

# The forest and wood processing sector in a global institutional perspective

**Working Paper****Author(s):**

Le Master, Dennis C.; Schmithüsen, Franz Josef

**Publication date:**

2003

**Permanent link:**

<https://doi.org/10.3929/ethz-a-005320670>

**Rights / license:**

In Copyright - Non-Commercial Use Permitted

**Originally published in:**

Working papers / Forest Policy and Forest Economics Department of Forest Sciences. International series 2003(4)

*Working Papers  
International Series*

03/4

*Forest Policy and Forest Economics  
Department of Forest Sciences*

***The Forest and Wood  
Processing Sector in a Global  
Institutional Perspective***

***Dennis C. Le Master and  
Franz Schmithüsen***

*Zurich 2003*



Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

# **Working Papers International Series Forest Policy and Forest Economics**

## **Editor**

Prof. Dr. Franz Schmithüsen  
Department Forest Sciences  
Swiss Federal Institute of Technology, ETH  
Zurich / Switzerland  
E-mail: *schmithuesen@fowi.ethz.ch*

1. International Context of the Forestry and Wood Processing Sector	3
Global Forests	
Wood Production	
Consumption of Forest Products	
International Trade in Forest Products	
Forest Products Industries	
Decentralization and Globalization	
2. The International Forest Regime	9
International Forest Related Policy Network	
Sustainable Development	
International Forest Regime	
Multi-level Policy Impacts	
Forest-Related International Processes	
Assessment of the Present International Forest Regime	
3. Conclusion	14
References	15

## The Forest and Wood Processing Sector in a Global Institutional Perspective

*Dennis C. Le Master and Franz Schmithüsen*

### 1. International Context of the Forestry and Wood Processing Sector

Global Forests: Forests are one of the Earth's largest land cover types, comprising about 3,870 hectares (ha), 30 percent of the Earth's land area (FAO 2001). Tropical and subtropical forests make up 56 percent of all forests, and temperate and boreal forests account for 44 percent. Forest plantations constitute about 5 percent of all forests, the rest being natural. Two-thirds of the world's forests are situated in 10 countries (Russian Federation, Brazil, Canada, United States, China, Australia, Congo Democratic Republic, Indonesia, Angola and Peru). Population data and forest area by continents are shown in *Table 1*. Asia has the lowest forest area per capita. The stocking volume per hectare is also relatively low.

**Table 1.—Basic Population Data and Forest Area by Regions**

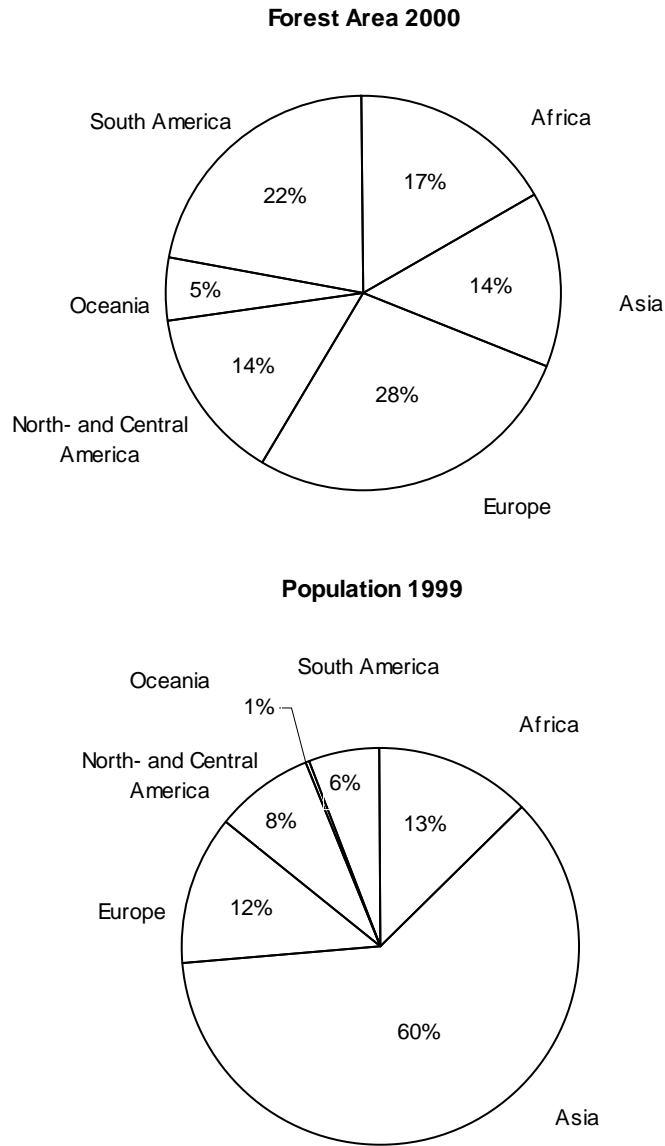
Regions	Countries mill. ha	Population mill.	Population Density km <sup>2</sup>	Forest Area mill. ha	Forest Coverage %	Forest Area per Capita ha	Stocking Volume m <sup>3</sup> / ha
Africa	2,978	767	26	650	22	0.8	72
Asia	3,085	3,633	118	548	18	0.2	63
Europe	2,260	729	32	1,038	46	1.4	112
North- and Central America	2,137	478	22	549	26	1.1	123
Oceania & others	849	30	4	198	23	6.6	55
South America	1,755	341	19	886	50	2.6	125
Total:	13,064	5,978	46	3,869	30	0.6	100

*Source*: Food and Agriculture Organization of the United Nations. 2001. *State of the World's Forests*. Food and Agriculture Organization of the United Nations, Rome.

