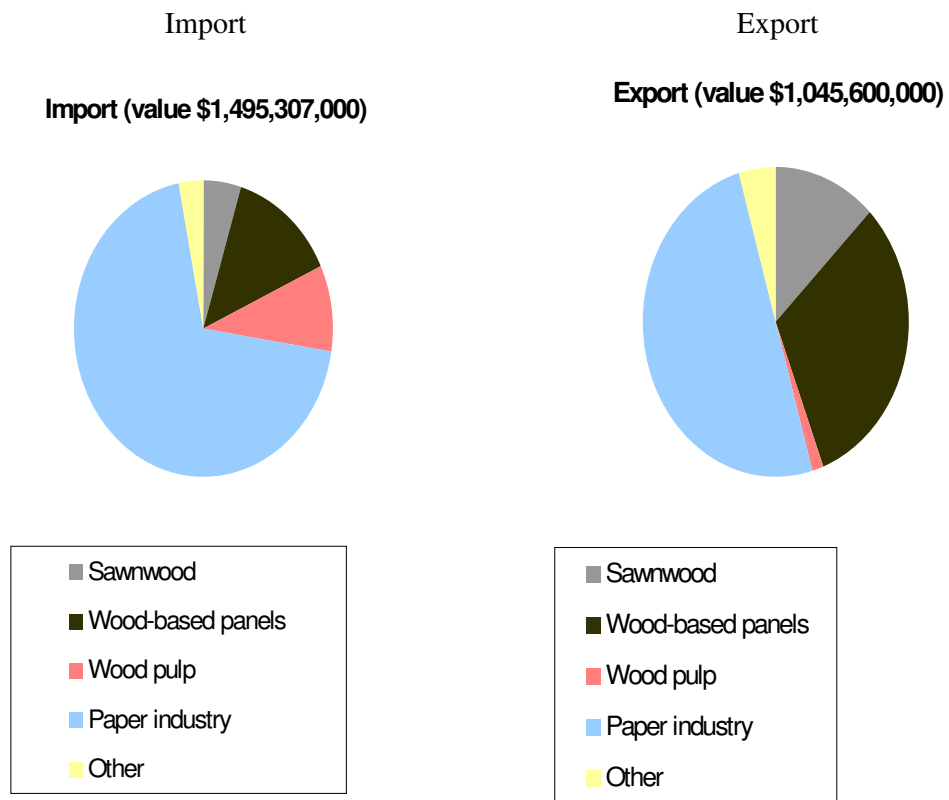
2. Main law regulations in order to forestry and forestry organization structure.

The Minister of the Environment is responsible for forest policy. Principles of Forest Management, Principles of Forestry Growing, Instruction of Forest Organization, and Instruction of Forest Protection are strictly formulated and systematically updated. Numerous groups of specialist from scientific institutions, not only from the forestry sector, have taken part in the process. The work resulted in the elaboration of Forestry Act, which includes general principles and directions of forest development, and conditions of sustainable forest management. Poland has become one of the leading countries in the formulation of sustainable forest executive in Europe. Inventory of forests is done in ten years intervals with strong base on the site classification. The main goal of the Polish forestry policy is the harmonization of sustainable forestry management with whole economic development, and adjustment to the new institutional and organizational changes in Poland. It's supposed to be implemented by sustainable forest management, forest biodiversity protection strategy, research program concerning basis of forest sustainable management in the Promotional Forest Complexes, national program of afforestation, introduction of new ecological elements (soil, biodiversity) into biological forest monitoring.

3. Importance of forestry in national economy

Forestry in Poland doesn't play any bigger role in the countries economy. The forest industry in Poland has been characterized by fast growth during the past decade in both production and exports. The growing importance of the forest sector is due to the successful privatization process, high levels of foreign investment and high levels of domestic raw material supply. Most of the industrial round wood is processed in Poland and then exported as sawn wood, wood-based panels, paper and paperboard and furniture. A highly developed furniture industry has influenced the growth of the particle board and fiberboard industry

4. Participation in trade



Graph 18. Trade of wood and wooden products in Poland.
(FAOSTAT. 2000. <http://apps.fao.org>.)


Germany

The Federal Republic of Germany has a total area of 357 020 km². Forest accounts for nearly a third of the land area (table 8). Forests are located mainly in the south, center and east of the country, with relatively little on the northern plain. Nearly all the forest is available for wood supply. The remainder is unavailable for wood supply mainly for economic reasons. All the forest is classified as semi-natural; there remain no areas undisturbed by man. No areas of plantation are reported, although large parts of the semi-natural forest were originally planted (regeneration or afforestation) or came from coppicing. Poplars are cultivated intensively in some areas. Two thirds of the volume of growing stock consists of coniferous species, the main species being Norway spruce and Scots pine. Beech and oaks are the commonest broadleaved species (table 9 and 10). The growing stock per hectare is, as in other central European countries, very high and has been increasing. Over half the forests are publicly owned, partly by the federal States (Länder) and partly by municipalities and communes. The remainder is owned by private individuals.

1. General data
- Total land area and forest area
Table 8. Total land area and forest area in Germany. (<http://www.infoholz.de>)

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (1987)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Germany	34,927	10,740	0	0.00	30.7	0.0	69.3
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition
Table 9. The composition of forest in Germany

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
21452	1599	4213	78,7	5,9	15,5

Table 10. Main tree species in Germany. (<http://www.bmvel.de>.)

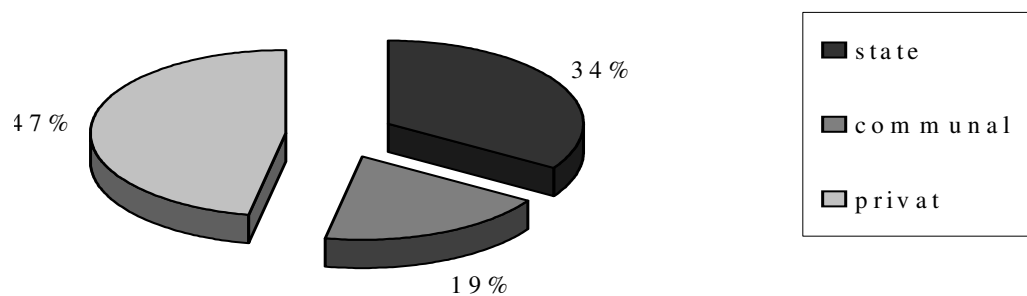
Tree species	Amount in %
spruce and other coniferous	35
Pine	31
Beech	25
Oak	9

- **Forest productivity**

Table 11. Standing volume and growing stock

Standing volume of trees (growing stock & dead trees)	Growing stock
1000 m ³ over bark	
2880000	2880000

- **Types of forest ownership**



Graph 19. Situation of forest ownership in Germany. (<http://www.forestsforever.org.uk/forestpolicies.html#germany>)

- **Lumber producing area**

Table 12. Potential productivity in Germany

Annual fellings	Annual removals
1000 m ³ over bark	
48584	38867

2. Main law regulations in order to forestry and forestry organization structure.

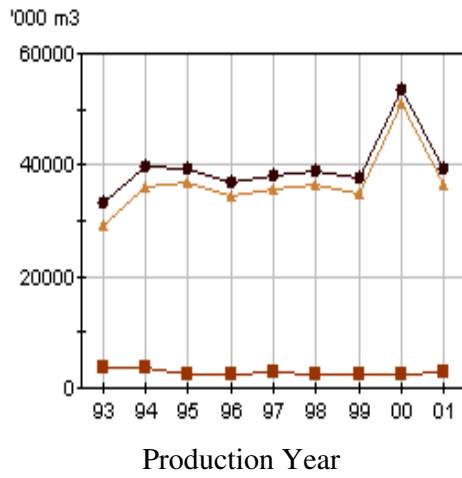
Forestry in general is organized at the level of the federal states (*Bundeslaender*), and most of the forest management projects are implemented by the forest administrations of the federal states. At the federal level the Ministry of Consumer Protection, Food and Agriculture (BMVEL) is responsible for co-ordination. The Ministry is a member of the National Sustainable Development Co-ordination Mechanism. It co-ordinates and provides a framework, mainly in the field of forest legislation and promotion. The tasks of the regional forest authorities include: regional legislation; defining and setting goals for regional forest policy; supervision of implementation; contributing to planning procedures; giving advice, care and assistance for privately owned forests; and managing state-owned forests. The national forest program concept calls for deep assessment of the current situation of forests and forestry and expected future needs and demands of German society as well. Furthermore, it calls for integrated, intersectional and dynamic approaches and ongoing dialogue among all stakeholders in the forest sector. The mechanisms applied at national and regional levels guarantee close cooperation between ministries and services of different sectors as well. Due to the federal structure in Germany, strategies and concepts to support sustainable forest management were developed and applied at both national and regional level. Sustainable forest management and afforestation of agricultural land are financially supported by the Federal government and the federal states within the "Joint Task for the Improvement of Agricultural Structures and Coastal Protection". The range of measures of EU structural policy also encompasses the support for the forest sector as well as accompanying measures.

3. Importance of forestry in national economy

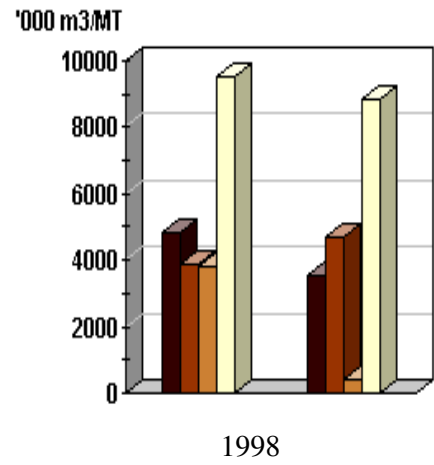
Germany is one of the major markets for forest products in Europe. The country also has a strong forest industry and it is one of the leading producers of wood-based panels and paper in the world. Germany has the largest engineered wood product industry in Europe, which is based partly on sawn wood imports. Two thirds of the paper production is based on imported wood pulp. Paper recycling is well organized in Germany and it is one the largest exporter and consumers of recovered paper.

4. Participation in trade

Forest Products



Trade of Forest Products



Imports

US\$83,767,000

Exports

US\$31,485,000

■ Round wood
■ Industrial Round wood
■ Fuel wood and charcoal

■ Sawn wood (m³)
■ Wood-based panels (m³)
■ Wood pulp (MT)
■ Paper and paperboard(MT)

Graph 20. Trade of wood and wooden products in Germany.
(FAOSTAT. 2000. <http://apps.fao.org>.)



Denmark

Denmark is a low-lying country situated in northern continental Europe separating the Baltic Sea from the North Sea. Forest and other wooded land accounts for only one eighth of the land area, scattered all over the country; the area is being gradually extended, and there are expectations that this proportion may eventually double (table 13). Plantations make up about three quarters of the forest area, with nearly all the rest classed as semi-natural. The area of forest undisturbed by man is very small. More than half the volume of growing stock consists of coniferous species, of which the main species, though not indigenous, is Norway spruce. The most common broadleaved species are Beech and Oak, however this species are also introduced in Denmark. The forests are intensively managed, and net annual increment is well above the European average. Around a quarter of the forest is publicly owned; the remainder is owned by individuals as well as by private institutions. In coniferous forests on poor soils some forest health and stability problems may have occurred, but the situation is being stabilized. The exact reason for these forest health problems is not clear, but the lack of adaptability of Norway spruce (*Picea abies*), which is the main, but not indigenous, species in Denmark, may be an important factor. Other main tree species in the Danish forests are *Abies alba*, *Larix europaea*, *Pinus sylvestris*, *P. contorta*, *Fagus silvatica*, *Quercus robur*, *Betula pendula*, *Alnus glutinosa* (table 14 and 15). Of the above-mentioned species, the coniferous species, except *Pinus sylvestris*, are mainly introduced.

1. General data

- Total land area and forest area

Table 13. Total land area and forest area in Denmark. (The Reflexive North. MOST, Nord 2001:10, Nordic Council of Ministers, Copenhagen 2001.)

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (2000)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Denmark	4,243	0,455	1	0.22	10.7	2.2	87.3
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition

Table 14. The composition of forest in Denmark

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
168	111	166	37,8	25	37,2

Table 15. Main tree species in Denmark.

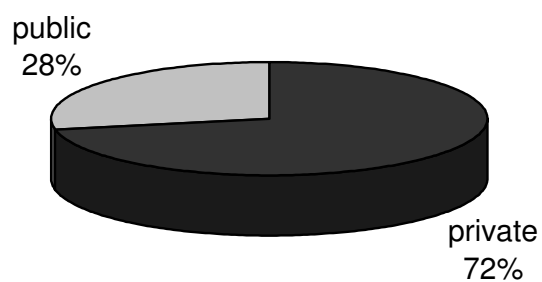
Tree species	Amount in %
Beech	16.2
Oak	8.5
Ash	2.2
Other broadleaves	5.2
Spruce	38.2
Fir	7.7
Pine	6.1
Other conifers	15.9

- **Forest productivity**

Table 16. Standing volume and growing stock

Standing volume of trees (growing stock & dead trees)	Growing stock
1000 m ³ over bark	
61500	60200

- **Types of forest ownership**



Graph 21. Situation of forest ownership in Denmark

- **Lumber producing area**

Table 17. Potential productivity in Denmark

Annual fellings	Annual removals
1000 m ³ over bark/	
2444	2194

2. Main law regulations in order to forestry and forestry organization structure.

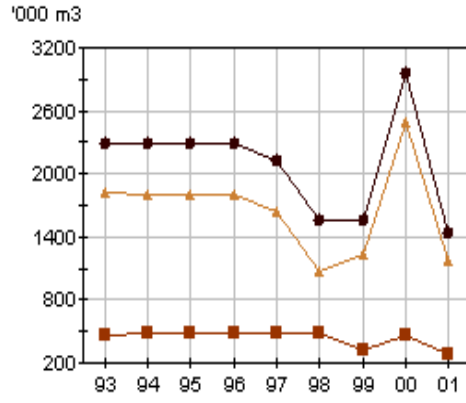
The National Forest and Nature Agency under the Ministry for the Environment is the national implementing and policy-making agency responsible for the forest sector. This agency is also the central administrative and executive unit for the 25 state forest districts covering one-fourth of the national forest area of Denmark. The general regulations of the Forest Act of 1997 reserve areas for forests, thus ensuring national forest reserves, and it prescribes good and multiple use forest management. The legislative framework also provides for reestablishment of forest areas after national windfall disasters (last disaster in December 1999) and comprises also the Nature Conservation Act of 1992; the Hunting and Game Management Act of 1993; the spatial planning legislation; and the agricultural legislation (under the Ministry of Food, Fisheries and Agriculture). Approximately 90 percent of this area is forest reserve in accordance with the Forest Act. Most forest areas are managed as production forest. However, in recent years considerable efforts have been undertaken to also designate areas managed with biodiversity conservation as the main objective. Stakeholder organizations are on a regular basis invited to participate in forest policy-making activities. National Forest Council has been established with the task of advising the Minister for the Environment on forest issues.

