

**Response to changes  
in demand/supply  
through improved  
marketing**

**21.2**



# Impacts of changes in marketing environment on the primary wood-processing industry in Korea

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## SUMMARY

Primary wood products typically require less effort in advertising, distribution channels, differentiation of quality, price, specification, etc., of the products. Primary wood products need more effort in adjusting production mix, in securing raw materials at reasonable prices. Being highly dependent on foreign timber resources, the primary process industry of Korea has been greatly affected by changes in the marketing environment, and has initiated many actions to mitigate the impact of increasing restriction on timber supply and other environmental regulations.

Domestically processed softwood lumber has been maintaining its production level due to a large extent to successful species substitution. Hardwood lumber and plywood used for furniture were typical primary wood products for which the industry failed to introduce new and effective timber species. Korean plywood mills have invested in new facilities to process small-sized softwood logs. The project achieved remarkable success with the mill consuming 450 000 m<sup>3</sup>, amounting to 30% of total plywood log demand in 1995.

The composites board mills operating in Korea took advantage of flexibility with type of wood raw material and better availability of labour. This allowed composites board mills to be better able to compete with plywood and sawn lumber in the primary wood product market, and to allow expanding production capacity. Mechanical pulp mills had secured stable raw material supply by adding the DIP process and by improving wastepaper recycling. Several offshore plantation projects have been operating by some Korean paper companies for acquiring needed pulpwood as a first step for the construction of new chemical pulp mills.

## 1. INTRODUCTION

The marketing environment surrounds industry with the variables of political and legal socio-economic and technological forces. The primary wood-processing industry in Korea has been affected by changes in the marketing environment, mainly from overseas, due to its large requirement for raw material and reliance on foreign imports. The 1988 Seoul Olympics accelerated political democratization and the establishment of an open market in Korea. The global concept of sustainable forest management announced in the Forest Principles adopted in 1992 by UNCED emerged as international rules for environmental conservation and forest resources regulation.

Primary wood products (such as sawn lumber, plywood, composites board) are typically used for secondary processing operations. Industrial products normally require less effort in advertising,

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distribution channels, differentiation of quality, price, specification, etc., of the products. Primary wood products need more effort in adjusting production mix, in securing raw materials of reasonable price, and in improving product and process management to reduce raw material cost (14).

This paper attempts to identify several marketing environments and discuss their impact on the primary process industry. In order to estimate the impacts of marketing environment changes on the production mix, some economic indications, statistics of demand and supply of wood, costs and competitiveness were analysed. The reactions of the industry were assessed in terms of changes of production and market share of the products during 1991-1995 period. The patterns and trends of the reactions are useful information for strategic planning of the industry and for developing a long-term regional timber modelling (7).

## **2. CHANGES OF MARKETING ENVIRONMENT**

### **2.1 Socio-political environment**

Political democratization in Korea is associated, to a large extent to a stronger labour movement with wage increases and reduction of working hours. During the period 1987-1995, the annual labour cost rose by 16.1%, the highest rate among industrialized countries (Table 1). The socio-political circumstances drove the Korean industry to a high labour cost economy. The high labour cost had such a negative impact on price competitiveness that the primary process industry (sawmill and plywood) abandoned export markets and limited its activities to the domestic market (6).

### **2.2. Economic forces**

During the last 30 years Korea has achieved a remarkable economic growth and rapid trade expansion. Since the mid-1980s Korea has been committed to reducing tariffs for processed goods and tariff escalation has been further reduced by the Uruguay Round Agreement in 1994 (2,12). Tariff reduction for plywood starting from 1988 had a significant impact on domestic market of primary wood products. The primary wood market had been growing by 14% during the 1991-95 period thanks to the construction market growth with an annual increase rate of 23% (11, Table 2). At the same time, tropical timber producing countries, such as Indonesia, had aggressively penetrated the Korean market by taking advantage of price competitiveness, resulting in an increase of processed wood imports by 32% during the 1991-95 period (Table 2).

