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Study of the Effects of Globalization on the Economic Viability of EU Forestry

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Summary

Most of us consider globalization to be a purely contemporary phenomenon. In a recent book, Chanda (2007) concludes that globalization is probably as old as humanity itself and just as complex and unpredictable. He states it "has worked silently for millennia without being given a name" and it moves through "a multitude of threads connecting us to far away places from an ancient time." Thus, globalization is a gradual historical process, Chanda claims, connected to the past.

The processes of globalization are continuously evolving and currently driven by the economic aspirations and desires of hundreds of millions of people around the globe. Consequently, the more people that become involved in these processes, the faster the globalization goes.

The main objective of this study is to analyze the effects of globalization on the economic viability and global competitiveness of the EU forest sector.

Globalization, as used in the study, focuses on the economic dimension and is defined as the integration of economic activities, primarily via markets. Economic globalization has, in turn, cultural, social, and political consequences, which are only partly reviewed in this study.

The geographical scope of the study is the total European Union, including the accession countries and the countries of the western Balkans; it covers a time frame from the present up to 2030.

A framework concept is used throughout the study to achieve consistency in the analysis.

The study is organized into six tasks as follows:

- Preparatory task: Detailed scoping and methodological framework;
- Main trends and factors of globalization affecting the EU forest sector and forestry;
- State and development in the EU forest sector;
- Regional effects of trends and factors of globalization;
- Threats and opportunities from globalization effects in the EU forest sector and forestry; and
- Responses and conclusions.

The study consists of a literature review and analytical work with a set of formalized models developed by IIASA.

The study has generated a large number of different results, but the report concentrates on major findings.

The study includes a literature review of globalization in general as well as a review of the main globalization factors and their related indicators:

- Globalization and forestry in general;
- Investments, globalization, and forestry;
- Economic activities, globalization, and forestry;
- Employment, globalization, and forestry;

- Trade, globalization, and forestry;
- Technology and know-how, globalization, and forestry;
- Policy and institutional changes;
- Societal and demographic shifts;
- Climate change and future energy demand; and
- Climate change, environmental change, and disturbances.

The results of this analysis are rather general for the EU forest sector and forestry, although globalization has resulted in a more diversified economic world of shifting patterns and a more differentiated model of global production. Globalization has helped to provide EU countries with access to global markets in industries that employ large numbers of people. At the same time, globalization puts the livelihoods of workers and entrepreneurs under increased pressure. Globalization also brings to the forefront a number of issues related to industrial development policies. The new imperative is to develop public policies that encourage the EU forest sector and forestry to cope with, adapt to, and shape changes rather than policies that attempt to preserve the status quo. All the globalization factors studied are likely to have an impact on the EU forest sector and forestry.

The study also carried out an analysis of the current status and development trends of the forest sector and forestry of the EU. One of its objectives was to identify commonalities and differences in the state and development of different European regions. Analyses were carried out for specific regions as defined in *Table 1*.

Table 1. Regional Types of Forestry in the EU27.

Type 1: Globalized regions/ Nordic–Baltic	Globalized pulp/paper industry-oriented, raw material production oriented regions in Nordic countries, and related supply regions in the Baltic states
Type 2: Wood production oriented regions/Central Europe	Raw material production-oriented regions in Central Europe supplying sawmilling/pulp and paper industry, and related supply regions
Type 3: Plantation-oriented/ (mainly) "Atlantic Rim" Western Europe	Regions based on plantations, mainly supplying to pulp/paper forest industry, for the most part in "Atlantic Rim" Western Europe
Type 4: Broader, multifunctional forestry oriented regions/Western Europe	Broader, multifunctional forestry-oriented regions with industries mainly catering to domestic consumption in Western Europe
Type 5: Urban society service influenced regions/North-western Europe	Regions with forestry dominated by/oriented toward serving urbanized societies and comparatively little raw material production-oriented forestry in North-western Europe
Type 6: "Countries in transition" regions/Eastern Europe	Regions dominated by restitution issues, "countries in transition," weak, broken, private forestry tradition, weak infrastructure, and uncompetitive domestic forest industries in Eastern Europe
Type 7: Low forest management intensity regions/ Southern Europe	Regions dominated by low forest management intensity (if any), comparatively high importance of non-wood forest products, forest fires in southern Europe

A general observation is that this type of analysis is hampered by lack of data and especially lack of internationally comparable data within the EU27.

The overall regional globalization trends are illustrated in *Table 2.*

Table 2. Indices for overall Globalization; Economic; Social and Political Globalization. Based on KOF Index of Globalization.