3. Importance of forestry in national economy

The Danish forest sector output does not meet the high demand for forest products in the country. Over half of the markets are supplied by imports. Most of the softwood logs are processed locally while high quality hardwood log imports to China and other Asian countries are increasing. The large furniture industry in Denmark relies to a large extent on imported raw materials and exports most of its production (graph 22).

4. Participation in trade

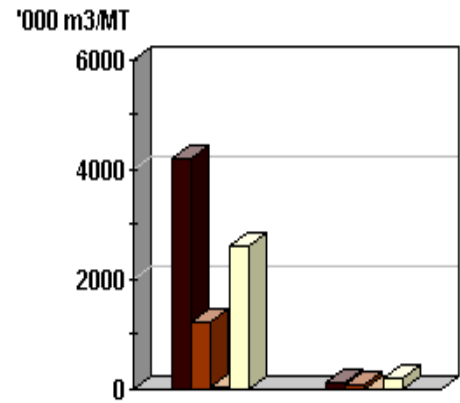
Forest Products



Production Year/

- Round wood
- Industrial Round wood
- Fuel wood and charcoal

Trade of Forest Products



1998

- | | |
|---------------------------------------|---------------------------------------|
| Imports | Exports |
| US\$83,767,000 | US\$31,485,000 |
| ■ Sawn wood (m ³) | ■ Sawn wood (m ³) |
| ■ Wood-based panels (m ³) | ■ Wood-based panels (m ³) |
| ■ Wood pulp (MT) | ■ Wood pulp (MT) |
| ■ Paper and paperboard(MT) | ■ Paper and paperboard(MT) |

Graph 22. Trade of wood and wooden products in Denmark.
(FAOSTAT. 2000. <http://apps.fao.org>.)



Sweden

The area of Sweden amounts 452 180 km². Forest and other wooded land accounts for three quarters of the land area (table 18). More than three quarters of the forest is available for wood supply, the remainder is not available mainly for conservation and protection reasons. Coniferous species, of which the most important are Scots pine and Norway spruce, account for more than four fifths of the growing stock volume. Birch is the main broadleaved species, with some aspen, alder, oak, beech and ash (table 19 and 20). Half the forest is owned by private individuals, a further two fifths by forest industries and most of the remainder by public institutions other than the State. About 80% of forest areas are available for wood supply. The naturalness of Swedish forests is reported as 16% forest areas undisturbed by man, 82% semi-natural forests, and 2% plantations.

1. General data

- Total land area and forest area

Table 18. Total land area and forest area in Sweden. (<http://apps.fao.org>.)

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (2000)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Sweden	41.162	27.134	1	0.00	65.9	7.2	26.8
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition

Table 19. The composition of forest in Sweden

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
21452	1599	4213	78,7	5,9	15,5

Table 20. Main tree species in Sweden.

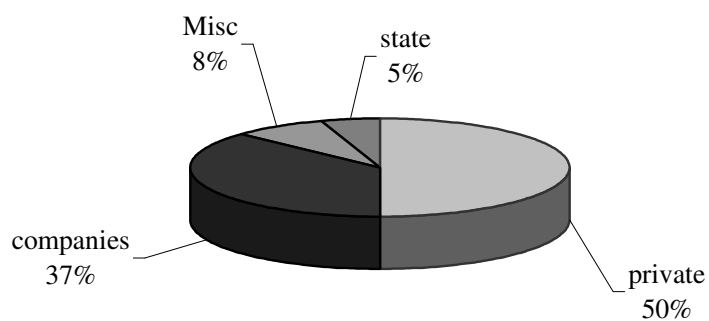
Tree species	Amount in %
Spruce	45
Pine	39
Birch	10
Other	6

- **Forest productivity**

Table 21. Standing volume and growing stock (<http://www.timber.asdo.com>)

Standing volume of trees (growing stock & dead trees)	Growing stock
1000 m ³ over bark	
3071172	2993640

- **Types of forest ownership**



Graph 23. Situation of forest ownership in Sweden

- **Lumber producing area**

Table 22. Potential productivity in Sweden (<http://www.sveaskog.se/>)

Annual fellings	Annual removals
1000 m ³ over bark	
67766	61593

2. Main law regulations in order to forestry and forestry organization structure.

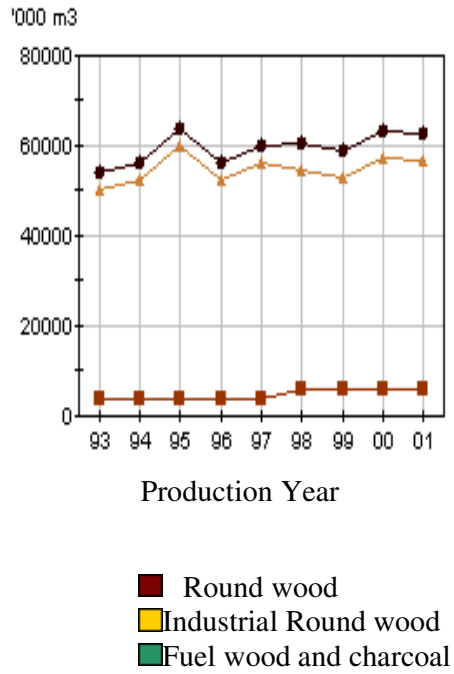
The Forestry Administration, under the Ministry of Industry, Employment and Communications is primarily responsible for the forestry sector. The National Board of Forestry (NBF) and 10 County Forestry Boards are responsible for the implementation of the Forest Policy, including the Forest Act. The Forestry Act of 1993 gives equal emphasis to both environment and production goals, provides for forest management on a multiple-use basis, and gives forest owners greater freedom but also responsibility in the management of their forest lands, for both natural and manmade forests. According to the forest policy the responsibility for protection of forests is shared between the forest sector and the state. However the Act is only a kind of directive line for the Stakeholders and it is not obligatory to follow its regulations. This freedom in decision making process led in Sweden to drastic changes in the sites and the domination of profitable monocultures and high amount of fast growing trees.

3. Importance of forestry in national economy

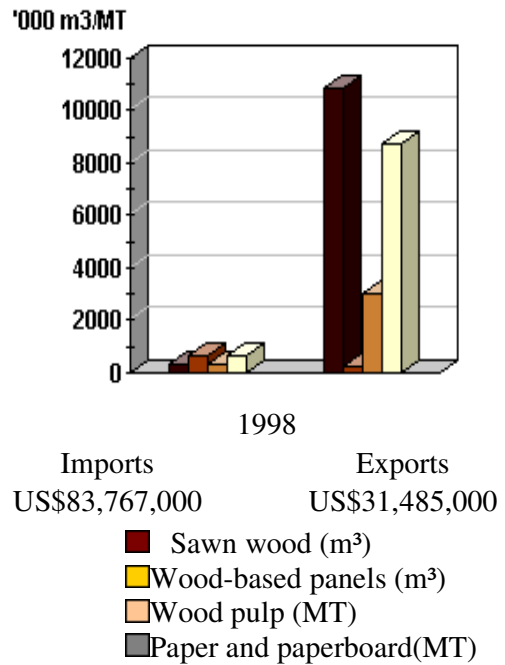
The forest industry is one of the driving forces of the Swedish economy and Sweden is one of the leading exporters of pulp, paper and sawn wood in the world. The production is mostly based on local raw material supply, but some round wood and recovered paper are imported. During recent years the Swedish forest industry has gone through several major mergers and acquisitions and the production is now concentrated in a few giant companies. Sweden has also significant domestic engineering and chemical industries that are major suppliers of equipment and raw material for the forest industry. Consumption of forest products per capita is among the highest in Europe.

4. Participation in trade

Forest Products



Trade of Forest Products



Graph 24. Trade of wood and wooden products in Sweden.
(FAOSTAT, 2000. <http://apps.fao.org>.)

Finland

Finland, a mostly low-lying country of forests and lakes, stretches from the Baltic Sea beyond the Arctic Circle. Forest and other wooded land accounts for over three quarters of the land area, putting Finland among the countries with the highest forest cover in the world (table 23). Forests are largely of the boreal type: coniferous species make up over four fifths of the volume of growing stock, with Scots pine and Norway spruce predominating. Birch is the main broadleaved species, with alder also common (table 24 and 25). Most of the forest is available for wood supply, but a substantial area is not available for conservation and protection reasons. Seven tenths of the forest and other wooded land is in private hands, mainly individuals but also forest industries, the remainder mostly owned by the State. The forest sector is an important part of Finland's economy.

1. General data

- Total land area and forest area

Table 23. Total land area and forest area in Finland.

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land coverse % (2000)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Finland	30,459	21,935	8	0.04	72	2.9	25,2
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition

Table 24. The composition of forest in Finland

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
17596	1692	2595	80,4	7,7	11,9

Table 25. Main tree species in Finland.

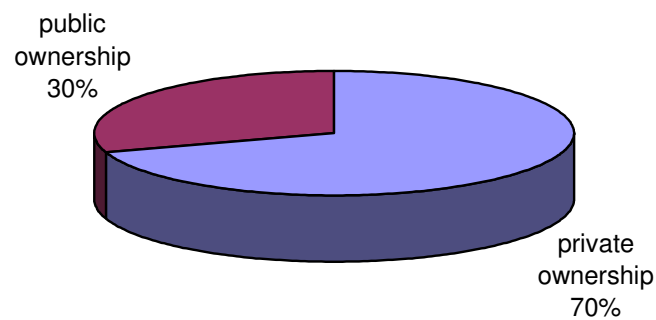
Tree species	Amount in %
Pine	46.5
Spruce	35.1
Birch and other broadleaved	18.4

- **Forest productivity**

Table 26. Standing volume and growing stock

Standing volume of trees (growing stock & dead trees)	Growing stock
1000 m ³ over bark/	
2002000	1963000

- **Types of forest ownership**



Graph 25. Situation of forest ownership in Finland. (<http://www.forestindustries.fi>.)

- **Lumber producing area**

Table 27. Potential productivity in Finland

Annual fellings	Annual removals
1000 m ³ over bark	
54300	49500

2. Main law regulations in order to forestry and forestry organization structure.

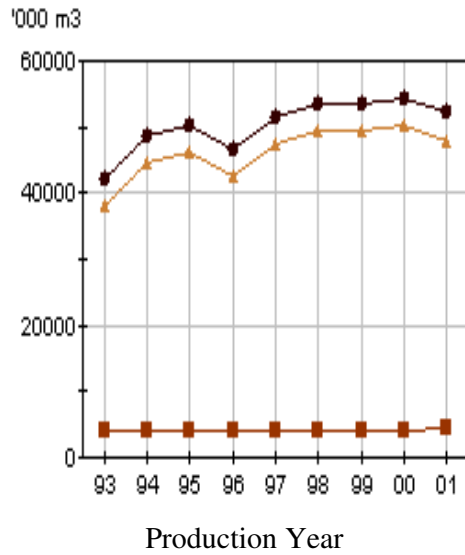
The Department of Forestry within the Ministry of Agriculture and Forestry is primarily responsible for forest policy and legislation concerning forestry in Finland. Other ministries and institutions actively involved in forestry matters are the Ministry of the Environment, Ministry of Trade and Industry, Ministry of Foreign Affairs, Regional Forestry Centers, the Forestry Development Center Tapio, the Forest and Park Service, the Finnish Forest Research Institute, Forest Management Associations and the Finnish Environment Institute. Finnish forest legislation has been completely reformed in the 1990s. The new forest legislation includes: (i) The Forest Act and the Nature Conservation Act as part of a regulatory framework; (ii) The Act on Forestry Centers and Forestry Development Center (1996) and the Forest and Park Service Act (1994); (iii) The Act on the Financing of Sustainable Forestry (1997) represents the development of financial instruments; (iv). The Act on Forest Management Associations (1999); (v) Forest certification; and (vi) A huge number of tasks all the way from research projects to the practical modes of work in forests themselves has been carried out in order to develop the informational means. All forest law now focuses on promoting sustainable forestry, including the economic, social and ecological aspects. A key element of the Forest Act (1997), with regard to safeguarding biodiversity, is defining certain habitats of special importance and giving guidelines as to how these habitats may be managed. The national legislation does not restrict the transfer of forestland to other uses. Reforestation in other parts of the country substitutes for the losses in the forest area in urban areas and road building. The purpose of the new Forest Act is to secure the production of timber, maintain the biological diversity of the forest nature and to take into account the multiple uses of forests.

3. Importance of forestry in national economy

The forest sector is one of the driving forces of the Finnish economy. The forest industry is characterized by large companies and production units. The fifth largest pulp industry in the world serves mostly the domestic paper industry. The country is one of the leading exporters of paper and sawn wood in the world.

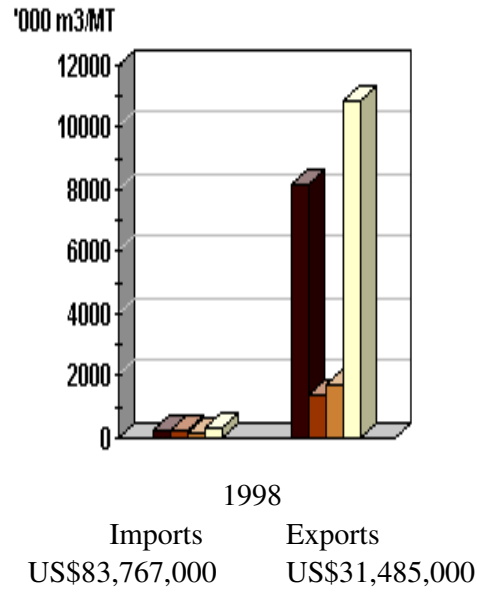
4. Participation in trade

Forest Products



- Round wood
- Industrial Round wood
- Fuel wood and charcoal

Trade of Forest Products



- Sawn wood (m³)
- Wood-based panels (m³)
- Wood pulp (MT)
- Paper and paperboard (MT)

Graph 26. Trade of wood and wooden products in Finland.
(FAOSTAT, 2000. <http://apps.fao.org>.)