A percentage comparison between population distribution and distribution of forests by continents, offered in *Figure 1*, shows striking contrasts. 60% of the world's population live in Asia whereas the forest area amounts to only 14%. On the other hand Europe including the Russian Federation has 28% of the forests and 12% of the world's population. In North America, U.S., Canada, and Mexico, the forest area is 14% and the population amounts to 8%. The contrast between forests (22%) and population (6%) is also striking in South America. In Africa the proportions between forests (17%) and population (13%) is somewhat more balanced.

Wood Production: Global production of total roundwood was 3,335 million cubic feet in 1999 (FAO 2001). A little over half of this amount was fuelwood, of which 90 percent was produced and consumed in developing countries. Industrial roundwood used in the manufacture of processed wood products, which totalled 1,550 million cubic feet in 1999, was dominated by developed countries. They accounted for 79 percent of total global production. Since the early 1960s worldwide roundwood production has risen from 2.3 billion m<sup>3</sup> to the present level of 3.5 billion m<sup>3</sup>. While industrial production varied from year-to-year during the 1990s, its general trend is flat.

**Figure 1.—Forest Area and Population by Regions**

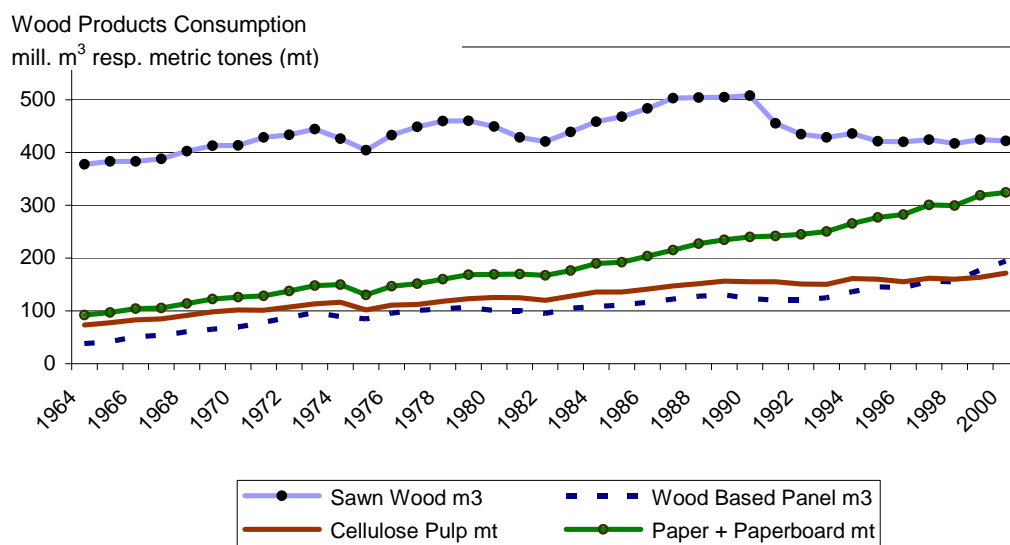


*Source:* Food and Agriculture Organization of the United Nations. 2001. *State of the World's Forests*. Food and Agriculture Organization of the United Nations, Rome.

**Consumption of Forest Products:** Consumption of sawnwood, wood-based panel products, and pulp and paper is dependent upon the strength of the global economy. Generally, consumption is growing, but regional differences are significant. For example, the 1997 Asian economic crisis affected demand in some Asian countries severely although the effects were less severe than anticipated. China is of special note. It is now the world's second largest consumer of wood products by value. Many of these products are imported. China is the third largest importer of wood products in the world after the United States and Japan. Global demands are principally determined by population growth, GDP per capita, prices, technological innovation, building of new infrastructure, and political change.

The dynamic development of worldwide consumption for major wood products is shown in *Figure 2*. Sawnwood consumption rose from 345 million m<sup>3</sup> (1961) to 508 million m<sup>3</sup> (1990), nearly 50%. The decline to 422 million m<sup>3</sup> by 2000 is largely due to an economic breakdown followed by restructuring of the economy in Eastern Europe and Russia. The consumption of wood-based panels has raised by more than 7 times from 26 million m<sup>3</sup> (1961) to 194 million m<sup>3</sup> (2000). The consumption of wood pulp has tripled during the same period. A particularly dynamic development attends the consumption of paper and paperboard. It has increased from 77 million metric tons to 324 million metric tons or four times.

**Figure 2.—Worldwide Wood Products Consumption, 1964-2000**



*Source:* UN-ECE/FAO. 2002. European Forest Sector Outlook Studies, EFSOS. Data Base. Geneva.

**International Trade in Forest Products:** Production of sawnwood, wood-based panel products, and pulp, paper, and paperboard is increasingly done for export. Significant increases occurred in each of the preceding categories during the 1990s. At the same time, the amount of industrial roundwood exported remained about the same and comprised only 5 percent of total production, one result of continuing efforts of countries to process raw logs and capture value added in manufacture.

The 1999 value of worldwide imports of roundwood and wood products amounted to (U.S.)\$141.2 billion, and the value of exports, (U.S.)\$133.9 billion (FAO 2001). With a trade value of (U.S.)\$65 billion for imports and (U.S.)\$67 billion for exports, Europe is most important and shows a largely even trade balance for roundwood and wood products. North and Central America, with (U.S.)\$10 billion difference between exports and imports, is an

important net exporter. Asia, in contrast, is a heavy net importer, with (U.S.)\$21 billion difference between imports and exports.