Region	**Overall Globalization**		**Economic**		**Social**		**Political**	
	1994	*2004*	*1994*	*2004*	*1994*	*2004*	*1994*	*2004*
T1 Globalized region	78.9	87.4	84.1	86.6	68.8	86.2	86.7	90.2
T2 Wood production-oriented	76.6	87.2	74.2	85.0	79.1	89.0	76.4	87.5
T3 Plantation-oriented: Western Europe	78.5	86.2	86.2	90.5	72.0	82.8	77.4	85.3
T4 Multifunctional-oriented: Western Europe	77.6	85.1	71.1	78.3	73.4	83.9	93.2	96.4
T5 Urban society service	82.4	84.9	89.3	92.0	77.6	87.2	79.7	80.1
T6 Countries in transition	46.5	68.1	52.9	75.1	43.5	66.5	42.1	60.8
T7 Low forest management intensity	66.5	80.3	69.3	80.6	60.5	74.7	82.4	88.1

From the table above it can be concluded that there was substantial overall development in globalization between 1994 and 2004 in different EU regions. This overall development has been especially rapid in the regions “Countries in transition” and “Low forest management intensity.” These two regions have also experienced a rapid development in economic globalization. However, they lag behind the remaining regions with respect to general globalization development. It can also be concluded that to reach a high degree of overall general globalization it is important to have, simultaneously, a strong development of economic, social, and political globalization.

With respect to the specific development trends in forest sector issues, the following can be highlighted:

- In most regions of Europe, private ownership of forest land is larger than public ownership.
- The economic activities in forestry in the form of investments and gross value added are dominated by the Nordic–Baltic regions.
- Removals of industrial roundwood are dominated by the Nordic–Baltic region followed by the North-western and Central Eastern regions.
- Biomass for energy production has increased over time because of increased energy prices.
- Productivity in forestry in the Nordic–Baltic region is far higher than in other regions.
- The Nordic–Baltic region is the major net importer of industrial roundwood followed by the Mediterranean and Central European regions.

It is important to keep in mind that literature reviews and statistical analysis of this kind are not very useful for identifying detailed developments with respect to globalization. The only observations that it is possible to make are necessarily of a general nature.

A commonsense assumption is that competition has become more intense in the forest sector in terms of overlap and in product and resource markets, keeping pace with the globalization of world markets. Therefore, it is of interest to see how the EU forest sector has managed to handle the recent increase in globalization. One approach is to examine the development of global export shares (based on values). This is illustrated below, based on FAO data for EU25 in *Table 3.*

Table 3. Global Export Shares (Values); expressed as a percentage for the EU25.

Industrial roundwood		Sawnwood	
1985	2005	1985	2005
16.9	21.0	30.7	36.0
Wood-based panels		Pulp	
1985	2005	1985	2005
34.6	40.5	32.8	23.9
Paper and paperboard		Newsprint	
1985	2005	1985	2005
56.1	59.4	21.0	31.6
Printing and writing paper		Wrapping, packaging paper and board	
1985	2005	1985	2005
76.5	81.2	64.5	59.0

From *Table 3* above it can be concluded that during the period 1985–2005 the EU25 managed to increase its global export shares for industrial roundwood, wood-based panels, paper and paperboard, printing and writing paper, newsprint, and sawnwood rather substantially. The EU25 has lost global export shares in pulp and paper and paperboard. The decline in the global export share of pulp is a healthy development. It means that instead of merely producing and trading market pulp, the pulp produced has been used in integrated mills for higher value-added production of different paper grades. The EU25 has also lost global market shares in the grade of paper and paperboard. Even in this case it seems to be a healthy sign, as losses are in low value-added grades and the shares of high value-added grades have increased.

Thus it can be concluded that:

- Globalization that has taken place to date has been favourable to the development of the EU forest sector.
- It is not only the impact factors of wood costs, energy costs, etc., that decide the competitive position in a globalized world. There are many other factors decisive to the competitiveness of the forest sector, such as know-how, quality, logistics, institutions, etc.

The latter conclusion is further supported by the fact that most of the world's largest forest-sector companies have followed more or less the same overall development strategies over time

(Lamberg *et al.*, 2006). The authors studied the forest sector strategies during the timeframe 1848–2003, divided into four periods. The characteristics of these periods are illustrated in *Table 4.*

Table 4. The Development of the Global Forest Sector (modified from Lamberg *et al.*, 2006).

Time Period	Technological Development	Capitalist System	Ownership Structure	Dominant Activities
1848–1945 (Period 1)	Virgin timber as the main source, mechanization	Industrial and financial capitalism	Dominated by family companies but corporations emerging	Emerging pulp and paper industries
1946–1960 (Period 2)	Rationalization of production, integrated mechanization of production processes	Financial capitalism	Family-owned companies fading	Emerging diversification
1961–1980 (Period 3)	Atomization and computerization of production and control systems, environmental concerns, recycled fiber	Fading financial capitalism, emerging global capitalism	Heyday of large family-owned companies	Diversified structures in struggle
1981–2003 (Period 4)	Giant machines, improved productivity, converted products, integrated units, reduced energy use, environmental concerns, new raw materials	Global capitalism	International ownership	Rising globalization of production, still regional concentration in production, concentration on core business activities

Thus, Lamberg *et al*. conclude that the overall picture is that all companies have followed a similar pattern of growth strategies over the study period. The dominant strategies were adopted in a sequential order in all companies without any substantial national differences.