Estonia

Estonia is the smallest of the Baltic states with an area of 45 227 km² (table 28). Forests are mainly of the boreal type: coniferous species make up nearly two thirds of the volume of growing stock, predominantly Scots Pine and Norway spruce. The principal broadleaved species is birch, with alder common in certain localities (table 29 and 30). The ownership structure of forests has been changing considerably as part of the overall land reform, with privatization and restitution of formerly State-owned forest land. The area of forest has increased by 2.2 times, and the growing stock by 3.0 times during the last 60 years, mainly as a result of timber supplies from Russia during the last few decades. Reserved and protection forests comprise about 30 % of the forest area, where protection, multi-functional management and maintenance of biodiversity are the main principles of forestry.

1. General data

- Total land area and forest area

Table 28. Total land area and forest area in Estonia.
(http://www.metsad.ee/eng/main_public.html.)

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (2000)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Estonia	4,227	2,06	13	0.63	48.7	3,4	49.0
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition

Table 29. The composition of forest in Estonia

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
788	416	812	39,1	20,6	40,3

Table 30. Main tree species in Estonia

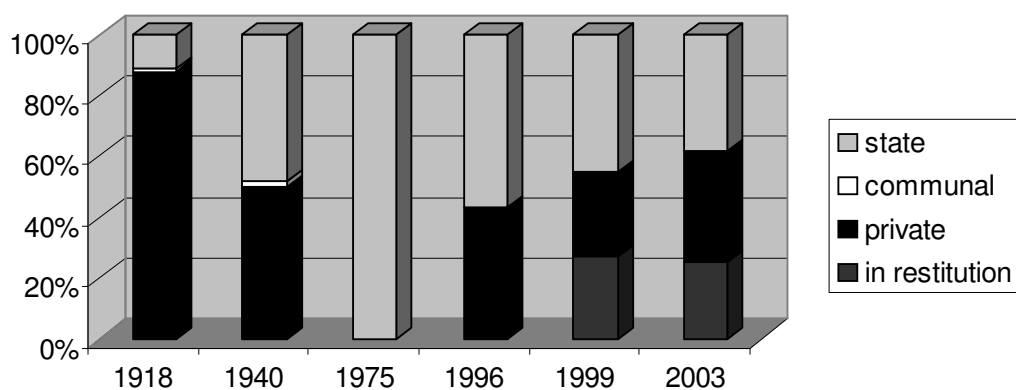
Tree species	Amount in %
Pine	35
Birch	31
Spruce	17
Alder	11
Aspen	5
Other	1

- **Forest productivity**

Table 31. Standing volume and growing stock

Standing volume of trees (growing stock & dead trees)	Growing stock
1000 m ³ overbark	
326812	322377

- **Types of forest ownership**



Graph 27. Situation of forest ownership in Estonia
(http://www.metsad.ee/eng/main_public.html.)

- **Lumber producing area**

Table 32. Potential productivity in Estonia

Annual fellings	Annual removals
1000 m ³ over bark	
7810*	6040

*The official allowable cut established by the Riigikogu (Estonian parliament) from all forests is 7.81 million m³ per year.

2. Main law regulations in order to forestry and forestry organization structure.

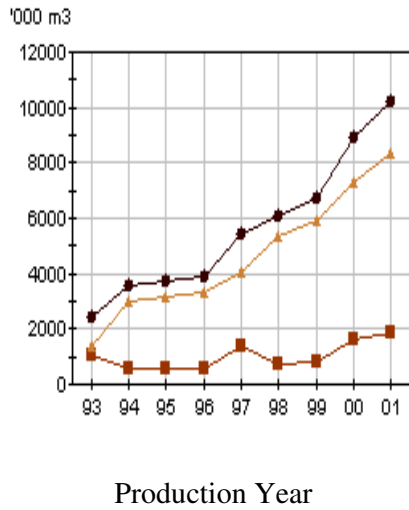
The Ministry of the Environment and the Forestry Board are the institutions primarily responsible for sustainable forestry in Estonia. In order to accelerate the development in the forest sector and to improve the basis for legislative reforms, the Ministry of Environment decided in early 1995 to launch the Estonian Forestry Development Program, which includes the task of formulating a National Forest Policy. The objectives set for the policy formulation process were to define the general objectives for the development of the forest sector, and to determine the action to be taken by the public sector in order to reach these objectives. When formulating the final draft, the Government will draw on public input and debate on the revised draft of the Forest Policy. The final draft will be approved as the National Forest Policy, thus constituting the basis for formulating new legislation as well as development and investment programs for the forest sector. It is anticipated that the National Forest Policy will be approved in 1997. Working Groups have been the main vehicle for examining various issues. Their members represent all main interest groups including the Forestry Department, various Government Ministries, Forest Industries, Private Forest Owners and non-governmental organizations. The main task of the Working Groups has been to identify and analyze suitable development alternatives in their special field. The Estonian forestry sector was organized largely on the basis of administrative structures inherited from the Soviet era therefore the adjustment to a market economy and new environmental standards proved to be slow and difficult, and gradually it became apparent that a thorough overhaul of the sector was needed. The principal issues were related to organizing public forest administration, establishing an appropriate balance between forest production and conservation, and providing support to private forest owners.

3. Importance of forestry in national economy

Estonia's forest sector is characterized by rapid growth over recent years. The major products are coniferous sawn wood and panels, especially particleboard and fiberboard. Over half of the panels and sawn wood produced are exported. Pulpwood is also an important export commodity due to the low processing capacity of the domestic pulp and paper industry. Over half of the paper demand is met by imports.

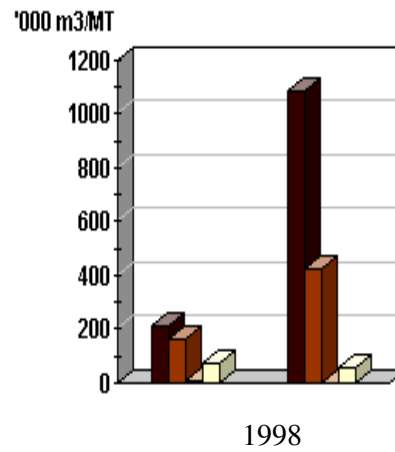
4. Participation in trade

Forest Products



- Round wood
- Industrial Round wood
- Fuel wood and charcoal

Trade of Forest Products



- 1998
- Imports: US\$83,767,000 Exports: US\$31,485,000
- Sawn wood (m³)
 - Wood-based panels (m³)
 - Wood pulp (MT)
 - Paper and paperboard (MT)

Graph 28. Trade of wood and wooden products in Estonia.
(FAOSTAT, 2000. <http://apps.fao.org>.)

Latvia

Latvia covers an area of about 64 590 km². It is well forested, with forest and other wooded land accounting for nearly half the land area (table 33). More than four fifths of the forest is available for wood supply; the remainder is not available for reasons of conservation and protection. Coniferous species account for three fifths of the growing stock, with one species, Scots pine, predominating, followed by Norway spruce. Birch is the main broadleaved species, with some volumes of alder, aspen and oak (table 34 and 35). Most of the forests are less than eighty years old. More than half the area of forest and other wooded land is in State ownership, but the process of privatization is continuing.

1. General data

- Total land area and forest area

Table 33. Total land area and forest area in Latvia. (<http://apps.fao.org>.)

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (2000)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Latvia	6,205	2,923	13	0.45	47.1	1.8	51.7
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition

Table 34. The composition of forest in Latvia

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
1127	534	1223	39,1	18,5	42,4

Table 35. Main tree species in Latvia. (http://www.miskai.gamta.lt/parkai/depas/a_dep.htm)

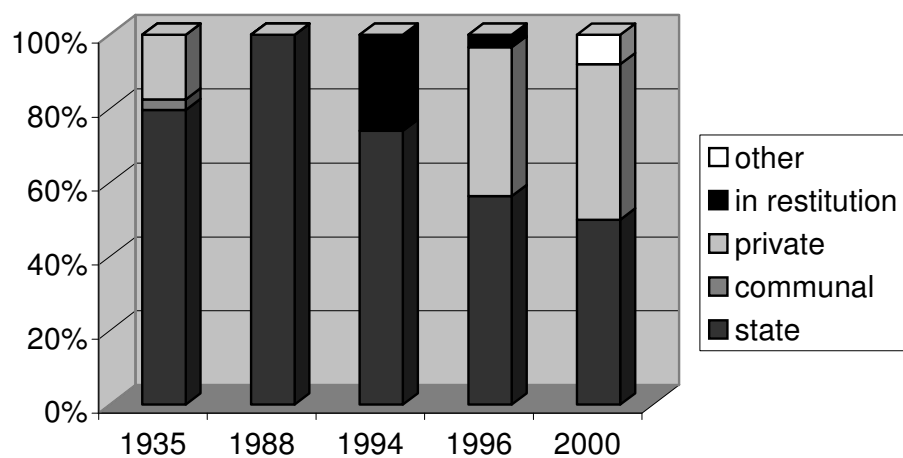
Tree species	Amount in %
Pine	38
Spruce	19
Birch	29
Alder	9
Aspen	3
Oak	1
Ash	1

- **Forest productivity**

Table 36. Standing volume and growing stock

Standing volume of trees (growing stock & dead trees)	Growing stock
1000 m ³ over bark	
542000	542000

- **Types of forest ownership**



Graph 29. Situation of forest ownership in Latvia
(http://www.miskai.gamta.lt/parkai/depas/a_dep.htm)

- **Lumber producing area**

Table 37. Potential productivity in Latvia

Annual fellings	Annual removals
1000 m ³ over bark	
8150	6710

2. Main law regulations in order to forestry and forestry organization structure.

The primary focus of Latvia's basic forest law on 'Forest Management and Utilisation', introduced in 1992 and revised in 1994, is 'to ensure the protection of the forest as an ecosystem and forest regeneration. While it remains a principle policy goal to increase timber production, forest policy has increasingly focused on biodiversity conservation during the 1990s. Latvia has recently signed the Rio Convention on Biological Diversity and is preparing to sign the Bern Convention on the Conservation of European Wildlife and Natural Habitats.

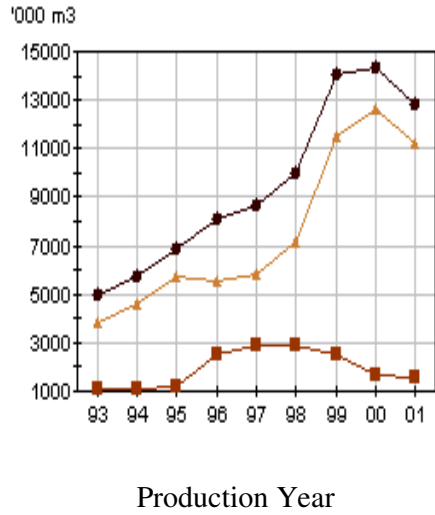
Latvia's regulatory framework is characterised by a high degree of centralised government control. The central government authorities in Riga, notably the State Forest Service, have inherited far reaching powers of control over forest use and planning in all Latvian forests irrespective of ownership status. Not only do the central authorities own and regulate forests, but they also direct the way forestry operations should be carried out in the field. The system of control comprises the annual allowable cut established by the Latvian Parliament, a comprehensive state run forest inventory programme, centrally compiled forest operations from forest establishment to final felling. The existing system of regulation is the subject of debate within Latvia and major reforms may soon be introduced.

3. Importance of forestry in national economy

The forest sector accounts for one-tenth of the country's GDP and forest product exports account for nearly one third of total exports. Latvia produces mainly sawn softwood, of which about three quarters, is exported. The sawmills in Latvia are relatively small, and rely increasingly on imported logs. Nearly one third of the round wood production is exported, mostly as pulpwood. The wood-based panel industry is also very export oriented, but for paper Latvia relies heavily on imports.

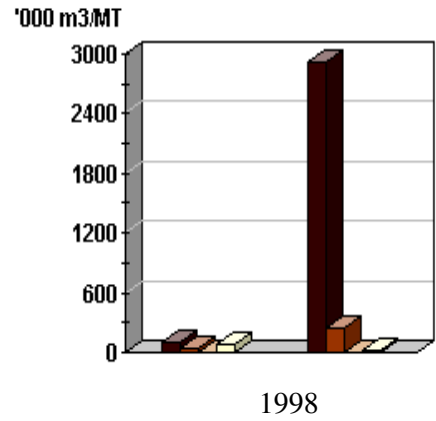
4. Participation in trade

Forest Products



- Round wood
- Industrial Round wood
- Fuel wood and charcoal

Trade of Forest Products



Imports US\$83,767,000 Exports US\$31,485,000

- Sawn wood (m³)
- Wood-based panels (m³)
- Wood pulp (MT)
- Paper and paperboard(MT)

Graph 30. Trade of wood and wooden products in Latvia.
(FAOSTAT. 2000. <http://apps.fao.org>.)


Lithuania

Lithuania is the largest of the Baltic states with an area of about 65 300 km² (table 38). Most of the forest is available for wood supply; the areas not available are mainly so for reasons of protection and conservation. There are a few areas of forest undisturbed by man; most of the forest is classed as semi-natural with some areas of plantations. Three fifths of the volume of growing stock consists of coniferous species, with Scots pine the main species, followed by Norway spruce. Birch, alder, oak and ash are the main broadleaved species (table 39 and 40). Parts of the forest have suffered from heavy damage caused by climate anomalies, insects, disease, animal grazing and fire, although the condition of the forest is reported to be gradually improving; the volume of sanitation cuttings has been substantial. Most of the forest is under eighty years of age. About four fifths of the forest is State owned, although the area in private ownership has been increasing since the early 1990s.