*Figure 3* shows that a large part of world trade in roundwood and wood products occurs within and between three regions: Europe, North and Central America, and Asia. For imports, 46% goes to Europe, 27% goes to Asia, and 22% goes to North and Central America. With regard to exports, the European share is 50%, the North and Central America share, 30%, and that for Asia is 13%. With 5% of world imports and 7% of world exports Africa, South America and Oceania participate only to a modest extent in the international trade of roundwood and wood products.

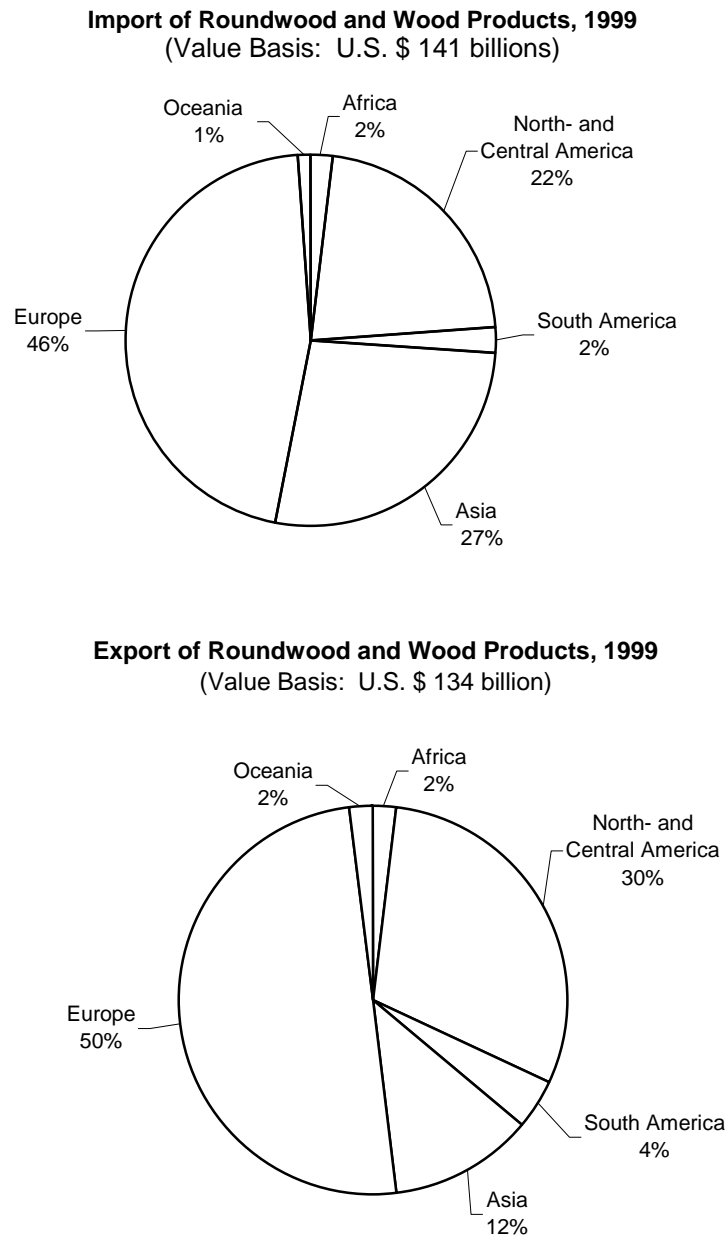
Another important aspect in world developments of the sector is the divergent trends of the major product lines. During the period 1963 to 1999, as shown in *Table 2*, the value of roundwood imports has diminished from 14.5% to 6.7% in total world trade. A downward trend also exists for sawnwood and sleeper imports (26% in 1963 to 18% in 1999), and for mechanical and cellulose pulp (20% in 1963 to 12% in 1999). (Note: Sleepers are timbers or lumber placed on or near the ground to support a superstructure; e. g. railroad ties.) On the other side, the proportion of wood-based panels in the world trade has increased from 7% in 1963 to 12% in 1999. Even more impressive is the development in paper and paper board product lines where imports have moved from 32% in 1963 to 50% in 1999. This means that every second dollar in world trade is made by the paper industry.

**Forest Products Industries:** PricewaterhouseCoopers (2002) conducts an annual global survey of the forest and paper industries. The *2000 Global Forest & Paper Industry Survey* is based on a data generated during a review of the 1999 financial reports of the 100 largest firms. These data show, among other things, that the very largest firms are integrated pulp, paper, and paperboard manufacturers. Companies primarily engaged in the manufacture of sawnwood products, such as lumber, tend to be smaller. Much of this difference has to do with the much larger capital requirements of an efficiently sized integrated pulp and paper mill as opposed to those for an efficiently sized integrated sawmill. The largest firms tend to be North American, European, or Japanese. Of the 25 largest, 10 are U.S.-based firms, 4 are Japanese, and 3 are Finnish. Of the 50 largest firms, all but 4 are North American, European, or Japanese (PricewaterhouseCoopers 2002)

Return on investment is a significant problem in the global forest and paper industry, which has often missed its target return on capital employed (ROCE) in recent years. Average ROCE was 5.4 percent in 1999, up from 4.1 percent in 1998 (PricewaterhouseCoopers). The industry's generally accepted minimum after tax return is 10 to 12 percent on capital employed. Thus the search for competitive advantages in global markets as well as for lower costs will continue if not intensify. A likely result will be more mergers and acquisitions and increased industry consolidation.