Forest sectors apparently have not yet faced changes that are judged to be necessary in a globalizing world for radical change and evolution of economic sectors (e.g., McGahan, 2004). Examples of these drastic changes are basic technology breakthroughs and dramatic changes in marketing.

The EU25 forest sector has, to date, been able to adapt to globalization by using overall strategies that are similar to those of their competitors. Soft characteristics such as know-how, logistics, institutions, education etc., have made it possible for the EU25 to reap gains from globalization. But will this be sufficient in the future?

To gain insight with respect to the future impacts of ongoing globalization processes, an analytical package of models (developed at IIASA) were used for scenarios analysis. These scenarios were developed based on the results of the proceeding steps of this study. Five specific scenarios were developed and used in the analysis. The flowchart of the integrated model cluster is illustrated in *Figure 1*.

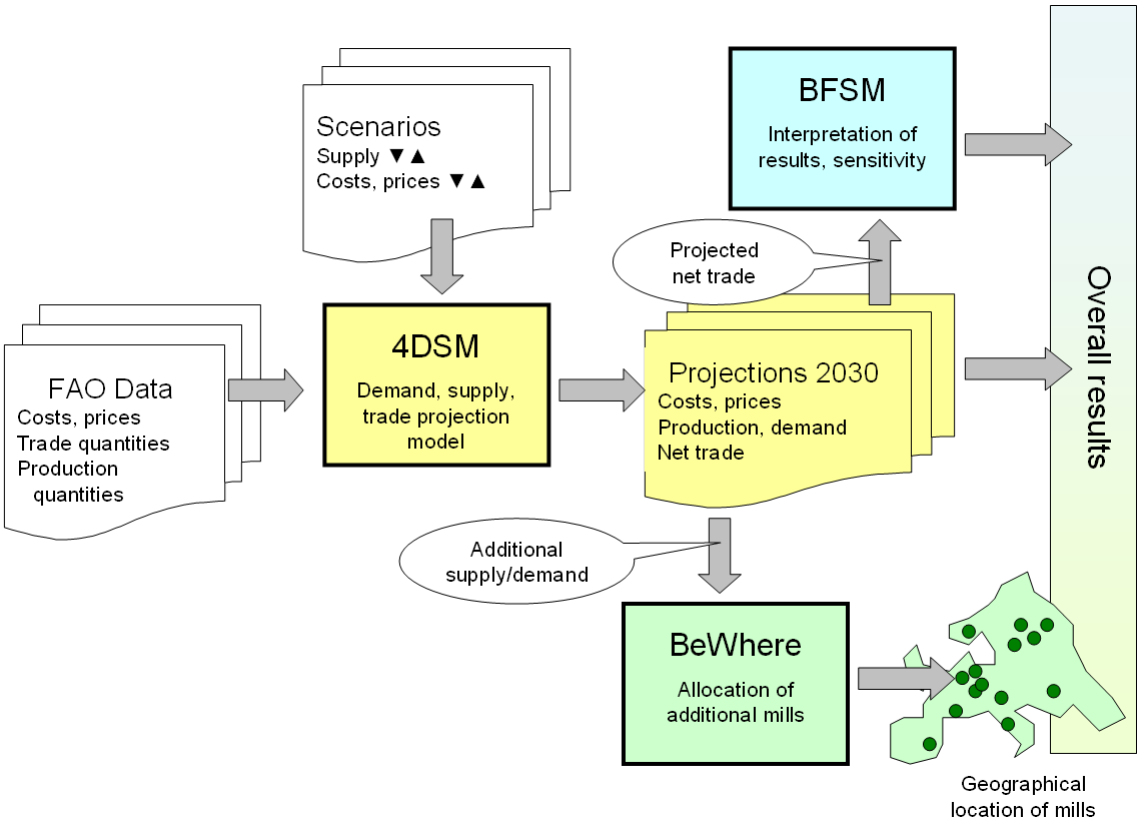

Figure 1. Integrated model cluster flow.