1. General data

- Total land area and forest area

Table 38. Total land area and forest area in Lithuania. (<http://apps.fao.org>.)

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (2000)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
Lithuania	6,257	1,994	5	0.24	31,9	1,1	67.3
Europe	2,259,906	1,039,250	877	0.08	46.0	1.3	52.9
World	13,139,618	3,869,453	-9,319	-0.24	29.4	11.2	58.6

- Forest composition

Table 39. The composition of forest in Sweden

Forest			Percent of forest		
Predominantly coniferous	Predominantly broadleaved	Mixed	Predominantly coniferous	Predominantly broadleaved	Mixed
1000 hectares			%		
914	678	386	46,2	34,3	19,5

Table 40. Main tree species in Lithuania. (<http://www.zm.gov.lv/forestry>)

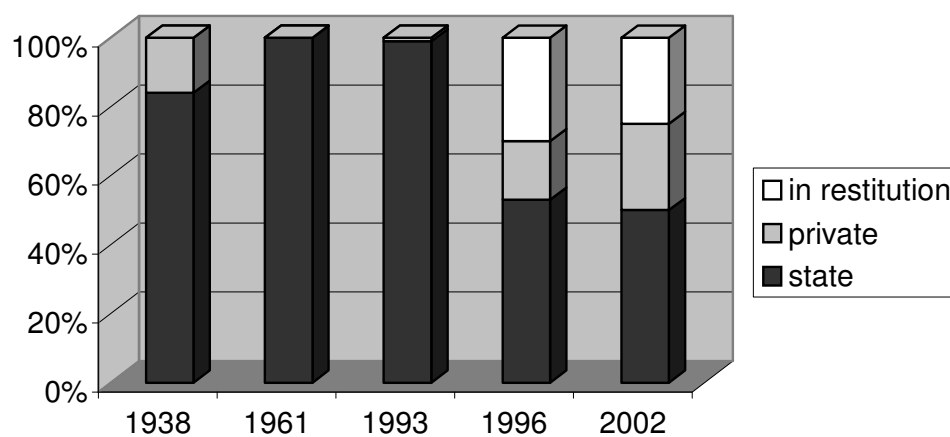
Tree species	Amount in %
Pine	36.6
Spruce	23.1
Birch	20
Aspen	2.8
Alder	12.2
Oak	1.8
Ash	2.7
Other	0.8

- **Forest productivity**

Table 41. Standing volume and growing stock

Standing volume of trees(growing stock & dead trees)	Growing stock
1000 m ³ over bark	
382837	373937

- **Types of forest ownership**



Graph 31. Situation of forest ownership in Lithuania (<http://www.zm.gov.lv/forestry>.)

- **Lumber producing area**

Table 42. Potential productivity in Lithuania

Annual fellings	Annual removals
1000 m ³ over bark	
5750	4740

2. Main law regulations in order to forestry and forestry organization structure.

Forestry as a whole is under the control of the Ministry of Environment of the Republic of Lithuania. The Department of Forests and Protected Areas within the Ministry of Environment is primarily responsible for forest policy and legislation concerning forestry in Lithuania. The General Forest Enterprise has responsibility for state forest management and commercial activities of all 42 State Forest Enterprises. Forest Control Division within State Environmental Inspection is responsible for ensuring that all forest activities are sustainable and maintaining environmental quality. The Forest Law adopted by Parliament (1994; amended in 2001) covers all main issues of forest policy: trends of forestry policy, forest ownership, forest management and supervision, economic regulation of forestry, forest use, regeneration, growing and felling, forest protection etc.

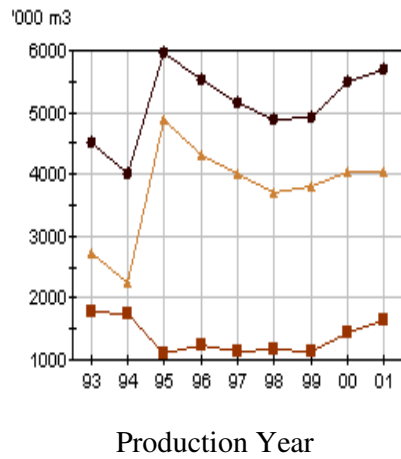
The Lithuanian policy of forest use is based on the principles of sustainable and multiple-use management and conservation of forest resources. The forest management has always been under strict professional control therefore annual felling has never exceeded the sustainable limits of the allowable annual cut.

3. Importance of forestry in national economy

The Lithuanian forest sector has a significant impact on the national economy. The driving force of the Lithuanian forest industry is the sawmill industry, which exports half of its production. During the past decade over two hundred small-scale sawmills began operation. Large volumes of round wood, mostly pulpwood, are still exported, mainly to Sweden and Germany. Part of the sawn hardwood is used in the furniture industry. The paper industry is not able to satisfy the domestic demand especially for higher grades of paper. Consumption of forest products per capita is below the European average level.

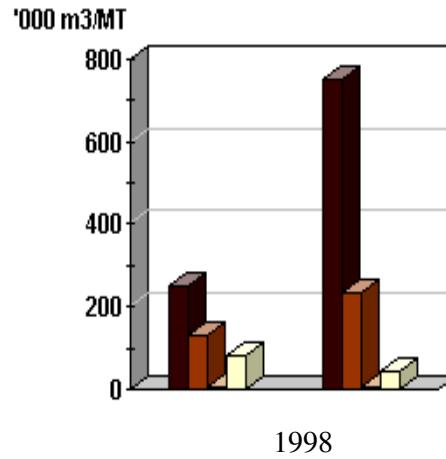
4. Participation in trade

Forest Products



- Round wood
- Industrial Round wood
- Fuel wood and charcoal

Trade of Forest Products



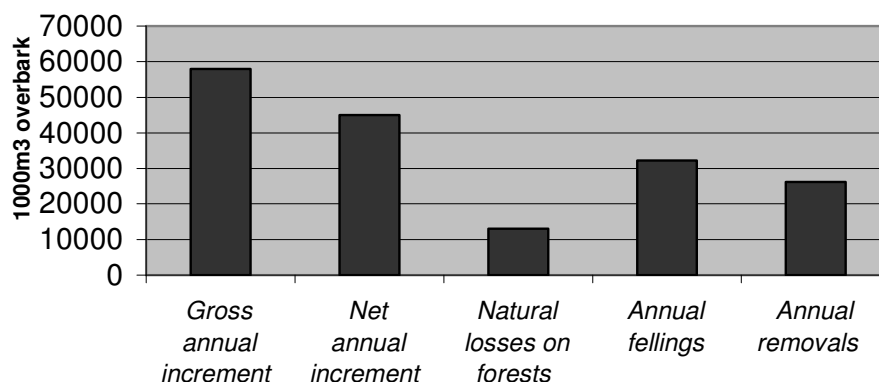
- Imports US\$83,767,000 Exports US\$31,485,000
- Sawn wood (m³)
 - Wood-based panels (m³)
 - Wood pulp (MT)
 - Paper and paperboard(MT)

Graph 32. Trade of wood and wooden products in Lithuania. (FAOSTAT, 2000. <http://apps.fao.org>.)

II. Potential stock and potential productivity in each countries

Poland

Increment and removals



Graph 33. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 43. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

		Import	Export	Production	Consumption
	Units*	Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	496	788	2910	2617
Sawnwood (C)	1000Cum	257	561	2330	2026
Sawnwood (NC)	1000Cum	239	228	580	591
Wood-Based Panels	1000Cum	946	1610	5197	4533
Wood Pulp	Mt	0,3674	0,0285	1,013	1,352
Paper and Paperboard	Mt	1,4747	1,1249	2,23	2,5798
Roundwood	1000Cum	727	723	27170	27173
Wood Fuel	1000Cum	0,2	47	2130	2083

*Cum= m³, Mt= mill. tons

Poland

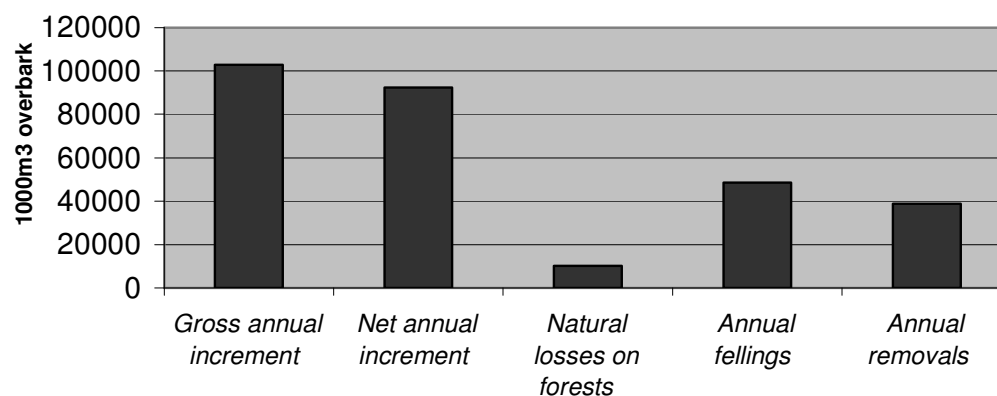
Polish forests are in over 80% owned by the state (graph 17). Therefore amount of annual cuttings is strictly regulated by law and Forest Management Plan. Only in cases of natural disturbances quantity of planned cuttings may increase. Total annual removals amounts in around 27 mill. m³ annually. We can observe slow increase of annual cuttings, in year 1995 only 24 mill. m³ was timbered. All works concerned with felling and logging are done by Logging companies. Wood is processed in sawmills mostly privately owned but some of it belongs also to the state.

At present Poland is producing around 3 mill. m³ of sawnwood, around 30% of it is exported (graph 32). Developing constantly wood based panels industry is producing around 2 mill. m³ of wood products annually. It's expected to increase the production in early future, by foreign investments in that sector. Especially Sweden and Germany are interested in investments, but the structure of polish law regulating forestry organization and amount of cuttings are quite hard for making any agreements. Nowadays amount of foreign investments in sawmilling and wood processing industry is not remarkable. Also most of sawmills are small and medium sized enterprises producing timber mainly for the domestic market.

Forestry in Poland doesn't play any bigger role in the countries economy. The more important role of forests is their positive impact on environment protection and nature sustainability, economy doesn't play a bigger role.

Germany

Increment and removals



Graph 34. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 44. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

	Units*	Import	Export	Production	Consumption
		Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	4862	4439	16879	173020
Sawnwood (C)	1000Cum	4173	3850	15869	16192
Sawnwood (NC)	1000Cum	689	589	1010	1110
Wood-Based Panels	1000Cum	3587	5410	13758	11935
Wood Pulp	Mt	4,342	0,49	2,148	6,0
Paper and Paperboard	Mt	9,293	9,732	18,526	18,087
Roundwood	1000Cum	2538	4450	42380	40468
Wood Fuel	1000Cum	79	23	4625	4681

*Cum= m³, Mt= mill. tons

Germany

The general economic situation also affected the situation of the timber and paper industries. With approximately € 81 billion in 2002, sales declined by 6% against the previous year. Particularly hard hit were timber retailers and the furniture industry. The number of people employed in the timber industry decreased from approx. 605,000 to approx. 560,000 (-7.5%) while the number of enterprises remained about the same.

With approx. 16 million m³, the production of coniferous sawnwood in 2002 was about 6% over that of the previous year. Stagnation has been anticipated both for the current and the following year. With regard to foreign trade, the trade association expects a slight reduction in imports and a significant rise in exports.

With 1 million m³, the production of non-coniferous sawnwood in 2002 was again significantly below the previous year's level. In this sector as well, the trade association expects stagnation in 2003 and 2004. Foreign trade is also expected to slacken.

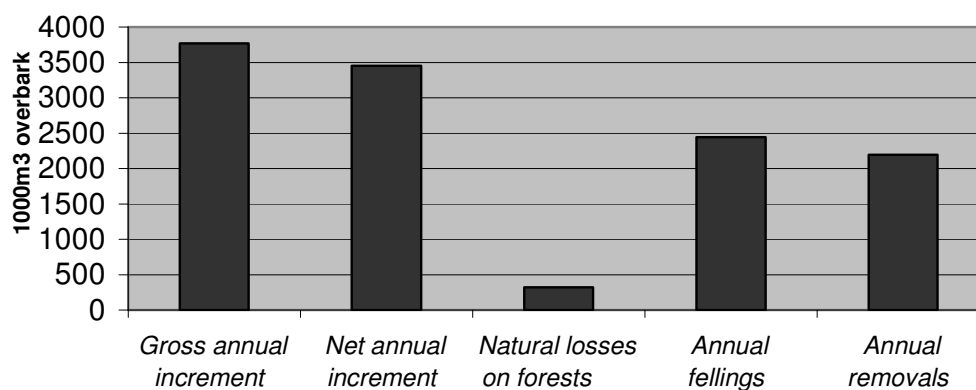
In wood-based panels production foreign supplies play a far greater, and constantly increasing, role than domestic production. In foreign trade, a slight increase in imports and a further decline in exports is expected.

With a production of 18.5 million tons of paper, paper board and cardboard (+4% against the previous year), the German paper industry remained the by far largest paper producer in Europe. This growth could primarily be attributed to increased exports (approx. 9.5 million t of paper exported, i.e. +9% against 2001). About 70% of these exports went to EU markets, 12% to Eastern European countries and the rest overseas. A similar increase in exports has been expected for 2003. The export growth can be attributed to the globalization of the German paper industry (successful international positioning of small- and medium-sized companies in market niches and the increased integration of German factories into multinational corporate groups).

In the year 2002, roundwood logging in the Federal Republic of Germany amounted to a total of 42.379 million m³ (+7.3%). This included 21.089 million m³ of coniferous logs, 3.375 million m³ of non-coniferous logs and 17.933 million m³ of other types (table 44). This increase was primarily due to the increased felling of coniferous logs (+15.8%) and other types (+5.3%) while the felling of non-coniferous logs decreased by 20.9%. The movement of prices for roundwood is shown in the producer price index for forest products from state forests in Germany. According to the 2002 index, roundwood slightly decreased by 1.1%. This can probably be attributed to falling prices for logs of all species and types but particularly also to windfall timber sales from wet timber preservation yards. The index only shows price increases for beech rail (+2.3%), industrial oak (+21.7%) and industrial spruce (+0.1%) against 2001. As a consequence of the long drought, business has been hampered by a considerable accumulation of beetle-damaged timber since the summer months not only in southwestern Germany but also in North Rhine-Westphalia.. A drop in prices has already become apparent and the market for coniferous logs is currently described as rather confusing. www.bmvel.de, www.infoholz.de, www.holz.de.