**Decentralization and Globalization:** FAO (2001) identifies “two major and seemingly contradictory” trends occurring in the world, namely, decentralization and globalization. In the case of decentralization, national forest agencies are being restructured, decentralized, and reduced in size in terms of both employees and budgets. As a result local communities are being turned to for assistance in protection and management of nationally owned forests. Community involvement is now an important feature of national forest policy and practice. It also is becoming a feature of the private sector for the reason discussed in the paragraph that follows. “Community-based forestry” is a widely used term with some common understanding of meaning. Community-based management systems, on the other hand, are still evolving, much in the same way as agro-forestry systems.

**Figure 3.—Distribution of Import and Export Values 1999 by Regions**



*Sources:* Food and Agriculture Organization of the United Nations. 1999. Forest Products, 1995-1999. Forestry Series No. 34. FAO Statistics Series No. 157. Food and Agriculture Organization of the United Nations, Rome.



**Table 2.—Change in the Percentage Value of Imports of Major Forest Product Lines for Selected Years**

Product Lines (Calculation Basis Import Value in US \$)	1963	1973	1983	1996	1999
Roundwood	14,5	22,2	15,2	9,5	6,7
Sawn Wood incl. Sleeper	26,3	24,8	22,3	18,7	18,4
Sawn Softwood	21,7	19,5	16,5	13,3	13,1
Sawn Hardwood	4,1	5,1	5,6	5,4	5,3
Derived Timber Products (Wood-based Panels)	7,4	10,4	9,0	11,6	12,2
Mechanical Pulp and Cellulose Pulp	19,7	13,7	15,3	14,1	12,3
Paper and Paperboard	32,1	28,9	38,2	46,1	50,4
Newsprint	15,0	8,6	10,6	8,3	7,2
Printing Paper	3,6	6,0	10,3	15,3	20,7
Other Paper Products	16,5	14,3	17,3	22,5	22,5
Total:	100,0	100,0	100,0	100,0	100,0

*Sources:* Ollmann, H. (2001): Struktur des Weltholzhandels 1996 : Handelsströme. Arbeitsbericht des Instituts für Ökonomie 2001 / 2; Bundesforschungsanstalt für Forst- und Holzwirtschaft, Hamburg. Food and Agriculture Organization of the United Nations. 1999. Forest Products, 1995-1999. Forestry Series N° 34. FAO Statistics Series N° 157. Food and Agriculture Organization of the United Nations, Rome.

Globalization refers to the increased use and application of global networks, freer flows of capital, labor, and information among countries, and increased growth of large multinational pulp, paper, and paperboard companies largely through mergers and acquisitions. The private sector now owns or controls significant areas of forests around the world. It is being increasingly held responsible for both the environmental and social aspects of forestry by governments. In the process, corporations have found that significant benefits attend being "a good citizen," leading to a significant number of them to adopt environmentally and socially acceptable practices voluntarily rather than having them imposed.

It is apparent that forest management will be affected by: (1) the consolidation process occurring globally in the forest and paper industry, (2) the need in the industry for achieving the higher rate of return on capital, (3) the need for incorporating environmental practices in natural forest management, and (4) the increasing use of forest plantations. The economic implications for forest management are several. Will mergers and acquisitions permit the acquiring firm to rationalize its forest land holdings and to reduce risk in terms of timber supply? What impacts will the need of multinational corporations for achieving a higher rate of return on capital have on investments in forest management and voluntary environmental protection? What effects will increased consolidation have on the trend for greater use of forest plantations? Will forest plantations significantly reduce the use of natural forests as a timber supply source?

## **2. The International Forest Regime:**

International Forest Related Policy Network: An increasing number of world-wide, continental, and regional agreements and processes involving the UN, as well as multilateral and supra-national entities form at present the international policy network addressing the protection of forests and forest sector development (FAO 2001, Schmithuesen 2000). Significant driving factors leading to fundamental changes in managing forest resources are:

- Globalization of the economy and of trade
- Internationalization of environmental and nature protection
- Privatization and a new understanding of the role of the state
- Demand for more participation by stakeholders and the public
- Strong influence of NGOs in public decision making
- Greater and more diversified demands of society for forest goods and services.

The conditions for sustainable forest management change as a result of trends towards multi-sector policy networks, privatization, and increased democratic participation. People expect public policies to be transparent and responsive to their needs. They demand that measures taken by government be effective and efficient. People want more information on economic and social issues and more participation in policy formulation and implementation. Society's expectations are high and extend to new issues, in particular to environmental protection and sustainable development. New demands, such as the use of forests as carbon sinks, illustrate that the social meaning of forests is dynamic. It can be subject to rapid and unpredicted changes. The distinction between private sector and public administration is increasingly permeable. The private sector has to deal with the incorporation of external effects in management, and public authorities are working with models from business administration. These and other global trends are important because they:

- Determine increasingly the conditions of national policy making
- Influences the attitudes and behavior of citizens, land users, and land managers
- Produce varying networks of political actors
- Establish complex multilevel policy frameworks.