The expected global production of main industrial forest products in different global regions for the five scenarios and baselines are illustrated in *Figures 2, 3, 4* and *5.*

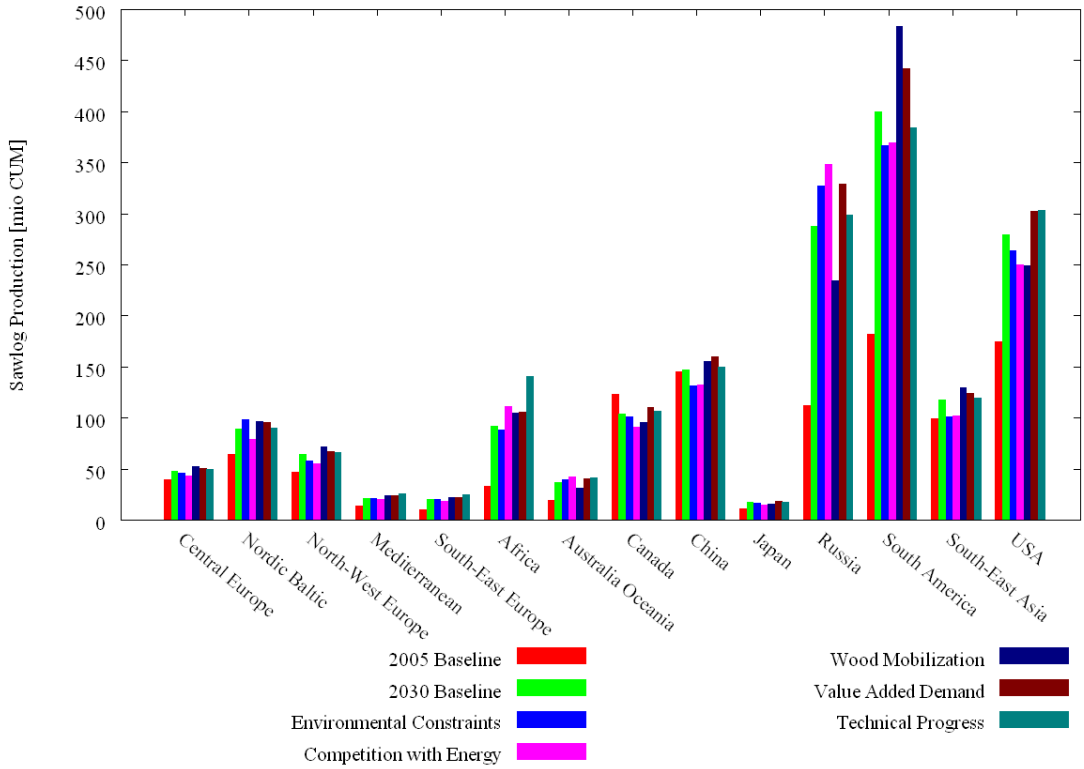

Figure 2. Expected supply/production quantity of sawlogs in world regions in 2030 in million cubic meters for different scenarios.

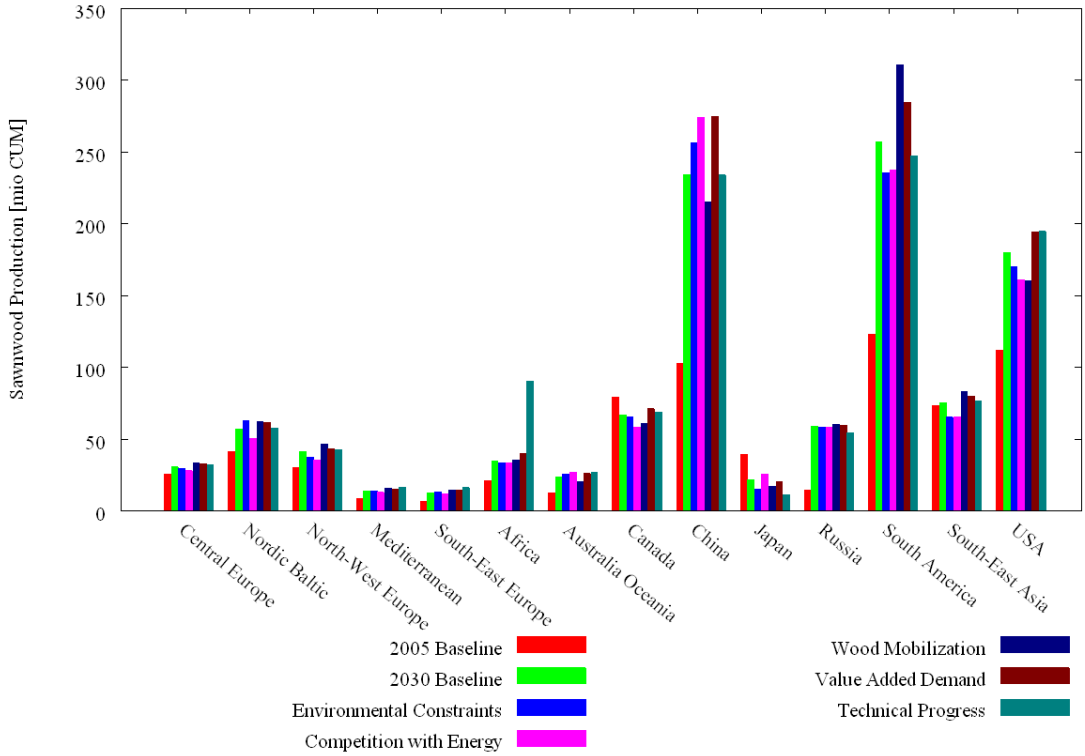

Figure 3. Expected supply/production quantity of sawnwood in world regions in 2030 in cubic meters for different scenarios.