### **2.3 Environmental regulations**

After the 1992 UNCED, sustainable forest management has been accepted as a global concept for environmental conservation. Many institutions and countries employed a variety of trade and environmental regulations in their forest industries. The ITTO Council recommended a restriction on cutting volume of tropical hardwood in Sarawak in 1991. At the same time the Pacific Northwest of the United States regulated logging on softwood timber in old growth forests. Those regulations had significant impacts on increases in prices of global plywood log and sawlog with related effects on major sawn lumber and plywood markets (Table 3).

In order to achieve sustainable forest management, FSC and ISO simultaneously attempted to establish timber certification, which assumes a market function by limiting the import of unsustainably produced forest products or by imposing countervailing duties on imported products that benefit from an environmental export subsidy (3). Currently, timber certification and labelling have been used in Western Europe by several producers as a marketing tool to provide information showing that the products originate from sustainably managed forest. In the case that timber certification is formulated and enforced in the near future, many agree that suppliers in developing countries will

reduce their timber production because some of the schemes will lead to higher cost and impede access of their products (15).

## **2.4 Technological factors**

Timber resources are declining, both in terms of volume and quality. This has led to calls for technology improvement in complete utilization and recycling of wood and fibre materials. Recently, the WTO Committee on Trade and Environment, EU, ISO 14000 proposed some directives related to environmental aspects including standards for technical regulations, process, packaging, labelling and recycling, etc. (1,13). In this regard, the wood industry has made progress in developing processes and technology for so-called environmentally friendly products such as laminated wood, composites boards and recycled paper.

## **3. ADJUSTMENT OF THE PRIMARY WOOD-PROCESSING INDUSTRY**

### **3.1 Trends in raw material markets**

Trends in the raw material market structure is indeed a good indication to assess changes in the industry. Demand for logs, a base raw material for the operation of the primary wood-processing industry, has been declining during the 1991-95 period in Korea. Domestic log consumption has been continuously decreasing with a supply of around 1 million m<sup>3</sup>, accounting for 11% of total log demand in Korea (Table 4).

Demand for imported logs also showed a moderately decreasing trend in volume during the same period. Species mix of imported logs radically changed with the ratio of tropical hardwood to softwood varying from 4:6 to 2:8 in the imported log market (Table 5). Meanwhile, processed wood demand has been rapidly increasing in the Korean market. Many primary processing lines have been eliminated from secondary wood processing mills, which have tried to cut labour cost by outsourcing of primary wood products. Furniture mills and wood-working mills were eager to import primary wood products, accounting for 70% of the industry's total raw material consumption (Table 6).

These rapid changes of raw material procurement affected reallocation of the market share among primary wood products. The biggest loser was sawn lumber showing a 57% share in the primary wood product market, which dropped by 12% point during the 1991-95 period. Whereas, composites board swelled its market share from 7% to 19% during the same period (Table 7). Plywood maintained its market share at 25% in 1995, similar to that of 1991. The market trends appear to draw a general pattern that composite board is a substitute for solid wood, and the pattern is likely to continue for a considerable time span.

### **3.2 Sawmill industry**

It is much more sensitive to log price than to wages due to a much higher ratio of raw material cost to labour cost (Table 8). As a matter of fact, the automation rate in sawmills in Korea is merely 18%, half the average of the manufacturing industry (8). Kim (1995) determined that automation in the sawmill industry was motivated more for material savings than for labour savings. Stable price and consistent supply volume were key factors for switching sawlog species in the industry. Because sawn lumber is mainly used for temporary construction and packaging in Korea, the quality and properties of wood are less important (8,10). For these reasons, radiata pine was the best choice for replacing hemlock in the Korean market.

The lumber market has not changed in terms of overall volume, but changes of individual species by country of origin were significant. Domestically processed softwood lumber has been maintained

its volume level due, to a large extent, to successful species substitution. The supply curve of imported tropical hardwood sharply turned down in 1994. Until 1993, imports of tropical hardwood had filled up the vacuum generated by the decrease in domestically processed tropical hardwood lumber. Demand for temperate hardwood lumber increased to meet processing needs of high-grade furniture parts and interior wood (Table 10).