Sustainable Development: The United Nations Conference on Environment and Development (UNCED), held in Rio in 1992, launched as a new basis for international cooperation the idea of sustainable development. Its central content is that economic growth, social integration and caring for a liveable environment are on an equal footing. They influence each other, cannot be substituted for, and are fundamental requirements of social progress and common advancement of mankind. The World Summit on Sustainable Development (WSSD), which took place in 2002 in Johannesburg, South Africa, reconfirms the outcomes of the major United Nation conferences and international agreements since UNCED. It places forests into a multi-sector context of a sustainable natural resource base (FAO 2003). It acknowledges the multiple and varying outputs from forests for employment and poverty alleviation, as a source of raw materials and energy, and as natural habitats and a provider of a variety of environment services. Achievement of sustainable forest management, nationally and globally, through partnerships among interested governments and stakeholders, is an essential goal of

sustainable development. This includes the private sector, indigenous and local communities, and non-governmental organizations.

International Forest Regime: An expression of the global political context in which the forestry sector and wood processing industry are now placed, is the emerging international forest regime (Schmithuesen 2003). Its foundation is the UNCED conference and the follow-up processes that have occurred since. As for many other sectors, the goal of sustainable development is the benchmark for judging to what extent forestry and forest policies contribute to economic and social welfare and to a safe environment worthwhile for present and future generations. The international forest regime is based on two pillars:

- World-wide and regional processes that involve governments, non-governmental organizations, the private sector, and indigenous and local communities.
- An increasing number of international legal instruments addressing forests and forestry, directly or indirectly.

Multi-level Policy Impacts: International commitments to sustainable development based on the principle of joint responsibilities between the international community and states are driving forces which lead to an increasingly complex framework of multilevel policy impacts (*Figure 4*). At the global level, free trade, environmental protection and biodiversity are dominant subjects. Forest-related aspects are increased industrial uses through access to new areas, reduction of large-scale deforestation, and maintenance of a minimum proportion of natural forests. At the supra-national level, major issues are structural changes in agriculture, and the protection of environment and water resources. Afforestation of marginal lands and criteria and indicators for sustainable forest development are of importance.

At the national level, emphasis is on forestry and wood processing as productive sectors of the economy, and on the regulation of forest management practices. At local level, multiple forest uses providing employment, environmental protection, and recreational opportunities are of immediate concern.

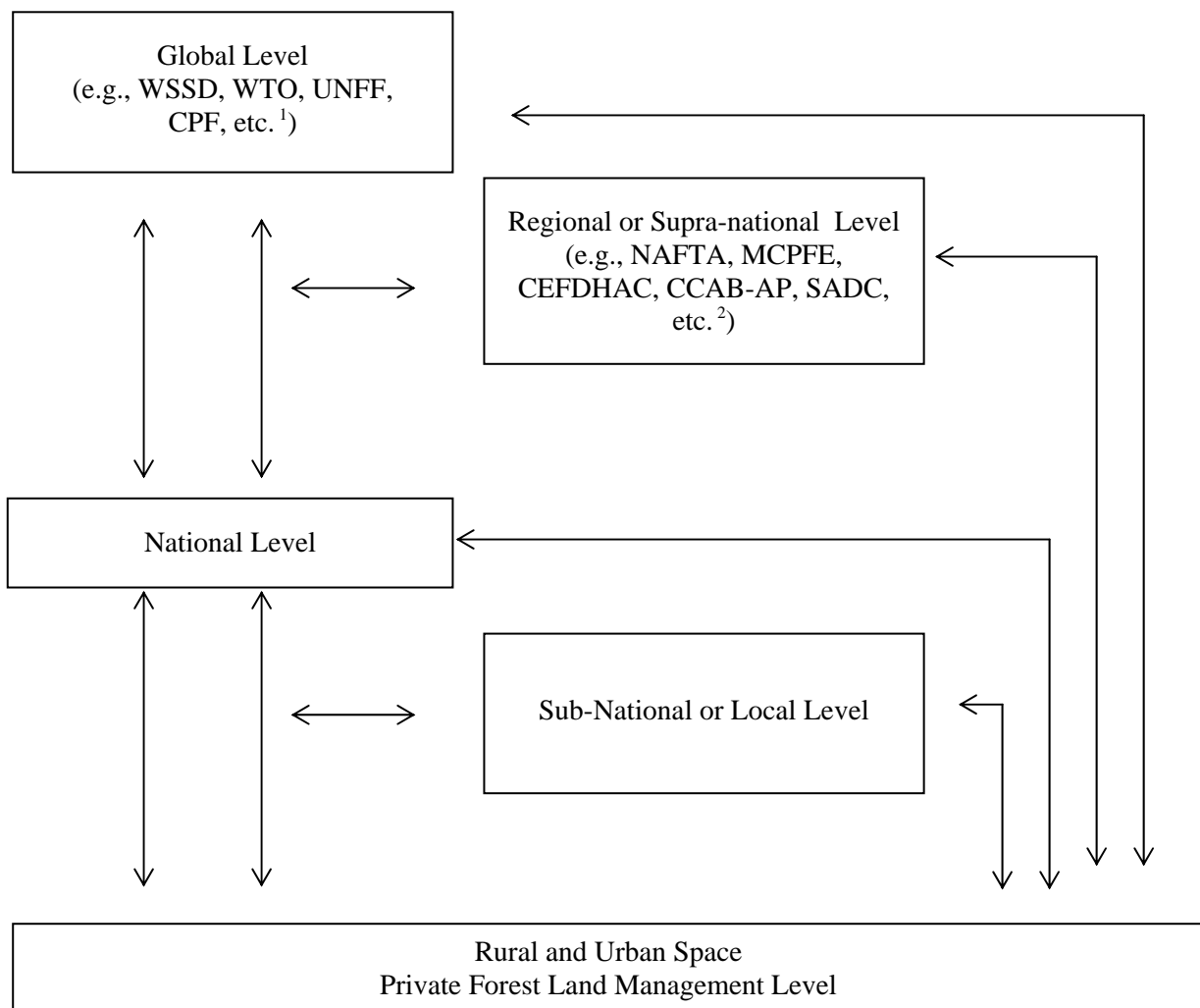
Forest-Related International Processes: Complex multi-level governance offers new opportunities to develop more consistent solutions that satisfy different social groups and stakeholders concerned with the use and management of forest resources. *Table 3* contains a list of important policy processes relevant to forestry.