Denmark

Increment and removals



Graph 35. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 45. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

		Import	Export	Production	Consumption
	Units*	Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	2689	368	244	2565
Sawnwood (C)	1000Cum	2434	293	217	2358
Sawnwood (NC)	1000Cum	255	75	27	207
Wood-Based Panels	1000Cum	1246	129	353	1470
Wood Pulp	Mt	0,06	0,002	0	0,058
Paper and Paperboard	Mt	1,144	0,238	0,393	1,299
Roundwood	1000Cum	643	568	1446	1521
Wood Fuel	1000Cum	136	1	657	792

*Cum= m³, Mt= mill. tons

Denmark

The Danish economy experienced a good growth rate in 2000 and a low inflation. Looking at the general development of the wood industry in Europe it is obvious, that Denmark being a small country with a small forest area and high labor costs is caught in a very difficult situation. International mergers and take-overs have become the normal situation in Europe these days, and in this context Danish forestry is too small to be really interesting strategically – especially when it comes to the primary wood industry. The hardwood-sawmills now almost entirely cut planks and the more detailed cutting is done in eastern European countries, where the lower labor costs justify the extra transport before the Danish furniture industry takes over. Encouragement has been given to the primary wood industry to develop their products further. But when it does so with a viable product it almost inevitably leads to the industry finding out it's a better business. They then stop the sawmill and import the sawnwood.

The major factor in Danish forestry in 2000 has been the wind-throw following the hurricane on the 3rd December 1999. It took down 3.6 million CUM or almost twice the normal yearly Danish production – the vast majority being softwoods. The windfall was unevenly distributed leaving parts of the country almost untouched, whereas other parts lost 30 years of normal production. All has now been harvested, and some 400 thousand CUM lumber of the best qualities are under water irrigation to be sawn over the next 3 years.

The market in 2000 was as mentioned heavily affected by the wind-throw at the end of 1999. Demand was unsatisfying and much more wood was put under water irrigation than expected. Prices on the best qualities and biggest dimensions of softwood went down 15 – 20 % and the lower qualities 30 – 40 %. In the beginning of 2000 hardwood prices were stable, but under the influence of the central European wind-throw at the end of December they came under pressure ending up with unexpected high needs for water-storage in May/June, covering most of the demand in the second half of 2000.

A big effort has over the last years been put in to widening the Danish market for wood fuel. The goal is to be able to use most of the lower quality wood residues from the wood industry and the forests for wood fuel in Denmark. In 2000 it was not possible to heighten the production considerably, but in 2002 a new power energy plant in Jutland will be ready to consume 200.000 tons of wood fuel. At the same time another power plant in Copenhagen will be ready to consume 200.000 tons of wood chips. This will hopefully stabilize the weak market for the lowest qualities of roundwood in Denmark.

No major changes took place in 1999 and first half of 2000 in the Danish wood industry. Some smaller sawmills have shut down – not really affecting the market. The market is heavily affected by the set up of the large sawmill in Wismar, Germany (Klausner Nordic Timber) demanding the better qualities of short timber and supplying sawnwood in intense competition with other sawmills in the region. The same has been the case in the hardwood market with Pollmeyer.

The Danish production of softwood pulpwood is exported – mainly to the Nordic countries. This is due to the fact, that the Danish production of pulpwood is too small to support a Danish pulp mill.

The sawn softwood timber market in Denmark was weak through 2000 with a hard competition in the country and from import (table 45). This caused extremely low revenues in the wood industry and the Danish production was almost unchanged despite the wish to cut large quantities from the wind-throw.

The large Danish import of sawnwood stayed relatively unchanged from 1999 to 2000. The largest impact has therefore so far been seen on the prices for sawn timber and on the demand

for roundwood during the wind-throw. The demanded species and qualities for the Danish furniture industry can't be supplied from Denmark.

The hardwood market is dominated by beech, which despite of increased log export to China and other Far East countries experienced falling average prices during 2000. The average quality and dimension fell, and the market were difficult. The export consisted of the better qualities and achieved slightly falling prices.

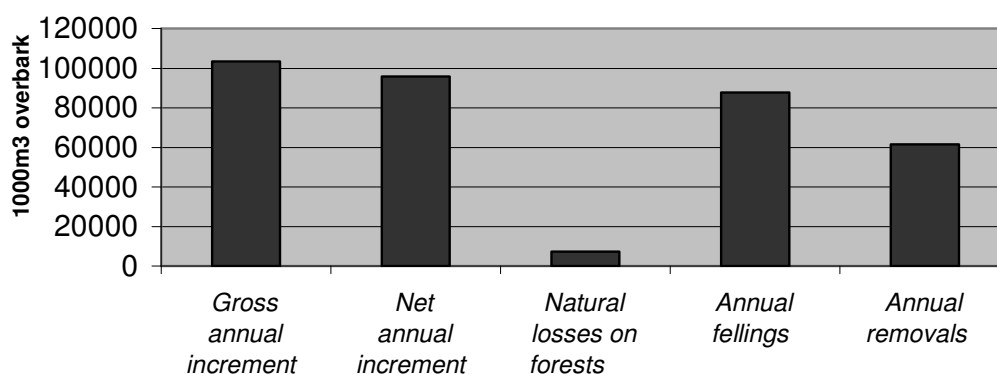
However the Danish sawmills were under pressure in processing the rest of the roundwood production, facing the problems cutting the lower qualities with larger sorting costs due to high Danish labor costs in comparison to the competing eastern European sawmills.

There is only one particleboard plant in Denmark. The only MDF-plant was shut down in 2000. The mills have been operating at capacity although market conditions for the boards have been difficult. The particleboard mill has benefited from increasing availability of chips from the Danish sawmills and cheap wood of the lowest qualities from the wind-throw. On the other hand the sales prices for particleboards have been on a critical level mainly due to the large production in for instants Poland.

There is no wood pulp production left in Denmark. The production of paper and paperboard is relatively stable.

Sweden

Increment and removals



Graph 36. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 46. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

		Import	Export	Production	Consumption
	Units*	Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	439	11476	16560	5523
Sawnwood (C)	1000Cum	328	11454	16400	5274
Sawnwood (NC)	1000Cum	111	22	160	249
Wood-Based Panels	1000Cum	676	231	850	1295
Wood Pulp	Mt	0,387	3,37695	11,382	8,392
Paper and Paperboard	Mt	0,652	8,93427	10,724	2,441
Roundwood	1000Cum	10007	1783	67500	75724
Wood Fuel	1000Cum	463	35	5900	6328

*Cum= m³, Mt= mill. tons

Sweden

The total removals in Sweden vary every year, but in general amounts around 67.5 mill. m³ of wood annually. Sweden produces around 16.5 million m³ of sawn wood annually, over 69 percent being of export grades. Swedish timber is firmly established on world markets. This country's experience in sawmill organization and practices is therefore of general interest. In Sweden, as elsewhere, the location of sawmills is determined by the facilities available for bringing logs from the forest and for transporting the sawn products to the market or shipping center. As the annual output of a mill grows, the transport expenses rise. Hence, in determining the most suitable size of sawmill for a particular area, transport expenses have to be taken into consideration.

Sweden is a land with a large number of lakes and waterways. For this reason, logs are very often stored in water, particularly as this facilitates sorting and prevents fungal and insect attack. Special precautions may have to be taken against freezing in winter, but it is also common for sawmills to stockpile on land enough logs to keep sawmill in the operation through the winter, in which case they are protected from decay by spraying with water.

Sweden's economy is heavily dependent from the forestry sector. Around 46% of it is related with forest industry.

The Swedish wood market consists mainly on conifer species processing. Broadleaves species are not in common with regard to difficult technology indispensable for processing hard wood of deciduous species and quite low contents of broadleaves in Swedish forests. Low share of broadleaves is caused by long rotation age of these species and also by the historical events (Oak trees were the property of the king and were used in shipbuilding industry).

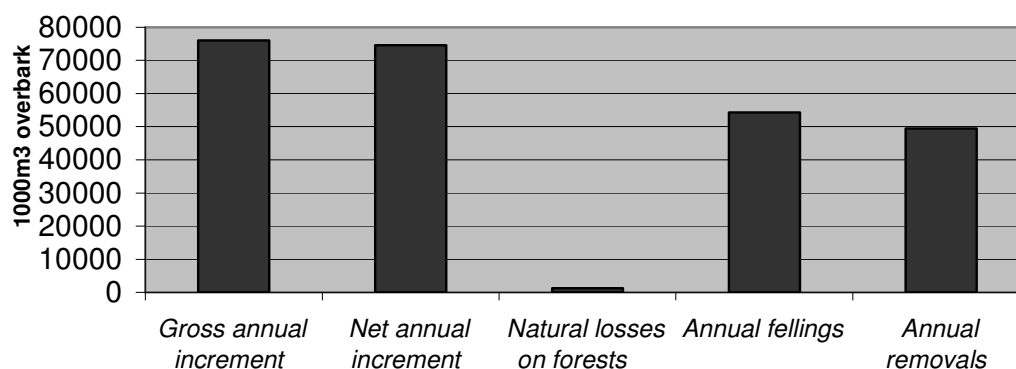
Present wood industry is based mostly on the pulp and paper production. Sweden produces around 11 mill.m³ of pulp annually and similar amount of paper products.

Most of wood demands are fulfilled by domestic market but the import of wood increases constantly and now amounts in around 10 mill. m³ of wood per year (table 46).

Sweden's wood industry is developing rapidly and significant investments are done abroad mainly in Eastern Europe (Latvia, Estonia, Lithuania, Poland).

Finland

Increment and removals



Graph 37. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 47. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

		Import	Export	Production	Consumption
	Units*	Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	257	8187	13390	5460
Sawnwood (C)	1000Cum	191	8167	13280	5304
Sawnwood (NC)	1000Cum	67	20	110	157
Wood-Based Panels	1000Cum	2614	1500	1860	621
Wood Pulp	Mt	0,147	2,114	11,729	9,762
Paper and Paperboard	Mt	0,383	11,48	12,776	1,672
Roundwood	1000Cum	12688	408	53011	65291
Wood Fuel	1000Cum	102	4	4482	4580

*Cum= m³, Mt= mill. tons

Finland

Finland depends on her forests, and on keeping her forest ecosystems in good shape. One-third of Finland's export earnings come from forests. Finland is the world's most forested country, with sixteen times more forest per capita than the average European country. For decades, the forest industry has been the backbone of Finland's national economy. The solid foundation of the Finnish industry is the industrial manufacture of forest-based products, which has its roots in the 19th century. The export income of the wood processing industry and the employment which it offers has maintained a fairly constant economic growth. The stumpage price paid by the industry and the job opportunities created within forestry have brought prosperity even to the remotest regions.

Today, the rapidly internationalized Finnish forest industries have taken operations outside their home country.

In 2000 the export value of forest industry products was 68.2 billion Finnmarks (EUR 11.47 billion). About 80 per cent of this sum was brought in by pulp, paper and paper products, and 20% by timber and wood products. Production has become more diversified, and the degree of processing is higher.

Forest industry production has a remarkably high degree of domestic origin. The industry's primary raw material, wood, is mainly of Finnish origin as is the energy. On average, only around 16 percent of production needs have to be met by imports (table 47).

There are more than 150 industrial sawmills in Finland, and thousands of small gang-mills. The total annual production of sawn wood is more than ten million cubic meters. The largest sawmills are truly high-tech, almost all-automatic. They export three quarters of their production. Small and medium sized enterprises produce timber mainly for the domestic market.

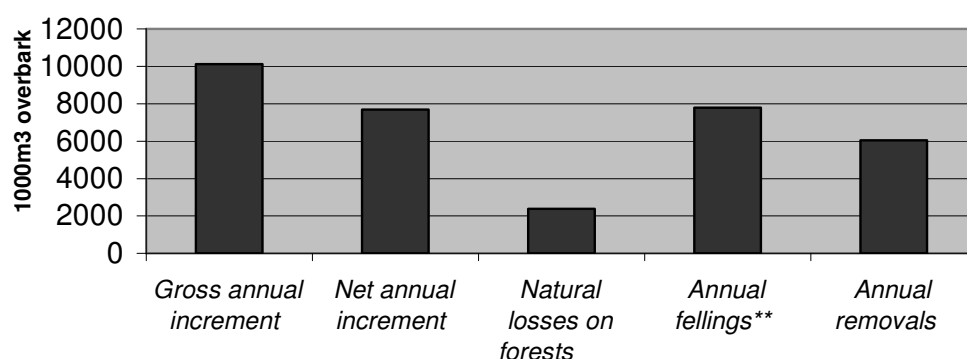
At present, about 20% of the total energy production of Finland is based on wood, which is a high figure in terms of global comparison. As far as energy is concerned, pulp mills are completely self-sustaining and even able to supply other plants with energy.

Finland is also the world's third largest exporter of softwood plywood and the fifth largest exporter of plywood in general.

© Ministry of Agriculture and Forestry, Finland 2001

Estonia

Increment and removals



Graph 38. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 48. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

		Import	Export	Production**	Consumption
	Units*	Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	236	1248	1900	896
Sawnwood (C)	1000Cum	205	1079	1770	888
Sawnwood (NC)	1000Cum	31	169	130	8
Wood-Based Panels	1000Cum	134	384	480	230
Wood Pulp	Mt	0	0	0,06	0,06
Paper and Paperboard	Mt	0,087	0,068	0,08	0,099
Roundwood	1000Cum	639	3359	10500	7780
Wood Fuel	1000Cum	0	227	1930	1703

*Cum= m³, Mt= mill. tons

**The interpretation of the figures in the table 49 and draft 38 prompts some doubts about their reliability. Considerable gap between the annual fellings and total production is visible, but because of lack of updated information it was impossible to find the reasonable explanation for it.