### **3.3. Plywood industry**

It experienced a rapid increase in manufacturing cost of 15.6% during the period 1988-'91, resulting in weak competitiveness indicated by a resistance index 25 as shown in Table 11. Raw material cost had the largest effect, consisting of 6.8%, out of the total cost rise of 15.6%, compared with 3.6% for labour cost and 4.7% for the cost of overheads. This point implied that diversion to low priced logs with stable suppliers is the most urgent task to recover competitiveness and to gain more profit for the plywood industry in Korea (9). For the effective use of alternative species, Korean mills invested from 1992 to equip rotary lathes that can efficiently cut small sized softwood logs. The project achieved remarkable success so that mills consumed 450 000 m<sup>3</sup>, 30% of the total plywood log demand in 1995 (Table 12).

Through its efforts in using alternative softwood species, the domestic plywood industry recovered price competitiveness in concrete-forming plywood. Thanks to that, domestically produced concrete-forming panels captured 60% of the 6 mm thick plywood market (Table 13). On the contrary, the 3-6 mm plywood production, for which diversion of log species was not feasible, experienced a decline. Since composites boards are hardly used for concrete-forming panels, softwood plywood production will continuously maintain its market share and keep the raw material market flexible for the Korean plywood industry.

### **3.4 Composites board industry**

It is relatively flexible as regards types of wood raw materials and less constrained in labour costs. The mills operating in Korea mainly utilize wastewood, accounting for 80% of total raw material input in 1995. In addition, being a capital intensive operation, composites board mills showed relatively low ratios of raw material cost at 52% including wood material at 30% and 10% of labour cost (Table 8).

The cost structure made it possible for the industry to overcome the "UNCED shock" in 1992 and maintain wholesale price increases within 8%, much lower than the 43% and 89% increases for plywood and tropical hardwood lumber, respectively (Table 14). This provided composites board mills a potential to compete with plywood and sawn lumber in the primary wood product markets, and to allow expanding production capacity (Table 11, Table 15).

As a general trend in Korea, 70% of MDF and 85% of PB output is forwarded to furniture mills and utilized for furniture parts and component processing (4). The Korea Furniture Manufacturers' Association predicted that the furniture industry will continue to increase consumption in composites board as a replacement for plywood and tropical sawn lumber. This is explained by the fact that composites boards have a high score on price stability, thanks to the self-sufficiency rate of 67% (5).

### **3.5 Pulp industry**

Pulp mills have been committed to reduce consumption of pulpwood while increasing pulp production. Deinking pulping (DIP) process technology was a solution for mechanical pulp mills. They strived to extend the deinking pulping process line, and the amount of wastepaper used in the furnish is as high as 70% for various mechanical pulps. DIP production played a major role to increase the paper recycling rate by 53%, a top level in the world. They also reduced consumption

of logs by eliminating internal chipping lines and by purchasing chip from outside suppliers (Table 16, Table 17). Through these efforts, the domestic mechanical pulp industry succeeded in maintaining its domestic market share and production volume during the 1991-95 period (Table 18).

Meanwhile, chemical pulp mills still supplied 18% of the total national consumption of chemical pulp in 1995 (Table 18). There are two possible reasons why the industry was discouraged to expanding production capacity. First, the price of chemical pulp has been flat affected by its weak import price, which decreased by 13% during the 1990-94 period. Secondly, a new mill with the economy of scale would require about 1 million m<sup>3</sup>/a of additional pulpwood (Table 3).

Recently, Korean paper companies projected to construct new pulp mills to improve self-sufficiency of chemical pulp so as to stabilize the domestic chemical pulp market. In addition, several offshore plantation projects have been active in acquiring needed pulpwood as a first step for the projected mill construction (4).

#### **4. CONCLUSION**

The primary process industry of Korea, highly dependent on foreign timber resources, has been greatly affected by the change of the marketing environment. Many actions have been carried out in order to mitigate the impact of increasing restrictions on timber supply and other environmental regulations.