During its deliberations 1997-2000, the International Forum on Forests (IFF) reached a considerable amount of consensus on the most important topics to be addressed by member countries and the international community. The active participation of non-governmental and indigenous peoples' organizations has strongly impacted the complex and sometimes controversial international dialogue. At its fourth session in 2000, IFF recommended to the Economic and Social Council (ECOSOC) and to the UN General Assembly to establish the United Nations Forum on Forests (UNFF) as a new intergovernmental body. UNFF is now the major UN political platform which brings together national governments, non-governmental organizations, the private sector, and the international entities in forest-related matters.

The Collaborative Partnership on Forests (CPF) was established in April 2001 in response to the invitation issued in the resolution of ECOSOC establishing UNFF in October 2000 (ECOOC 2000). CPM member organizations (CBD; CIFOR; FAO; GEF; ITTO; UNCCD; DESA; UNDP; UNEP; UNFCCC; World Bank) support UNFF in three main ways:

- Supporting the implementation of IPF/IFF proposals for action;
- Providing expertise and advisory services to UNFF;
- Assisting UNFF in monitoring, assessment, and reporting on forests.

**Figure 4.—Public Decision-Making in Sustainable Forest Management at International, National and Local Levels**



<sup>1</sup>World Summit on Sustainable Development (WSSD), World Trade Organization (WTO), United Nation’s Forum on Forests (UNFF), Collaborative Partnership on Forests CPF).

<sup>2</sup>North American Free Trade Agreement (NAFTA), Ministerial Conference on the Protection of Forests in Europe (MCPFE), Conference on Central African Moist Forest Ecosystems (CEFDHAC), Central American Council for Forests and Protected Areas (CCAB-AP), South African Development Community (SADC).

**Table 3.—Established Policy Networks and Processes**

The IPF/IFF and UNFF Processes
Collaborative Partnership on Forests
Conference on Central African Moist Forest Ecosystems (CEFDHAC)
Yaoundé Declaration
Southern African Development Community (SADC)
Central American Council for Forests and Protected Areas (CCAB-AP)
Treaty for Amazonian Co-operation (TCA)
Association of Southeast Asian Nations (ASEAN)
Ministerial Conference on the Protection of Forests in Europe (MCPFE)
Pan-European Work Program on the Conservation and Enhancement of Biological and landscape Diversity in Forest Ecosystems
Regional processes on Criteria and Indicators

Important developments which are complementary to the world-wide international processes emanate from a number of Regional Forest-Related Initiatives aiming at more cooperation among regional groups of countries. Major issues that appear from the objectives and work programs of the regional initiatives are a closer integration between different policies addressing natural resource utilization and environmental protection, and the promotion of more consistent policies for forest conservation and development of the industrial wood processing sector.

The development of a common grid of relevant criteria and indicators that can be used at eco-regional levels is an important necessity in order to assess and monitor progress in sustainable forest management at the national level as well as in response to internationally agreed upon commitments. A number of international processes on Criteria and Indicators are presently undertaken by governments, the private sector, NGO's, and international institutions to develop and implement criteria and indicators for sustainable forest management at regional levels (FAO 2002). In response to countries' demand there are at present nine such processes engaged in elaborating a common basis of understanding on what the principle of sustainable management implies in a given socio-economic and ecological context (*Table 4*).

Assessment of the Present International Forest Regime: International conventions and non-binding legal instruments are the constitutive framework for the increasingly complex system of international cooperation. They emanate from the initiatives of national governments, are signed and ratified by all countries of the UN system, and are then translated again, in varying degrees, into national law and policies. They add new dimensions to existing patterns of governance at national, regional, and local levels.

Present international laws on the environment and natural resources are for the most part "soft" law instruments which, typically, establish enabling mechanisms for international consensus building and cooperative arrangements. They facilitate compliance with legally binding responsibilities and support countries of a lesser level of advancement to achieve a higher level of commitment step-by-step. In their initial stages, soft law agreements and instruments are general on purpose, leave options with regard to the time frame for implementation, and provide opportunities for countries to choose their own approach to addressing problems of common concern. One of their functions is to provide working tools flexible enough to accommodate competing interests, changing situations, and evolving scientific and technical

knowledge. Even if concrete results are scarce in the beginning, legal instruments facilitating a phased adoption of responsibilities can lead to substantive progress. A typical example of legislation to allow for gradually increasing commitments through subsidiary instruments is the Kyoto Protocol which is intended to implement the Climate Change Convention.

**Table 4.—International Criteria and Indicator Processes**

ITTO Criteria for Sustainable Management of Tropical Forests
Pan-European Process on Criteria and Indicators for Sustainable Forest Management
Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests Outside of Europe
Tarapoto Proposal for Criteria and Indicators for Sustainability of the Amazon Forest
Dry-Zone Africa Process
Near East Process
Lepaterique Process of Central America
Regional Initiative for Dry Forests in Asia
African Timber Organisation for the Identification and Testing of Criteria and Indicators for Sustainable Forest Management in Its Member Countries.