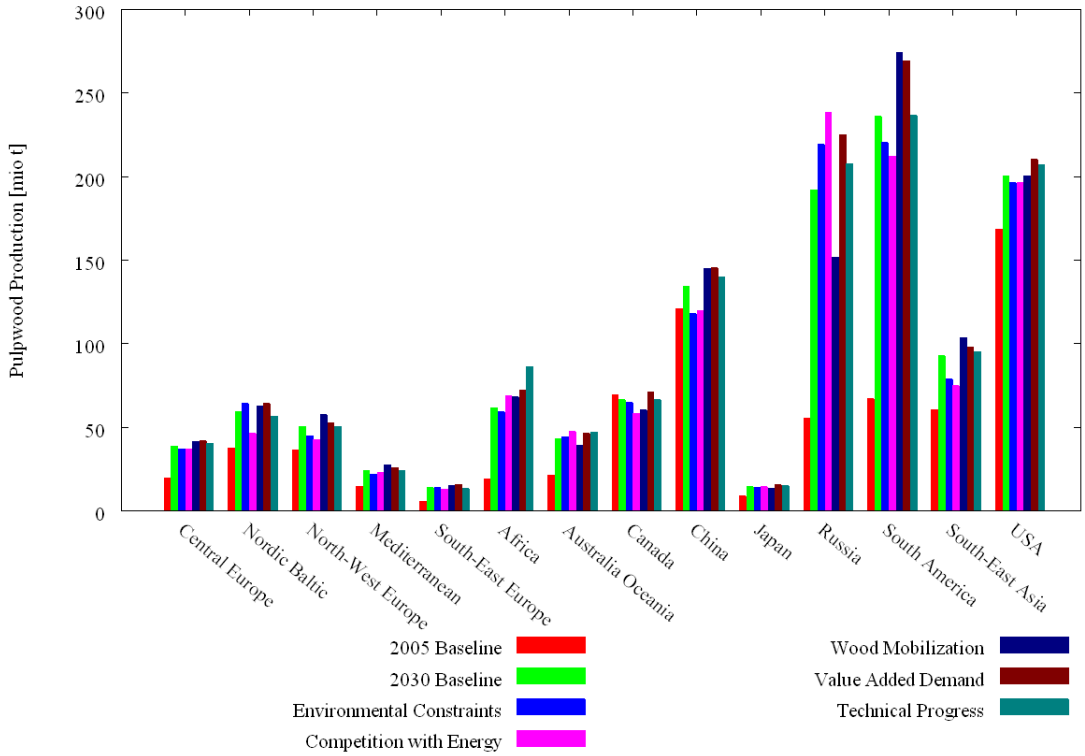

Figure 4. Expected supply/production of pulpwood in million tons by region and impact scenario.