When the choice of substitute timber species is limited, it is very difficult for the primary industry to improve competitiveness and to recover the market share. Hardwood lumber and plywood used for furniture were typical primary wood products for which the industry failed to introduce new and effective timber species.

Primary wood products were preferred by the secondary wood-processing industry when domestic self-sufficiency was high. In the case of 3-6 mm thick plywood, it relied heavily on foreign suppliers, domestic furniture makers substituted MDF for some plywood in order to secure stable supply of raw materials, and total consumption of the 3-6 mm thick plywood declined in Korea.

Meanwhile, when aesthetical appearance and physical properties are not critical, the industry is flexible in its choice of raw material. Softwood lumber mills and softwood plywood mills achieved smooth and effective adjustment of raw material mix by switching from hemlock to stable priced radiata pine.

Neither the tight labour availability nor the log price increase hurt competitiveness of composites board industry due to its flexible production structure, utilizing wastewood and requiring little labour. The industry is taking continuous competitive advantage over rival plywood and solid lumber, and to play a leading role in the growth of the domestic primary wood-processing industry.

Mechanical pulp mills have secured stable raw material supply by adding the DIP process and improving wastepaper recycling. On the other hand, the chemical pulp market has been dominated by imports because of recession of domestic production. Uncertainty in raw material supply security has been a great factor in constructing competitive mills of economical scale.

Finding technologies and processes which maintain the raw material market flexible and secure environmentally stable resources ensure the viability of the primary wood products industry and secondary wood products market.

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**Table 1. Annual increase rate of labour cost for manufacturing industry in major competing countries during the 1987-1995 period (%)**

Labour cost	Country			
	US	Japan	Taiwan	Korea
nominal rate	2.7	2.8	9.7	16.1
actual rate	-1.0	1.4	6.5	9.9

Source: Ministry of Finance and Economics, 1966.

**Table 2. Trends of supply structure of wood materials in Korea (1 000 m<sup>3</sup>)**

Class	1991	1992	1993	1994	1995
Total (A)	22 285	22 275	24 648	24 178	25 325
Domestic log (B)	1 286	1 123	1 184	1 173	1 055
Import log (C)	8 861	8 059	7 648	7 710	8 229
Import processed wood (D)	12 138	13 093	15 816	15 295	16 041
Share of processed wood (%) [D/(C+D)]	58	62	67	66	66
Self-supply rate of log (%) [B/(B+C)]	13	12	13	13	11

Source: Forestry Administration, 1996.



**Table 3. Import price index for wood materials in Korea**

Year	Products			
	North American softwood log	Tropical hardwood		Pulp
		log	sawn lumber	
1990	100	100	100	100
1991	96	133	108	85
1992	106	150	124	82
1993	180	293	207	60
1994	150	283	240	87

Source: The Bank of Korea, 1996.

**Table 4. Trends in demand structure of wood materials in Korea (1 000 m<sup>3</sup>)**

Wood products	Year				
	1991	1992	1993	1994	1995
Total	22 285	22 275	24 648	24 178	25 325
Round log	10 147	9 182	8 832	8 883	9 284
Processed wood	12 138	13 093	15 816	15 295	16 041
Share of processed wood (%)	54	59	64	63	63

Source: Forestry Administration, Korea, 1966.

**Table 5. Trends of log import by type of species in Korea (1 000 m<sup>3</sup>)**

Species	Year				
	1991	1992	1993	1994	1995
Tropical hardwood	3 775 (42.6)	3 224 (40.0)	2 165 (28.3)	1 951 (25.3)	1 843 (22.4)
Temperate hardwood	62 (0.7)	105 (1.3)	61 (0.8)	46 (0.6)	58 (0.7)
Temperate softwood	5 034 (56.8)	4 730 (58.7)	5 422 (70.9)	5 713 (74.1)	6 328 (76.9)
Total	8 861 (100.0)	8 059 (100.0)	7 648 (100.0)	7 710 (100.0)	8 229 (100.0)

Source: Forestry Research Institute, Korea, 1996.