With regard to fundamental forestry issues, the results of UNCED and its follow-up processes is mixed. The non-binding instrument adopted as the Forest Principles, is innovative and comprehensive by intention. Its content makes international discussions more substantial and has probably changed the thinking of many foresters. However, the fact remains a strategic gap exists between non-binding statements on forest protection and management and the formal obligations from conventions addressing broader objectives of climate change and biodiversity. Significant gaps remain between the non-binding legal instruments on forest protection and management and the goals and obligations from the three UNCED conventions. This makes it difficult to translate global and cross-sectoral objectives on climate change, biodiversity, and combating desertification into consistent national policies on forests and sustainable forest management.

The international community is not, or at least not yet, in a position to agree on workable measures, to bring together the economic importance of forest production, the burning issue of social equity in using forest resources, and the need to protect unique forest ecosystems and maintain biodiversity. The disagreement on how forests are to be used and managed continues in spite of a growing public perception to see the forests of the world as a common heritage. In spite of great efforts during the last ten years, a firm international platform acknowledging the global character of the social and political demands upon forests, does not exist. Apart from the temporally functioning UNFF, there is political basis established that can facilitate coordination and implementation of common forest strategies. One of the important tasks of the UNFF is to act as such an intergovernmental platform which facilitates inter-sector coordination.

### **3. Conclusion**

The mandate for global sustainable development as agreed upon by the international community at the United Nations Conference on Environment and Development in Rio 1992 has produced an increasingly elaborated system of international policy processes and legal instruments. As these international measures are translated into public policy at national and local levels, inferences about the applicability in forestry increase, for the complexity tends to obscure and even confound causal relationships. The traditional institutional setting in which forestry operates changes rapidly. Added to it are recent institutional developments such as participatory processes for stakeholder consultation and the need for an integrated public policy framework, not only within the natural resource sector but among other relevant sectors of the economy as well.

This paper has placed the economic uses of forests and the development of the wood processing sector into the rapidly evolving global context of sustainable development. The expanding global institutional framework addressing the economics of sustainable timber production, multiple-use forest management, and environmental protection will have important impacts on forestry development as a whole. The private sector is increasingly being held accountable for the impacts of forest management on communities. Accountability expectations tend to be even greater when multinational corporations are involved. The implications are great. What responsibilities do corporations have in the communities in which they operate? How should communities be involved? What are appropriate participatory processes for consultation with community members? Who are the legitimate stakeholders?

## References

- ECOSOC. 2000. "Report of the fourth session of the Intergovernmental Forum on Forests", Vol. E/2000/L.32\*. United Nations Economic and Social Council, New York.
- Food and Agriculture Organization of the United Nations. 1999. "State of the World's Forests 1999". FAO, Rome.
- Food and Agriculture Organization of the United Nations. 1999. "Forest Products, 1995-1999", Forestry Series No 34. Statistics Series No 157. FAO, Rome.
- Food and Agriculture Organization of the United Nations. 2001. *State of the World's Forests, 2001*. FAO, Rome.
- Food and Agriculture Organization of the United Nations. 2002. "Law and Sustainable Development Since Rio: Legal Trends in Agriculture and Natural Resource Management". FAO Legislative Study No 73, Rome.
- Food and Agriculture Organization of the United Nations. 2003. Cross-Sectoral Policy Impacts between Forestry and Other Sectors. Forestry Paper 142, edited by Y.C. Dubé and F. Schmithüsen, Rome.
- Ollmann, H. 2001. "Struktur des Weltholzhandels 1996 – Handelsströme". Arbeitsbericht des Instituts für Ökonomie 2001 / 2; Bundesforschungsanstalt für Forst- und Holzwirtschaft, Hamburg.
- PricewaterhouseCoopers 2002. 2000 Global Forest and Paper Industry Survey.
- Schmithüsen, F. 2000. The Expanding Framework of Law and Public Policies Governing Sustainable Uses and Management in European Forests: In: Schmithüsen, F.; Herbst, P.; Le Master, D.C., Eds., 2000. Forging a new Framework for Sustainable Forestry – Recent Developments in European Forest Law. IUFRO World Series Volume 10: 1-27. International Union of Forestry Research Organisations, IUFRO; Secretariat, Vienna.
- Schmithüsen, F. 2003. Understanding Cross-Sector Policy Impacts - Policy and Legal Aspects. Forestry Paper 142: 5-44, FAO, Rome
- UN-ECE/FAO. 2002. European Forest Sector Outlook Studies, EFSOS Data Base, Geneva.