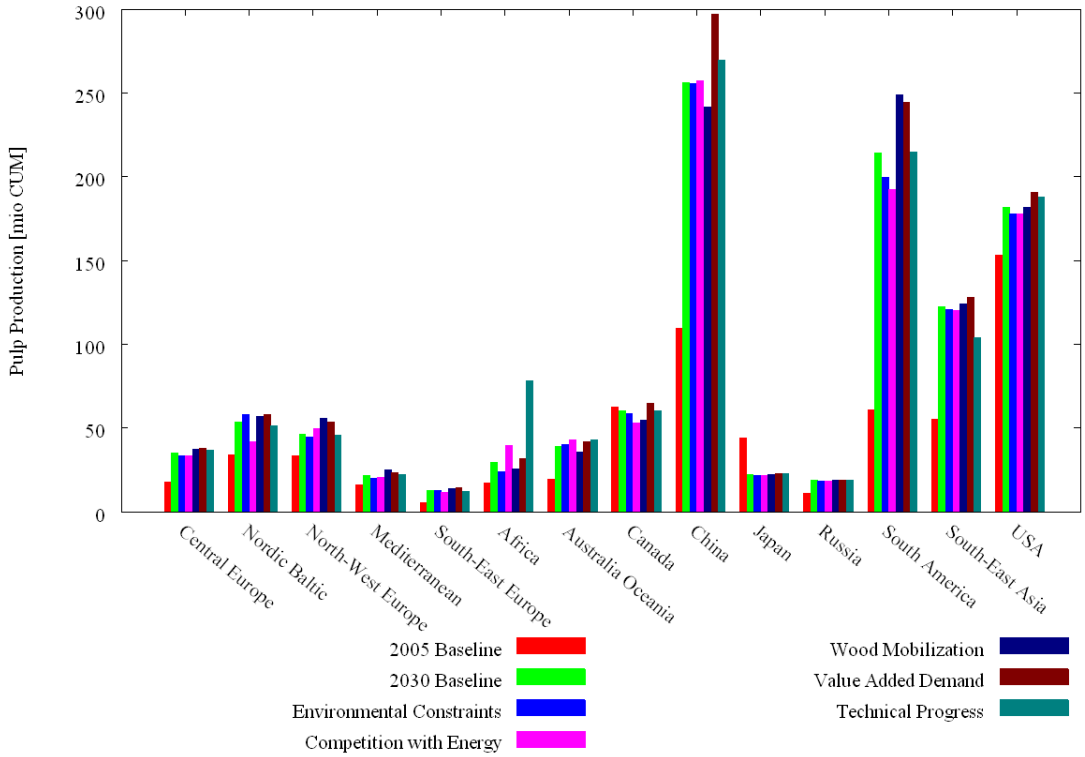

Figure 5. Expected paper and paperboard production in million tons by region and impact scenario.

The overall conclusions of the analytical analysis are presented below.

The EU Forest Sector—A Competitive Sector

A European forest sector turns out to be a competitive region in a globalized world. We assess growth in the forest sector of each European region. The analysis also points in the direction of increased product prices due to rapidly increasing global demand, which may help boost current sluggish European forest-sector profits. The competitiveness of the European forest sector is robust across a large variety of different development scenarios. However, Europe is not judged to be a global growth powerhouse like, for example, Latin America and Russia. *The fate and direction of the competitiveness of the EU-based forest sector is determined mostly outside of Europe,* where projections are more uncertain. This means that the EU must in the future carefully monitor the development of the global forest sector in order to set appropriate policies for the EU-based forest sector.

Tight Wood Supply

The global wood supply situation will become tight in the future because of current over-harvesting in a number of regions, increased environmental concerns, and climate change effects (such as insect outbreaks in Canada).

Under these conditions, analysis of the model shows that Russia and Africa will substantially increase their role as wood suppliers in order to balance global demand. Whether this will happen in reality is a crucial question. Both regions are complex from the political and institutional points of view. With respect to Russia, the overall question is if Russia will be a global partner with respect to the forest sector or if it will act based only on nationalistic self-interest. It is important for the EU to encourage Russia to become a trusted partner in the global forest sector in the future.

Africa is a difficult region and one where it is important for the EU to encourage sustainable forest management of existing resources. This is especially important in the light of current Chinese and Indian operations in that continent.

South America a High-Growth Region

South America is almost certain to become a high-growth region with its vast land resources and risky but more calculable investment conditions than countries like Russia, China, or African nations. However, this region is no stranger to political uncertainties, as illustrated by developments in Venezuela and Bolivia.

Globalization will cause increased pressure on the EU forests to meet the demands from conventional forest-industry, energy- and chemical industries, as well as increased environmental and social demands. It will be a major policy challenge for EU forestry to balance these demands.

Energy Development Crucial

Global overall energy sector development and especially global bio-energy development will be crucial for the development of the conventional forest industry in Europe. European land politics, climate policies, and energy policies are likely to be conducive to the implementation of a substantial bio-energy sector in Europe. For the conventional forest sector this development represents a possible threat as well as an opportunity. From our geographically explicit forest sector bio-energy sector modelling, we conclude that economies of scale will be the major factor determining competitiveness of the conventional forest sector relative to the bioenergy sector.

The conventional forest sector has considerable experience in managing large amounts of wood raw material and could thus be an important partner of the energy sector.

Renaissance for the EU Sawmilling Industry

The EU sawmilling industry for years has suffered sluggish development and low profitability. But because of foreseen increased global demand and increased energy prices, most of the scenarios show some sort of future renaissance for the European sawmilling industry, as wood for construction purposes will be more economically and environmentally favorable than other building materials.

Substantial Growth in Paper and Paperboard Production

There is also substantial growth foreseen for the production of papers and paperboard in the EU in the future thanks to globalization. This increase in production is driven by increased production of higher value-added paper and paperboard products in the EU.

Centres of Gravity

The Nordic–Baltic and Central regions will be centres of gravity of the forest sectors of the EU in a globalized world.

Substantial Growth

The South-eastern European region is assessed to have substantial future growth in the forest sector due to increased productivity in the sector and the resulting low costs of production.

Shift in Demand

There will be a strongly upward shift in consumer demand for paper and paperboard (a shift that has already been occurring for some years).