**Table 6. Procuring source of primary wood products by secondary wood-processing industry [1 000 m<sup>3</sup> (%)]**

Industry Source	Furniture		Wood working		Musical instrument	
	1991	1995	1991	1995	1991	1995
Inside process	32 (2.3)	6 (0.5)	28 (2.9)	0 (0.0)	95 (34.2)	0 (0.0)
Domestic supply	445 (31.4)	300 (26.3)	339 (34.6)	358 (28.8)	128 (46.0)	150 (73.5)
Import supply	938 (66.3)	836 (73.2)	613 (62.6)	885 (71.2)	55 (19.8)	54 (26.5)
Total	1 415 (100.0)	1 142 (100.0)	980 (100.0)	1 243 (100.0)	278 (100.0)	204 (100.0)

Source: Forestry Research Institute, Korea

**Table 7. Trends in market share of primary processed wood products [1 000 m<sup>3</sup> (%)]**

Products	Year		
	'85	'90	'95
Lumber	3 121 (67.5)	4 588 (63.3)	5 169 (55.9)
Plywood	1 238 (26.7)	1 859 (25.7)	2 339 (25.3)
Composite board	267 (5.8)	796 (11.0)	1 747 (18.9)
Total	4 626 (100.0)	7 243 (100.0)	9 255 (100.0)

Source: Forestry Research Institute, Korea, 1996.

**Table 8. Constitution of manufacturing cost by primary wood products (%)**

Cost	Item				
	Sawmill	Plywood	MDF	Furniture	Manufacture
Materials	66	68	52	53	66
Labor	16	14	10	18	12
Overhead	18	18	38	29	22

Source: Forestry Research Institute, Korea, 1996.

**Table 9. Trends of softwood log consumption by species in Korea (1 000 m<sup>3</sup>)**

Species	Year			
	'92	'93	'94	'95
Hemlock	1 968 (37.9)	1 182 (20.9)	726 (12.5)	426 (6.4)
Radiata pine	2 123 (40.9)	2 497 (44.2)	3 404 (58.6)	3 399 (50.7)
Domestic pine	239 (4.6)	398 (7.0)	442 (7.6)	446 (6.7)
Others	857 (16.5)	1 569 (27.8)	1 237 (21.3)	2 435 (36.3)
Total	5 187 (100.0)	5 647 (100.0)	5 809 (100.0)	6 706 (100.0)

Source: Forestry Research Institute, 1996.

**Table 10. Trends in lumber market share by species [1 000 m<sup>3</sup> (%)]**

Lumber	Year				
	1991	1992	1993	1994	1995
Domestic processed sw	3 190 (64.0)	2 838 (64.2)	2 740 (60.5)	3 429 (66.2)	3 090 (60.8)
Domestic processed hw	851 (17.1)	675 (15.3)	509 (11.2)	603 (11.6)	350 (6.9)
Import sw	126 (2.5)	122 (2.8)	189 (4.2)	186 (3.6)	267 (5.3)
Import tropical hw	577 (11.6)	718 (16.2)	982 (21.7)	658 (12.7)	705 (13.9)
Import temperate hw	243 (4.8)	67 (1.5)	107 (2.4)	306 (5.9)	671 (13.2)
Total	4 987 (100.0)	4 420 (100.0)	4 527 (100.0)	5 182 (100.0)	5 083 (100.0)

Source: Forestry Research Institute, Korea, 1996.

**Table 11. Resistance index of domestic plywood and composites board in Korea**

Class	Item		
	Plywood	MDF	PB
competitiveness (pn)	25	9	36
major competitor	Indonesia	USA	Indonesia

Source: Forestry Research Institute, 1994.