Estonia

Estonia's wood processing industries - like other industrial sectors - underwent a rapid restructuring process in the early 1990s. Wood processing companies are located all over Estonia. Larger concentrations may be observed near bigger centers such as Tallinn, Tartu, Pärnu and Rakvere.

In developed countries the products of Estonian wood processing companies are competitive mostly thanks to their reasonable price-quality ratio. This means that the prices of Estonian companies are lower than those of West European enterprises but the quality is as high as the one offered by other manufacturers. Estonian producers price their products based on market situation and the costs incurred. Most companies apply cost-based pricing.

Most wood processing companies consider the Estonian market highly competitive. It is probable that in the near future the Estonian wood market will experience changes due to the sale of AS Sylvester to Stora Enso group. The impact of the transaction on the Estonian forestry and wood processing industries is as yet hard to assess.

All industries import processed and unprocessed wood. Although wood processing companies purchase most of the raw and other materials from Estonia a lot of raw material is also imported (table 48). The main import markets are Russia, Finland and Latvia.

Estonian wood processing industry has received foreign investments for ca 10 years already. In 2002 the largest investment in the wood processing sector has been the establishing of the aspen pulp plant in Kunda. As a result of the purchase-sales transaction in progress, several successful Estonian sawmills will soon be transferred under foreign capital.

According to customs statistics and the Statistical Office, in the 2002 the exports of wood processing companies equaled to 67.4% of their total sales. The chart indicates the main export articles were sawn timber, unprocessed wood and wooden construction components.

The main export markets were Germany, Great Britain, Finland, France, Sweden and Denmark. Rising markets are Finland, Ireland and Denmark.

According to Estonian Statistical Office sawmills exported ca 72% of their production.

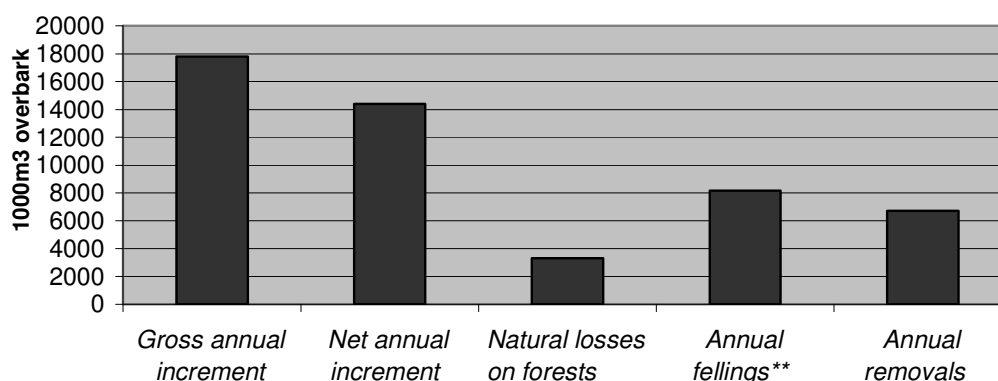
Over the last decade, several log-house producers have emerged. If ten years ago we had less than 10 companies engaged in the area, the sub-sector today has more than 80 companies with their total annual sales amounting to approximately 600 million kroons. This kind of investment found very broad market for their product with the international scale. Window and door producers can increase their export potential by selling to log house producers who export most of their products. It may be assumed that smaller manufacturers will remain focused on the domestic market whereas larger ones will increase their exports.

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Source: Statistical Office of Estonia

Latvia

Increment and removals



Graph 39. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 49. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

		Import	Export	Production**	Consumption
	Units*	Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	158	2857	3947	1248
Sawnwood (C)	1000Cum	151	2290	3100	961
Sawnwood (NC)	1000Cum	7	568	848	287
Wood-Based Panels	1000Cum	62	237	318	143
Wood Pulp	Mt	0	0	0	0
Paper and Paperboard	Mt	0,1	0,024	0,0243	0,1
Roundwood	1000Cum	393	4469	13467	9391
Wood Fuel	1000Cum	6	244	1198	960

*Cum= m³, Mt= mill. tons

**The interpretation of the figures in the table 49 and draft 38 prompts some doubts about their reliability. Considerable gap between the annual fellings and total production is visible, but because of lack of updated information it was impossible to find the reasonable explanation for it.

Latvia

Latvia has come close to those transition economies of Central and Eastern Europe that are leaders in terms of attraction of foreign direct investments.

Denmark, the United States, Germany, Sweden, United Kingdom and Russia have made major investments. An important project for Latvia is the pulp-mill project (the planned capacity is 600 thousand tons of pulp per year). If the project is implemented it will result in growth of GDP by 1-2%. The Swedish Sodra, Finnish Metsaliitto and the government of Latvia established the joint stock company Baltic Pulp. The task of the newly established company is to address questions of design, construction and operation of the pulp-mill. It is planned that the plant would start operating in 2005.

The forest utilization has increased considerably as the result of the land reform and increased economic activity. This increase is especially high in other ownership (private and local community) forests. The volume of fellings in state owned forests is stable, greatly due to the annual allowable cut there determined by law. Harvested timber is mainly used for sawn wood production within the country. Depending on the fluctuation of pulp prices in the market, about 30 % of total annual felling volume is exported as round wood, 90% of that as pulpwood. The round wood export volume varies considerably. The softwood/hardwood ratio remains relatively stable with the trend to increase of hardwood.

The sawmilling and wood processing industry in Latvia comprises many small- medium sized enterprises, with only a few being of international scale. At present this is the most important forest industry segment for the Latvian economy. In 2000 the Latvian sawmilling industry produced around 4 million m³ of sawn timber with a total value of some 240 million LVL, most of which was exported (table 49). The leading companies are investing to become major players in the sawn timber markets whilst others are approaching the future through a strategy aimed at the production of added value timber products. Currently two sawmilling companies have an annual output in excess of 100,000 m³ per annum with several others expected to reach this level in the very near future. About 20 medium sawmills have production capacity between 10,000 and 50,000 m³/yr. The level of technologies and efficiency is differing at these sawmills. Several hundred small sawmills each produce between 500 to 10,000 m³/yr. of unseasoned or partly dried sawn wood. Competition for the resources and difficulties in marketing the sawmill by-products have made the small and medium sawmills strive for the maximum yield of sawn products (the log-scale factor is by some percent higher than in the Nordic countries), making unconventional assortments and using non-traditional wood species. The installed capacity of Latvian sawmills is quite high. The possible annual output of sawn wood exceeds 5.7million m³/yr., when working in one shift.

The Latvian sawmilling sector is at a stage in its development where the viability of many of small and medium sized mills is unsustainable. The process the industry is going through at present, with the larger companies going for volume production and medium sized for specialty production, has been mirrored in many other countries producing softwood sawn timber. The loss of small inefficient sawmills which have not or cannot acquire the required capital investment to reach the next stage of development is an inevitable outcome of industrial development.

Latvian sawn timber export continues to increase; growth rate last years has declined. The growth of production and export volume of sawn wood gradually slows. At the same time the local consumption of sawn wood is increasing. At present about 23.5% of total sawn wood production is used in the country, mainly for furniture production.

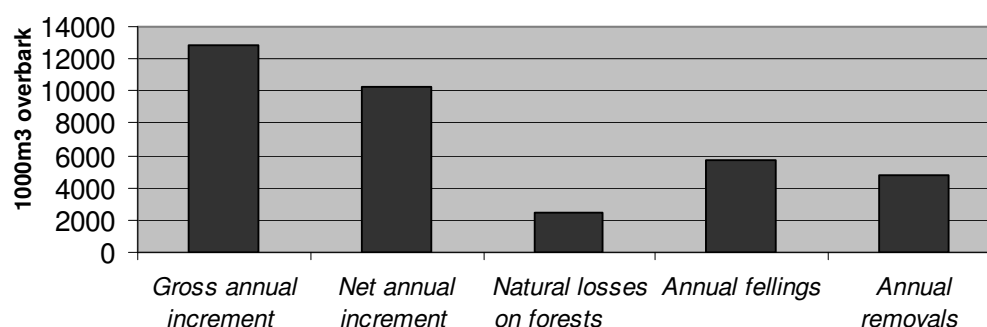
During the past two years the import of sawn wood from Russia and Belarus has been on the increase. The material brought to Latvia is processed further to add value to the products, a part of them is exported. The future prospects of the sawmill industry depend on the projected

pulp mill in Latvia and a modern board manufacturing facility, which would provide for a more complete and efficient utilization of raw material or selling of sawmilling by-products.

The wood based panel industry in Latvia currently produces plywood; particleboard and glue laminated solid wood panels. The most valuable production there is plywood which comprise about 90 percent of total production value. The export of plywood is directed mainly to Germany, UK, Sweden, Netherlands and Austria.

Lithuania

Increment and removals



Graph 40. Increment and removals ratio in 2001 (EFI,2002 European Forest Institute web pages <http://www.efi.fi>.)

Production of particular assortments

Table 50. Production in year 2002. (UN-ECE. 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO. ISBN 92-1-116735-3)

		Import	Export	Production	Consumption
	Units*	Quantity	Quantity	Quantity	Quantity
Sawnwood	1000Cum	307	918	1200	588
Sawnwood (C)	1000Cum	273	630	900	543
Sawnwood (NC)	1000Cum	34	288	300	46
Wood-Based Panels	1000Cum	157	192	303	269
Wood Pulp	Mt	0,00466	0,00227	0	0,002
Paper and Paperboard	Mt	0,084	0,02999	0,078	0,132
Roundwood	1000Cum	104	1436	6300	4967
Wood Fuel	1000Cum	0,1	16	1440	1424

*Cum= m³, Mt= mill. tons

Lithuania

During 1996-1998 Lithuania experienced the steady growth in economy. As of 1st April 1999 foreign direct investment totaled USD 1745 million in 1998 investments amounted to USD 585 million, in first three months this year - USD 120 million. Major country investors are Sweden (17.3%), USA (15.3%) and Finland (10.8%). Forest industries are the fifth biggest industry sector where direct foreign investments totaled at USD 52 million.

Russian crisis caused the recession in economy of many Eastern Europe countries. Lithuania was not exception in this case; its economic indicators worsened during first half of 1999.

The impact of Russian crisis for forest industries was not so strong as for most other sectors. Since the beginning of the independence Lithuanian timber sector was export oriented to Western markets. The main problems met by forest industry this year is decreased domestic consumption (furniture) and competition with cheaper imported products (wood-based panels).

Natural calamities in 1994 – 1996 (windthrows and bark beetle damages in spruce stands) caused steep increase in volumes and structure of roundwood removals. During 1997-1999 removals stabilized at 5 million m³ level. Most of removed timber comes from sanitary cuttings.

Pulpwood (including wood for board industry) supply is expected to decline slightly this year because of decreased demand from domestic panel industry.

Imports from Russia doubled this year, while deliveries from Belarus ceased due restrictions of log exports in this country. This year Russia accounts for 95% in Lithuania's softwood log imports (in 1998 – 50%). Total imports are expected to be up by 20% compared to 1998, however imports still play insignificant role in total softwood sawlog market in Lithuania, accounting for about 5% of total supply.

Softwood sawlog exports are showing steady increase and are expected to double to 150,000 m³. Almost all volume goes to Poland; also some attempts on exports to Germany were noticed.

In 1998 exports declined to all export markets with exception of Italy and U.S. Germany remained the main market (57% of exports), followed by UK (11%), Belgium (5%), Netherlands (5%) and Denmark (5%). Interesting development is increasing sales to U.S. market – Lithuania became the fourth biggest supplier of sawn softwood from Europe to this country.

Lithuanian sawmills are losing their market share in these countries due to tightened competition with other suppliers (mainly Belarus, Russia and Latvia). Sales to UK, Belgium, Denmark and United States increased this year. Exports to U.S. doubled, and this country became the fourth biggest export market for Lithuanian sawn softwood (table 50).

Non-coniferous log removals were increasing steadily since 1997. The main species used by industry are birch (45%), aspen (25%), alder (20%), oak and ash (10%). Plywood industry consumes about 50% of birch and 25% of black alder logs. The rest is consumed by sawmilling industry. Relatively small volumes of hardwood logs are exported.

Wood-based panels production amounted in 1997 to 165,000 m³. Now only 30,000 m³ is produced. Main markets are Poland and UK.

Since early 1990's the pulp production discontinued in Lithuania.

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III. Analysis of the most important topics

The structure of the forest ownership

Table 51. Types of forest ownership in each of the countries

Property structure	Poland	Germany	Denmark	Sweden	Finland	Estonia	Latvia	Lithuania
State	82%	34%	0%	5%	30%	38%	50%	50%
Private	17%	47%	72%	50%	70%	37%	42%	25%
Communal	1%	19%	28%	0%	0%	0%	0%	0%
In restitution	0%	0%	0%	0%	0%	25%	0%	25%
Other	0%	0%	0%	45%	0%	0%	8%	0%

The owner's structure in considered countries differs much upon each other (table 51 and graphs 17, 19, 21, 23, 25, 27, 29, 31). Main differences appear because of law restrictions, culture, tradition and historical events. From almost mainly state owned organization in Poland, through diverse structure in of the Baltic States forest ownership to the mainly privatized forests of Scandinavia. Positive and negative sides of each structure may be considered due to many different economical or social aspects.

From the ecological point of view state organization structure in high degree cares about protection of environment and biodiversity, soil and water protection and nature balance preservation (in Poland position of environment protection is strictly regulated by Forest Management Plan). Privatization of forests by giving almost free will in decision-making process resulted in decrease of biodiversity, increased amount of forest monocultures, and made forest more even regardless to site index. From the economical point of view privatization of forests gives broad possibilities of development for wood processing industries and for people willing to locate their capital in forestlands.

State organization structure represents central oriented type of organization characterized by rather slow possibilities of accommodation to the newly appeared needs of the market and low elasticity.