Most growth in demand for paper and paperboard will be in China, India, Southeast Asia, and South America in the future. This is also to some extent true for sawnwood. These dramatic increases in demand crucially define the global competitiveness landscape. European forest industries, as technology and business leaders in the sector, are challenged by such growth potentials and will attract European companies to invest in new capacities in regions with growing demand.

The EU probably cannot do much to avoid such a development. The one thing the EU can do is to avoid introducing policies that diminish the existing competitiveness of the EU forest sector. Reduced competitiveness leads to the risk of a large-scale exodus of EU forest companies to the growth market regions.

Shift in Supply

With a growing demand in paper, lumber, and energy sectors, there will be a shift in supply to fast-growing plantations and remaining wood baskets like Russia and Africa. An overall concern will be “where will the raw material come from?”

Increased Prices

The analysis shows that, because of tighter wood supply, competition from the energy sector, increased demand in emerging economies, among other things, there will be a substantial increase between 2005–2030 in the demand of forest raw material and industrial forest industry products. In general it can be said that the prices will increase most in what is today regarded as

low-cost regions. Prices will also become more similar across regions because of globalization. This can possibly mean increased profitability for EU forestry thanks to increased globalization.

Based on the analysis, it is difficult to obtain a clear-cut identification of the strengths and weaknesses of different regions of the EU with respect to the globalization process. Moreover, a factor regarded as strength by one stakeholder in the sector can be regarded as a weakness by another. With this caveat, the study provides a consistent matrix on this issue for EU regions used in the quantitative work described above.

The study has also investigated the responses taken in the different regions of the EU to address and benefit from the specific effects of globalization. The findings can be summarized as follows:

1. Overall, there is little concrete response to globalization and very little innovation activity in the sector, especially in small forest holdings;
2. Large forest holdings respond mainly by cost cutting through outsourcing. This is driven by the price competition to which the forest industry is subject in globalized commodity markets. Responses to globalization are thus triggered by the forest industries and their respective demand rather than being directly to globalization;
3. Innovations are incremental and usually not new for the sector. They tend to follow existing paths ("more of the same") and traditional supply-side approaches. Customers and consumers play virtually no role as a source of improvements in products or services.
4. Institutional innovations are potentially an important response to globalization. However, insofar as they occur, they tend to be trend-follower initiatives based on perceptions of forestry as an efficient supplier of raw materials, with traditional concepts of innovation support. There is little strategic, future-oriented, and systematic response to the opportunities and threats that globalization presents to EU forestry.

It can also be concluded that the responses to globalization in the EU to date have been wood-focused, with a view to competing on price for global raw material commodities. Innovations for developing higher value-added wood products as well as products and services other than timber are very underdeveloped. In general, comprehensive innovation policies for the forestry sector that answer the challenges of globalization do not exist in the EU countries. There still seems to be a strong focus on traditions, limited emphasis on the future, and avoidance of risks in the EU forest sector.

The study also carried out a literature review of lessons learned on responses to globalization in other sectors. It is difficult to get a rich homogenous picture on this from the literature, but the following results are of interest:

- Globalization causes increased intra-industry trade rather than inter-sector trade and specialization based on comparative advantage.
- Risk-averse respondents to globalization often become anti-globalization.
- Active governance of trade by governments is necessary for markets to function, and governments need to work at getting public support for economic openness.
- It seems that globalization is driven primarily by a reduction in the costs of trade.
- Moreover, this latter development results in higher efficiency and productivity as firms face foreign competition.

There is no single explanation or easy-fix normative perspective on how the EU forest sector might remain competitive with increased globalization. There are obvious threats as well as opportunities for the EU forest sector and forestry. The study has identified these threats and opportunities, as illustrated in *Table 5*.

Table 5. Cross-matrix of opportunities and threats of globalization factors: forestry and forest industry

		Forestry	
		Opportunity	Threat
Forest industry	Opportunity	• Sustainable resource supply • Wood-based bioenergy/biomaterials—polyproduction • More efficient business relationships, including business intelligence • Productivity gains through increased technology use, including logistics • Biotechnology R&D breakthroughs • Domestic / regional outsourcing of production to enhance productivity • Increasingly stable and reliable global institutions and regulatory and operational frameworks (e.g., Kyoto) • Societal support to renewable resources, green image of wood	• Foreign direct investment outside the region (forest industry relocation) • Low import barriers industrial raw material • Import competition for raw material/globalization of natural resource sourcing • Job loss due to productivity gains • International/global outsourcing of production of components • Increasingly imperative global institutions and regulatory and operational frameworks (e.g., WTO) encouraging foreign direct investment abroad
	Threat	• Increasing raw material scarcity leading to higher prices • Wood-based bio-energy • Alternative non-production- oriented business models • Policies that restrict wood use but are viable business models for forestry (including, e.g., recreational services, some carbon sequestration) • Society demanding increasing use of forests for environmental protection and recreation, with viable business models in forestry to provide these	• Rising import competition pressure for parts, components, or finished products • Reduced export-competitiveness • Declining forest industry profitability • Policies increasingly regulating SFM, but with little scope for developing market-based solutions and experimentation • Increasing degree of urban population viewing forests as ideally untouched nature, and increasing stakeholder involvement requesting non-economically viable management without alternative income opportunities • Climate change • Continued low public and private R&D