$pn = (pd - pm) / pm \times 100$

pn=competitiveness (<10; strong, 10-20; normal 20 < weak)

pd=domestic wholesale price

pm=import price (FOB)

**Table 12. Trends of plywood log consumption by species in Korea [1 000 m<sup>3</sup> (%)]**

Species	Year			
	1992	1993	1994	1995
Kapur, Keruing	840 (53.6)	191 (13.3)	110 (8.1)	93 (6.3)
MLH	670 (42.7)	1 003 (69.7)	999 (73.2)	785 (52.8)
Other hardwood	58 (3.7)	188 (13.1)	47 (3.4)	159 (10.7)
Softwood	–	56 (3.9)	208 (15.2)	449 (30.2)
Total	1 568 (100.0)	1 438 (100.0)	1 364 (100.0)	1 486 (100.0)

Source: Forestry Research Institute, Korea, 1996.

**Table 13. Trend of plywood supply in Korea by thickness and source [1 000 m<sup>3</sup> (%)]**

Year	Total	Plywood			
		domestic		import	
		< 6 mm	>6 mm	< 6 mm	>6 mm
1985	1 227 (100)	479 (39.0)	748 (61.0)	–	–
1992	1 977 (100)	212 (10.7)	736 (37.2)	707 (35.8)	322 (16.3)
1993	2 274 (100)	111 (4.9)	787 (34.6)	800 (35.2)	576 (25.3)
1994	2 073 (100)	56 (2.7)	830 (40.0)	598 (28.8)	589 (28.4)
1995	2 339 (100)	21 (0.9)	871 (37.2)	858 (36.7)	589 (25.2)

Source: Korea Plywood Manufacturers' Association, 1996.

**Table 14. Wholesale price index for wood products in Korea**

Year	Products		
	Composites board	Plywood	Tropical hardwood lumber
1990	100	100	100
1991	100	103	120
1992	100	111	134
1993	109	160	276
1994	109	165	244

Source: The Bank of Korea, 1996.

**Table 15. Trend of composites board supply in Korea [1 000 m<sup>3</sup> (%)]**

Year	Total	Board			
		PB		MDF	
		domestic	import	domestic	import
1991	1 020 (100)	155 (15.2)	493 (48.3)	301 (29.5)	71 (7.0)
1992	1 209 (100)	320 (26.5)	451 (37.3)	354 (29.3)	84 (6.9)
1993	1 512 (100)	444 (29.4)	516 (34.1)	408 (27.0)	144 (9.5)
1994	1 616 (100)	524 (32.4)	403 (24.9)	506 (31.3)	183 (11.3)
1995	1 747 (100)	548 (31.4)	494 (28.3)	614 (35.1)	91 (5.2)

Source: Korea Plywood Manufacturers' Association

**Table 16. Trends of pulp material consumption in Korea (%)**

Class	'80	'85	'90	'95
Outsourcing rate of chip for pulpmills	10	62	66	77
Wastepaper rate to total pulp consumption	63	65	70	69

Source: Korea Paper Manufacturers' Association, 1996.

**Table 17. Wastepaper recycling rate by major paper consuming countries**

Country	Korea	World	Holland	Japan	Germany	EU	USA
rate %	53	37	55	51	50	39	39

Source: New Zealand Pine International, 1996.

**Table 18. Trend of pulp supply in Korea [1 000 m<sup>3</sup> (%)]**

Year	Total	Supply			
		mechanical		chemical	
		domestic	import	domestic	import
1991	1 540 (100)	167 (10.8)	30 (1.9)	157 (10.3)	1 186 (77.0)
1992	1 767 (100)	161 (9.1)	50 (2.8)	150 (8.5)	1 406 (79.6)
1993	1 923 (100)	142 (7.3)	53 (2.8)	307 (16.0)	1 421 (73.9)
1994	2 170 (100)	171 (7.9)	67 (3.1)	351 (16.1)	1 582 (72.9)
1995	2 218 (100)	181 (8.1)	68 (3.1)	319 (14.4)	1 650 (74.4)

Source: Korea Paper Manufacturers' Association, 1996.