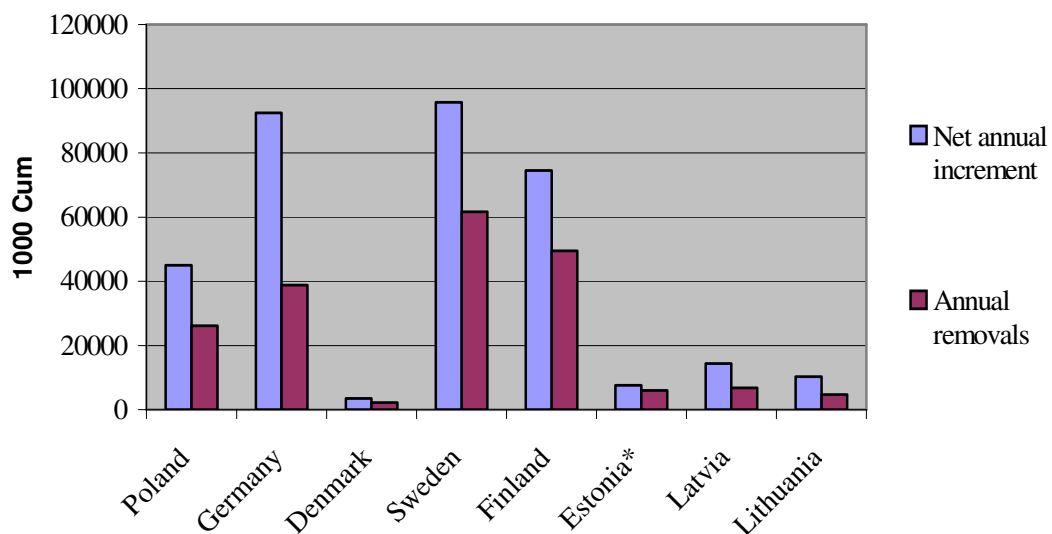
It's impossible to synonymously determine the more appropriate structure of ownership. However observing the respected countries we can hypothesize that state ownership is more proecological and cares in greater way about environment protection and biodiversity. Privatization of forests on the contrary gives bigger economical possibilities and might be more profitable.

Correlation between the ownership and forest policy

In the countries like Poland and Germany regardless to the ownership the forest act has got to be strictly followed. In West Germany The Forest Preservation and Forestry Promotion Act was passed in 1975 to prevent destructive and wasteful timber policies. It now applies to all of Germany. Under the act, forest owners must return cut areas to their original condition, converting forests into timber farms in which the cut trees are replaced by seedlings. However, despite legislation and the great attention paid to the forests, no lasting solution has yet been found. As a result of the decades of ecological damage, many German forests, including the highland Black Forest in the southwest, are badly depleted. Similar situation has place in Lithuania, where almost one fourth of the forest grounds are in restitution process. All forest area is strictly superintended by The Ministry of Forestry of Lithuania. Latvia's regulatory framework is characterised by a high degree of centralised government control.

The central government authorities in Riga, notably the State Forest Service, have inherited far reaching powers of control over forest use and planning in all Latvian forests irrespective of ownership status. Not only do the central authorities own and regulate forests, but they also direct the way forestry operations should be carried out in the field. The system of control comprises the annual allowable cut established by the Latvian Parliament, a comprehensive state run forest inventory programme, and centrally compiled forest operations from forest establishment to final felling. The existing system of regulation is the subject of debate within Latvia and major reforms may soon be introduced. Situation differs much in the Scandinavian countries and Estonia. The Forestry Act in these countries lays down that the forest shall be managed in such a way as to provide a valuable, sustainable yield and, at the same time, preserve biodiversity. The issue of compensation for encroachment on ongoing land use is regulated in the legislation on planning and building and in the constitution. It has been established that, under the legislation, there are few restrictions on land use, which can be imposed on a landowner in order to preserve biodiversity. This means that, as it is formulated at present, the Forestry Act constitutes a paradox. Conflicting objectives in different parts of the legislation have the effect, in practice, that it is not possible to formulate enforceable rules in the Forestry Act or in supplementary regulations or injunctions, which would make it possible to implement the environmental goals on an equal level with production goals.

Potential stock and potential productivity of considered countries (comparison)



Graph 41. The annual increment/removals ratio in each of the countries (GFTN,2002. Global Forest and Trade Network web pages. <http://www.panda.org>.)

* Values in different sources vary much upon each other. Data used in the graph consists on the official values stated by the Estonian parliament.

Comparison on this field is relatively difficult in order to many contradictory data and lack of reliable source of information (graph 41, parallel of tables 6, 7, 11, 12, 16, 17, 21, 22, 26, 27, 31, 32, 36, 37, 41, 42).

Scandinavian forestry is characterized by rational correlation between removals and increment, however Scandinavia in order to increase profit from forestry decreased the rotation age of main tree species (Pine and Spruce). Also many fertile sites were turned into spruce or Pine monocultures without the consideration of decreasing biodiversity.

Scandinavian forestry is also considered as one of the most profitable type, which might generate almost half of countries economy.

The capacity of the biggest forest corporation Stora Enso amounts around 24 mill. m³ annually (total capacity of the branches in Sweden and Canada). The same it's the third biggest wood industry on the world and the first biggest in Europe. Amount of annual production in this corporation is close to total annual removals in Poland.

Poland and Germany don't make most of their potential stock. Annual removals amount in less than half of the annual increment. Forestry in these countries is droved with high consideration of sustainability, environment protection and minimal intervention in natural ecosystems. Respected system so valuable from ecological point of view of creates rather non-profitable branch of economy. In Poland as well as in Germany forest industry establish only around 3% of total countries economy.

The situation in Baltic States and Denmark is quit difficult to interpret because of their small land area and relatively small forest area. Quite interesting is situation of Estonia where annual removals were often higher, during past years, than annual increment. One reason for that might be increased felling in older stands and also precede works of afforestation of closed mines and polygons. Afforestation on these areas is with rather law felicity and increment is also very low.

Most of the removals done in Lithuania come from sanitary cuttings. It's caused by very high amount of damaged trees and quite heavy industry during soviet times.

Many Scandinavian and EU countries are interested in investments in Baltic States because of their good geographical situation and relatively low developed local industry. Huge investments are done by Sweden and Finland on the market in Estonia, Latvia and Lithuania. Good establishment possibilities are found by the corporations like IKEA, Stora Enso, Finncor, UMP-Kymmene, Metsaliitto or AssiDoman (source: FSC,2002 FSC web pages, <http://www.fscoax.org>,SFB,2002. Sustainable Forestry Board web pages, <http://www.aboutsfb.org>)

Organization of felling, technical standards and used technology

In all considered countries organization of forestry is quite similar. Created are particular services responsible for cuttings and wood transport. Costs of transport are usually paid by the buyer. Used technologies differ much between countries also mechanization of work and impact on the environment is different. This work consists on the countries with very highly developed forestry and wood industries (Sweden, Finland) and also countries with small wood industry and small forest areas (Latvia, Lithuania, Estonia, and Denmark). Also used techniques are different between the countries. Observed differences between western and eastern countries might suggest probable tendencies of changes in technologies and wood-processing ways is the countries in transition. This changes; development of the used technology during cuttings and intensification of forest production and mechanisation can increase negative influence on the environment. Opening of new markets for wood, appearance on the local markets competitive companies (more modern and effective but causing more damages in the environment) and also increased demand for wood products might cause changes in the legislation and organizational level.

Existing in Poland system of forestry organization is characterized by sustainability, environment protection and respect for ecology might be shaken by the tendencies launched abroad. One of the tendencies might be privatization of forests in Poland. Although one of the privatization ideas was heavily rejected few years ago, it's not excluded that the idea will soon come back in the light of new laws and possibilities. Privatization of forestlands and free interpretation of forest management plan obligated in Poland with mechanization of services responsible for cuttings will probably result in disturbances in the biological balance of forests.

System of cuttings with chainsaw used in Poland, Latvia and Lithuania is characterized by the lowest negative impact on the environment. Also launched idea of horse forwarding especially during thinning and sanitary cuttings is considered as relatively cheap and ecological. Foreign companies will be highly competitive especially in order to the time of processing.

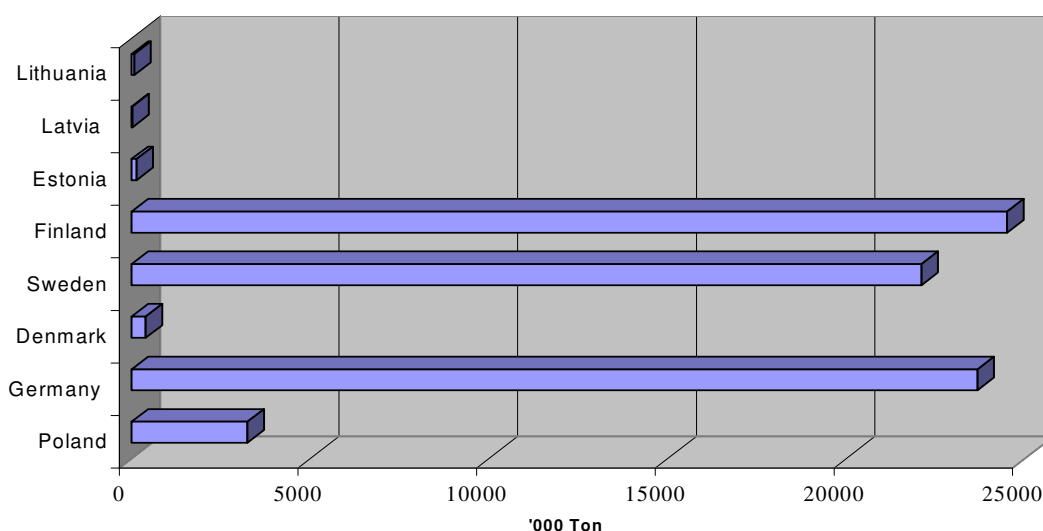
Also standards of wood in each of the countries are different. From one hand it might be caused by the different species composition in each of the countries, from the other hand by different use of the raw material. For example in Sweden and Finland most of the material is used in the pulp and paper industry, therefore the quantity is more important than quality of logs. Their classification system consists on three quality classes. In the countries with higher amount of broadleaved species and with industry focused on saw milling the classification system consists on four quality classes* (Germany, Poland, Latvia and Lithuania).

*Related only to large-sized wood

PEFC,2002. PEFC web pages. <http://www.pefc.org>.

SFB,2002. Sustainable Forestry Board web pages. <http://www.aboutsfb.org>

Paper industry



Graph 42. The paper industry in the countries (CEPI,2002. Confederation of European Paper Industries web pages <http://www.cepi.org>.)

Paper industry is characterized by strong development due to industrial and social development. Demand for paper increase constantly, it is estimated that demand during last ten years doubled. Finland, Germany and Sweden are the leading countries in the paper industry. The production of paper in Sweden and Finland is much higher than the consumption; therefore it's a valuable export product. Interesting is that production of paper in Germany is on similar level as in Scandinavian countries but despite of it doesn't cover total demand for that product in the country.

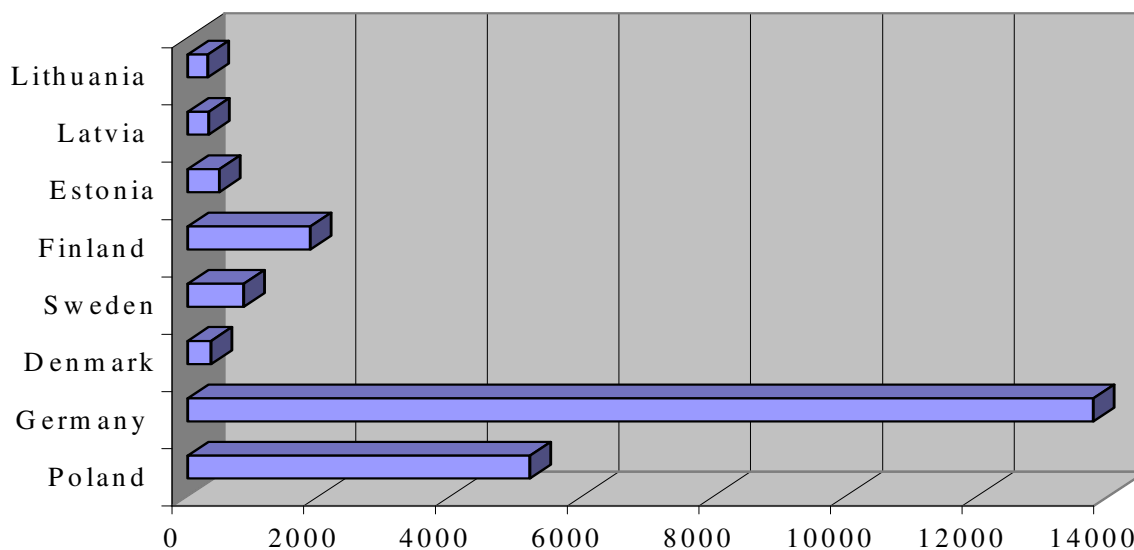
Polish paper industry fully covers demands of the country, nevertheless around 1,5 Mt is exported and similar amount is imported from Germany.

Baltic States and Denmark don't have developed paper industry. Their total summary production is lower than production in Poland. Demands for paper in Baltic States are

fulfilled by import from Scandinavia; demands in Denmark are supplemented by Germany and Sweden.

It is estimated that paper industry will develop fast due to increased consumption on the world. At present Scandinavian countries want to develop this branch of economy by local and abroad investments. Sweden actually is planning to build pulp mill in Latvia and Estonia.