The study has identified four possible strategic options to adapt to and benefit from globalization based on the threats and opportunities discussed above. These strategic options are:

Option 1 = Cease active income- or profit-oriented forestry
Option 2 = Diversify into alternative and niche income streams
Option 3 = Become cost-competitive in global commodity market
Option 4 = Pursue technological and business model innovation

As stated above, there is no single easy-fix strategy on how to stay competitive in the forest sector with increased globalization. In reality, a successful strategy would be a portfolio of the above options. In addition, the conditions for adapting different strategies vary for different regions of the EU. The study has made an assessment of suitable strategic options for the seven types of regions of the EU discussed earlier. This assessment is presented in *Table 6.*

Table 6. Strategic options to respond to globalization and their regional suitability (number of stars indicating suitability).

	Option 1: No commercial operation	Option 2: Niche / diversify	Option 3: Commodity-competitiveness	Option 4: Next-generation products
Type 1: Globalized regions / Nordic–Baltic		*	**	***
Type 2: Wood production-oriented regions/Central Europe		**	***	**
Type 3: Plantation-oriented/(mainly) "Atlantic Rim" Western Europe		*	***	*
Type 4: Broader, multifunctional forestry oriented regions/Western Europe		**	***	**
Type 5: Urban society service- influenced regions/Northwestern Europe	**	***		*
Type 6: "Countries in transition" regions/Eastern Europe		**	***	
Type 7: Low forest management intensity regions/ Southern Europe	**	***		**

Implementation of these strategic options will by their very nature have both positive and negative implications in the different regions of the EU. These implications are illustrated in *Table 7.*

Table 7. Effects of adaptation options on globalization factors and globalization dimensions.

Globalization factors	Option 1: No commercial operation	Option 2: Niche / diversify	Option 3: Commodity competitive-ness	Option 4: Next-generation products
Investment	Considerably decreasing	Stable or decreasing	Increasing (continuous and considerable investment);	Considerably increasing (strategic and risky)
Economic activity—productivity, added value	Considerably decreasing	Stable or decreasing	Considerably increasing	Stable or increasing (short term)
Employment	Considerably decreasing	Stable or increasing	Decreasing	Stable (short term)
Trade	n.a.	Stable	Stable or increasing	Stable or increasing
Technology, know-how	Decreasing	Increasing	Increasing	Considerably increasing
Globalization dimensions				
Policy	n.a.	n.a.	n.a.	n.a.
Society	Likely neutral response	Likely neutral or positive response	Likely negative response	Likely neutral response
Environment	Likely positive except for health risks	Likely neutral or positive	Likely negative or neutral	Likely neutral (short term)
Resources (energy, raw material)	Likely negative	Likely neutral or positive	Likely positive	Likely positive

Supporting Strategic Adaptation through Forest Policies

Globalization promises benefits, but its long-term benefits come with what can be substantial short-run costs. With increased competition, producers will face challenges to reduce costs if they are to remain viable. Governments can help this process by working for an open international trading system. It is extremely disruptive and costly for importers of roundwood, for example, to face sudden prohibitions in a supplying country that seeks to protect upstream manufacturers of wood products. Governments can also help with retraining and relocation of workers who are displaced from declining industries or from industries which, though not declining, are shedding labour because of technical change.

It is also possible for a government to protect its industries with subsidies, tariffs, and import quotas or prohibitions. It would even be possible for the EU to achieve self-sufficiency in this manner. Producers would not be challenged by competition, so would not have to reduce costs by increasing productivity. But the costs of such a policy would be very high indeed. By

foregoing the short-run costs of adapting to globalization, the EU would also be forfeiting the long-run gains of specialization and technological change. Inevitably, trading partners would retaliate with their own subsidies and trade restrictions, increasing the costs of such a policy even more.

To sum up, it is the producers themselves who must search for effective and efficient ways of competing in a global market. Governments can aid this process by promoting open and orderly markets at home and abroad, by facilitating the retraining and relocation of workers who are displaced by technological change, or by the creative destruction of competitive imports. We now know that gains from trade go beyond the static gains of specialization; they are dynamic as well because globalization demands technological change and high productivity from firms that enter export markets *and* from firms that hope to survive import competition.

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