## WORKING PAPERS INTERNATIONAL SERIES

- 03/4 *Le Master Dennis C. / Schmithuesen Franz*  
The Forest and Wood Processing Sector in a Global Institutional Perspective. (15 pages)
- 03/3 *Schmithuesen Franz*  
Understanding Cross-Sectoral Policy Impacts - Policy and Legal Aspects. Published in Cross-Sectoral Policy Impacts Between Forestry and Other Sectors, Forestry Paper 142 (2003); Food and Agriculture Organization of the United Nations, Rome 2003 (48 pages)
- 03/2 *Schmithuesen Franz*  
The Global Revolution in Sustainable Forest Policy: A European Perspective. Pinchot Distinguished Lecture, 2003; Washington DC; Pinchot Lecture Series. (24 pages)
- 03/1 *Gallardo Gallardo Enrique*  
Regulación de los bosques para la conservación de la diversidad biológica - El caso de Chile. Contribución para el Grupo IUFRO 6.13, Derecho Forestal y Legislación Environmental. (10 pages)
- 02/3 *Schmithuesen Franz / Iselin Georg / Herbst Peter*  
Bibliography - Contributions IUFRO Research Group Forest Law and Environmental Legislation as of September 2002. (35 pages)
- 02/2 *Herrmann Kaspar B.*  
Wahrnehmung und Erwartungen der Bevölkerung in Bezug auf Landschaft und Wald im Pays des Feullardiers. Parc Naturel Régional du Périgord-Limousin, Frankreich. (24 Seiten)
- 02/1 *Rosset Christian*  
Participants and Participation in the Management of Natural Resources within Forest Users' Groups. A Social-Cultural Study in the Middle Hills of two Districts of Nepal. (38 pages)
- 01/1 *Schmithuesen Franz / Wild-Eck Stephan*  
Uses and Perceptions of Forests by People Living in Urban Areas: Findings from Selected Empirical Studies. Published in Forstwissenschaftliches Centralblatt 119 (2000): 395-408. (24 pages)
- 00/6 *Schmithuesen Franz / Zimmermann Willi*  
(1) The New Federal Swiss Forest Legislation: Constitutional Competencies, Objectives, Instruments and Policy Actors. (2) Communal Forest Tenure in Switzerland: Towards Co-Financing Forest Management Systems. In Forging a New Framework for Sustainable Forestry. IUFRO World Series 10: 298-314; 315-326. Vienna, International Union of Forestry Research Organisations. (28 pages)
- 00/5 *Schmithuesen Franz / Iselin Georg*  
Bibliography 1984-2000 of Contributions from the IUFRO Group Forest Law and Environmental Legislation (35 pages)
- 00/4 *Cirelli Maria-Teresa / Schmithüsen Franz*  
Tendances du droit forestier: Europe Occidentale. Etude juridique en ligne (2000) # 10; Rome, FAO. (37 pages)
- 00/3 *Seeland Klaus / Schmithüsen Franz*  
Forest Use and Management in the Wider Himalayan Context - Selected Papers. Published in Man in the Forest - Local Knowledge and Sustainable Management of Forests and Natural Resources in Tribal Communities in India, 1-47; New Dehli, D.K. Printworld. (39 pages)

- 00/2 *Schmithuesen Franz*  
 Percevoir la forêt et la gestion forestière. In: Arnould, P.; Hotyat, M., (ed.), 1999: Forêts et filières bois de l'hémisphère nord. Ann. Géo, Nr. 609-610 (1999): 479-508; Paris, Armand Colin. (33 pages)
- 00/1 *Cirelli Maria-Theresa / Schmithüsen Franz*  
 Forest Law Developments in Western European Countries. Legislative Study Online (2000), No 10; Rome, FAO. (35 pages)
- 99/5 *Rocek Ivan*  
 Les opinions des propriétaires forestiers – Résultats d'une enquête en République Tchèque. Avec la collaboration de Zdenek Patek, Karel Pulkrab, Ludek Sisak et Frantisek Zich. Prague, Faculté Forestière de l'Université Agronomique. (50 pages)
- 99/4 *Schmithuesen Franz*  
 The Expanding Framework of Law and Public Policies, Governing Sustainable Uses and Management in European Forests. Published in Experiences with New Forest and Environmental Laws in European Countries with Economics in Transition; Forstwissenschaftliche Beiträge Forstpolitik und Forstökonomie, Vol 21, p.1-30; ETH Zürich, 1999. (37 pages)
- 99/3 *Zimmermann Willi / Schmithuesen Franz / Wild-Eck Stephan*  
 Main Findings and Policy Implications from the Research Project Public Perceptions of Mountain Forests in Switzerland. Published in Wiersum, F. (ed), 1998: Public Perceptions and Attitudes of Forest Owners Towards Forest and Forestry in Europe, Hinkeloord Report 24: 47-59; Agricultural University Wageningen. (15 pages)
- 99/2 *Schmithuesen Franz / Iselin Georg*  
 Bibliography 1984-1999 of the IUFRO Research Group Forest Law and Environmental Legislation. (27 pages)
- 99/1 *Schmithüsen Franz / Zimmermann Willi*  
 Forestry Case Study Switzerland. In: Pelkonen, P.; Pitkänen, A.; Schmidt, P.; Oesten, G.; Piussi, P.; Rojas, E.; eds., 1999: Forestry in Changing Societies in Europe - Information for Teaching Module Silva Network Part II, pp. 415-441; University Press, Joensuu/Finland. (25 pages)
- 98/3 *Rocek Ivan*  
 Les attitudes des habitants de la République Tschèque envers la forêt et la gestion forestière. Avec la collaboration de Zdenek Patek, Karel Pulkrab, Ludek Sisak et Frantisek Zich. Prague, Faculté Forestière de l'Université Agronomique. (57 pages)
- 98/2 *Eggermont Katrien / Schmithüsen Franz*  
 WWF International as a Policy Actor and its Involvement in Promoting Forest Conservation. Results from a Diploma Thesis jointly undertaken by the Chair Forest Policy and Forest Economics of the ETH and the Laboratory for Forest, Nature and Landscape Research of the Catholic University Leuven. (52 pages)
- 98/1 *Schmithüsen Franz / Kazemi Yves/Seeland Klaus*  
 Actitudes de la Población ante el Bosque y sus Prestaciones Sociales (27 pages). In: Agricultura y Sociedad Nr. 85 (1998) 1: 43-66, Madrid