Wood based panels industry

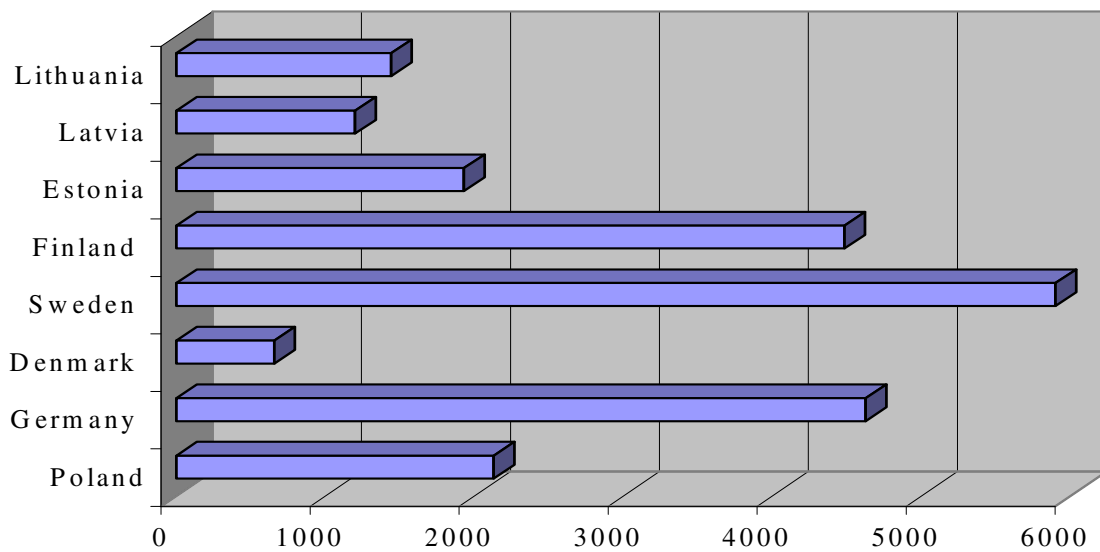


Graph 43. Wood based panels industry in regarded countries (FAOSTAT, 2000. <http://apps.fao.org>.)

Wood based panels industry in considered countries is strongly dominated by Germany and Poland. Annual production in Germany reaches almost 14 mill. m³ from which over 5 mill. m³ is exported. In Poland production amounts over 5 mill. m³ annually which is similar to German export quantity. Annually around 1,6 mill. m³ of panels are exported (data from 2002). At present the amount is probably much higher due to strongly developed wood based panels industry is last couple of years, but credibility actual data are not available at present.

Wood based panels industry in the rest of the countries is very small. Total summary amount of production in all Scandinavian and Baltic countries together generate only four fifths of production in Poland.

Fuel wood



Graph 44. Production of fuel wood in each of the countries (FAOSTAT. 2000. <http://apps.fao.org>.)

Fuel wood is commonly produced in all of considered countries (graph 44). This branch of wood industry is focused mostly on the local demands and doesn't play any greater role in wood industry. In Scandinavian countries wood is one of the most common sources of energy. In Poland, Germany and Baltic States is only an alternate for coal and gas.

This graph refers only to the wood intended for fuel in the first stage of production (timber classification and quality estimation) and doesn't illustrate the factual amount of wood or wooden by-products used for energetic purpose.

Use of wood per person in respective countries

Table 52. Use of wood and paper per person in respective countries
(<http://earthtrends.wri.org/>)

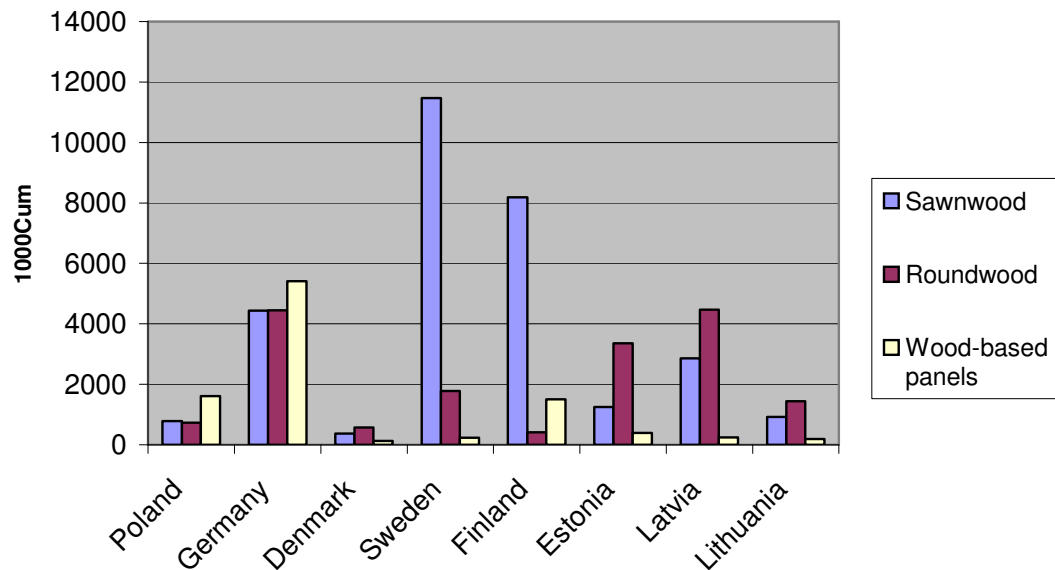
Country	Population*1000	Use of wood in 1000CUM	Use of wood per capita Cum	Paper and paperboard consumption per capita kg/year
Poland	38 646	27 173	0,703	66,8
Germany	83 251	40 468	0,486	219,47
Denmark	5 350	1 521	0,284	242,76
Sweden	8 940	75 724	8,470	275,34
Finland	2 317	65 291	28,179	321,78
Estonia	1 416	7 780	5,494	74,51
Latvia	2 366	9 391	3,969	43,17
Lithuania	3 601	4 967	1,379	38,02

The table 52 (column 3 and 4) consists only of the comparison of wood used by the each of the countries in general, which for example includes also wood intended for paper industry with the assignation for export in later stage and doesn't refer to factual domestic consumption of wood per capita. The consumption of the paper in the countries (column 5) point out the most developed countries in the region (Finland, Germany, Sweden and Denmark) and outline the huge gap in the development between these countries and the Baltic Countries.

Low level of consumption of wood and paper causes a difficult situation for forest sector and sawmilling industry and reduces the possibilities for wood industry development. Regarding to that it is important to promote wooden articles on domestic market and abroad.

Export/import ratio in the considered countries

Export of selected assortments



Graph 45. Export of sawnwood, roundwood and wood-based panels (FAOSTAT. 2000. <http://apps.fao.org>.)

Export of sawnwood is dominated by Sweden and Finland (graph 45). Considering resources in these countries it doesn't arise any surprise. Interesting is the fact at Poland as a country with many resources of roundwood doesn't play any greater role in the international export. Countries with much smaller forest area like Latvia and Estonia play far greater role on the wood market than Poland. Taking into consideration value of the products Germany derive the biggest benefits from this branch of export, while position of Denmark, Lithuania and Poland seem to insignificant. Other interesting issue is the very low trade of wood-based panels, only Germany exports considerable amounts of this product (draft 45, 46).

Export of sawnwood from Poland is directed mainly to West Europe especially Germany, Italy, Netherlands, France, Spain, Denmark, Belgium, Austria, Sweden. Roundwood export from Poland is mainly orientated to Austria, Czech Republic, Italy, Germany and France.

Germany exports their products mainly to Italy, France, Netherlands, USA, Austria, Belgium, Czech Republic, China, Denmark, and Sweden.

Denmark's export is orientated mainly to Scandinavian countries, China and Germany.

Sweden's export is directed to United Kingdom, Norway, Denmark, Germany, Netherlands, Japan and Spain.

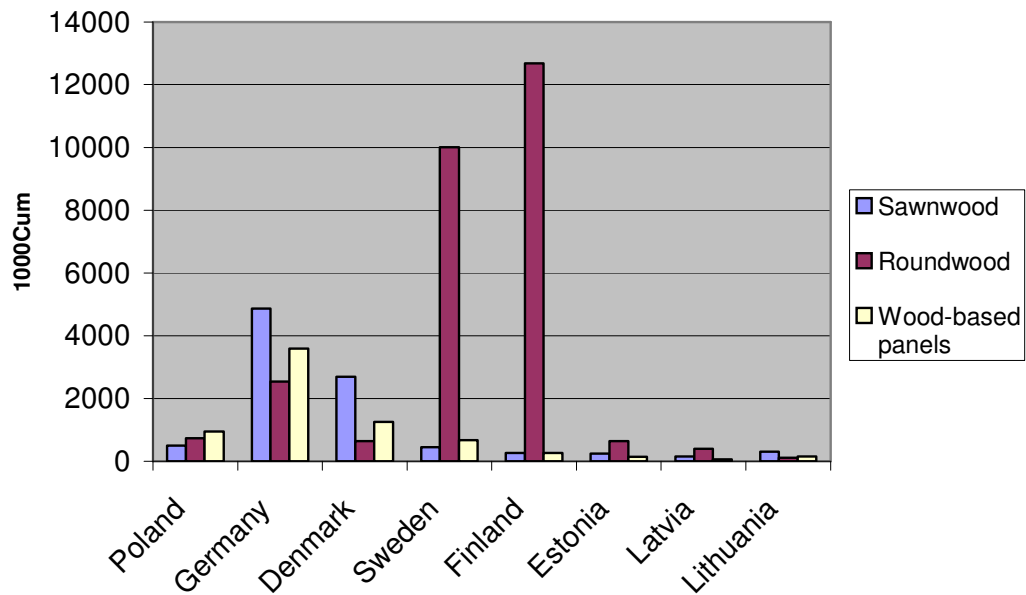
Finland exports wood mainly to United Kingdom, Japan, France, Germany, Egypt, Netherlands, Sweden, and Denmark.

Estonia exports their products mainly to Sweden, Finland, Norway, United Kingdom, Egypt and Germany.

Latvia exports mainly to United Kingdom, Germany, Egypt, Ireland, Sweden and Finland.

Lithuania's export is directed to Germany, United Kingdom, Sweden, Russian Federation, Poland, Latvia, Belgium, Canada and United States.

Import of selected assortments



Graph 46. Import of sawnwood, roundwood and wood-based panels (FAOSTAT. 2000. <http://apps.fao.org>.)

Import of roundwood to Sweden and Finland is significant. It exposes the greatness of their wood industry and the potential of their sawmill corporations. Also import of regarded products/materials to Germany is high, interesting is the fact and relatively similar amounts of the same products are exported from the Germany.

Poland and Baltic countries doesn't play any bigger role in import.

Poland imports mainly from Russian Federation, Belarus, Germany, Ukraine, Slovakia and Lithuania.

Germany imports great amounts of wood from Scandinavia, Belarus, Russian Federation, Poland, Lithuania, Ukraine, France, Estonia, Belgium and Czech Republic.

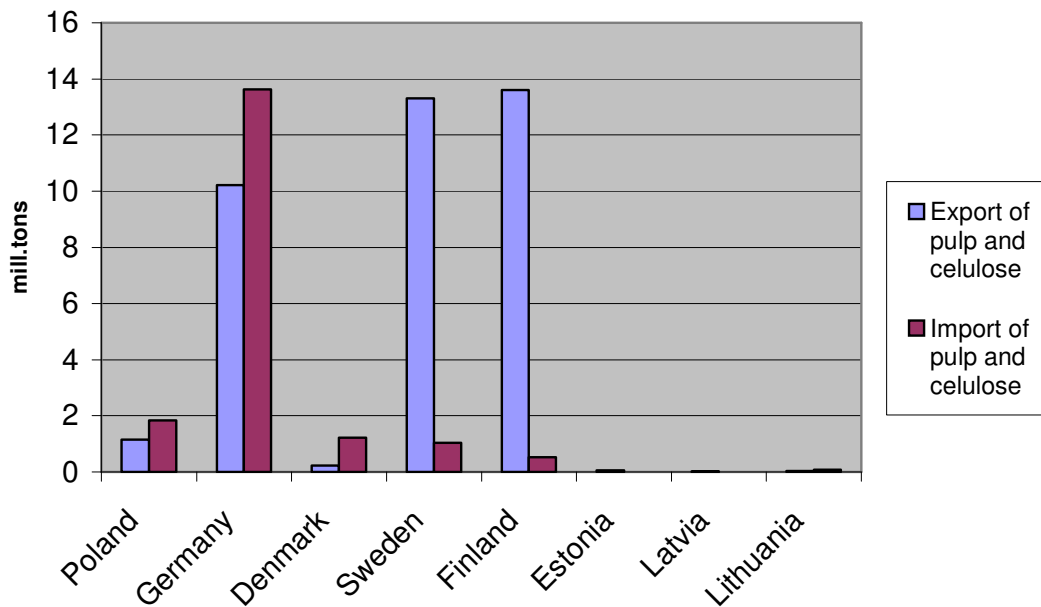
Denmark imports mainly from Sweden, Finland, Germany and Russian Federation and Poland.

Sweden import comes mainly from Russian Federation, Latvia, Estonia, Norway, Germany and Finland.

Finland is importing mainly from Russian Federation and Baltic countries.

The Baltic countries imports regarded products mostly only from Russian Federation and to some extend also from Belarus.

Trade of pulp and cellulose



Graph 47. Export and import of pulp and cellulose (FAOSTAT. 2000. <http://apps.fao.org/>.)

Sweden, Finland and Germany are the biggest manufacturers of cellulose and pulp products. These countries also belong to the biggest suppliers of these products for Europe. Total export from these countries exceeds 35 mill. tons annually. The position of the other countries on in the pulp and cellulose trade is insignificant.

IV . Trends in development in wood marked and possibilities for cooperation

Wood market in Europe is dominated by the countries with the biggest production possibilities based on high developed technology, high demand for wood products and with highest capital. An important factor is competition on the market of wood suppliers. Poland belongs to the countries where state forest is the only supplier which is a kind of monopolization of the market. In the Scandinavian countries forests are the property of many institutions and private owners. It gives possibilities to for the industries to discuss the amount and negotiate price of the wood.

Nowadays in the times of the European Union the possibilities for import and export of wood are increasing. However the other problems in free development of the market are the taxes and the legislation processes in the country. The companies newly established in Poland don't have equal possibilities with the companies abroad because of the limited credit possibilities and high taxation system.

Nowadays we can observe on the market strongly developing big companies, which are buying small, and badly prospering companies abroad and on the local market. The best examples are the biggest strongly developing Scandinavian holdings, which are buying of small companies situated in Estonia, Latvia and Lithuania.

In Poland an important issue is the promotion on wooden products. Only by creating market demand for this kind of products we can create possibilities of development for the sawmills and wood processing companies prospering or trying to establish on the market. Similar

problems are visible in the Baltic States where lack of capital is leading to decrease capacity of the industries or force them to close the holding. High-developed countries are constantly increasing their production in the country and abroad. The only threat for them might be Russia and its wood base in Siberia. Although this kind of event rather seems quite unreal, the great amount of wood and wood products would probably lead to drastic changes on the established European market.

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