# Responses to changes in demand and supply of forest products through improved marketing

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## SUMMARY

Several major trends, both in supply and demand for forest products markets in developed and developing regions and in countries in transition are increasing the importance of marketing forestry activities both at the industrial and community levels. Directing the materials available from forest resources to most appropriate and rewarding end-uses is a vital means in contributing to sustainable forestry and development. On the demand side the changes in demographic structures, economic development, concern for social and environmental aspects, direct consumer involvement and changing consumer tastes are setting specific new requirements for marketing in meeting customer needs and wants. On the supply side major changes are taking place in the supply of raw materials with consequent implications for product development and the introduction of new products to the markets. The move from log exports to marketing of value-added products is setting new requirements for industries in developing countries. The increasing role of small-scale operations at the local community level as suppliers of especially non-wood forest products requires additional development efforts. Opportunities are there for improved marketing to contribute to sustainable development.

Marketing takes place in a social context. It has three basic functions: connecting the supply and demand in society; integrating all the activities and parts of an enterprise to serve the markets efficiently; and, in the narrowest sense, making products move smoothly from production units to customers. Improvement of marketing to respond to the emerging changes requires recognition of values on which to base marketing activities. In particular, increasing demand for social and environmental responsibility is setting new conditions for marketing. In its function of integrating various activities of an enterprise, marketing provides information on customers and informs the rest of the organization about the customers and markets. Marketing is expected to develop from a specialized, short-term oriented function to one taking a leading role in long-term strategy formulation of an enterprise with focus on evolving customer needs and wants. Improved information technology assists in making marketing a knowledge-based and experience-based activity. Information technology makes it possible to create a feedback loop for marketing.

The paper concludes that improved marketing requires adoption of responsible marketing values, use of proper marketing philosophies and better marketing technologies. It identifies four major development issues on which action will be needed: improvement and strengthening of access to marketing information; full recognition and understanding of basic decisions of marketing planning; improved knowledge of current marketing practices and development of human resource for the marketing function in the forestry sector.

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## **1. SOME MAJOR TRENDS IN GLOBAL FOREST PRODUCTS MARKETS**

Several major trends both in supply and demand for forest products markets are having a significant impact on forest products marketing. This is causing changes at both the industrial and community levels. Consequently, increasing attention is being paid to developing and strengthening support structures for efficient marketing of forest products.

Industrialized and developing countries and countries in transition are facing different sets of challenges and opportunities related to changes in their respective marketing environments for forest products. The major changes to which industrial countries are responding are the emergence of a range of new products resulting from environmental pressures, new processing technologies, including increasing number of products made from residues, recycled materials and plantation-grown timber. In addition, a new, albeit still relatively small, market niche has arisen for wood products from sustainably managed forests and for specialty non-wood “natural” forest products, particularly from tropical forests. Decreasing availability of well-known, good-quality tropical hardwoods is directing the products made of the remaining resources to high-value end-use sectors. For instance, in industrialized countries, the repair and renovation of existing buildings is often associated with upgrading their quality by using precious materials, such as tropical hardwood for joinery, flooring and furniture. Marketing of wood products to these end-use segments requires specialized information and capabilities in order to be able to respond to competition from other materials.

Countries in transition are facing a totally new situation in marketing their products. Markets have had to be changed from the rather captive to the very competitive domestic and export markets. Parastatal organizations responsible for placing the products in the markets of centrally planned countries have had to be replaced by privatized industries and their emerging organizations.

### **1.1 Demand-side trends**

Changes in demographic structures, economic development and expectations, various value structures like concern for social welfare and environment and consumer tastes are some of the major factors having an impact on forest products demand to which marketing has to respond. The development in various parts of the world will not be even. This is likely to lead over time to changes in factors determining the prominent tastes and fashions in consumption of goods and services including also those provided by forests.

#### **Population growth/decline**

World population, currently at 5 700 million inhabitants, is estimated to grow to 9 800 million by 2050 according to United Nations projections (medium variant). The growth is fastest in developing regions while in Europe a decrease in population is foreseen as shown in Table 1.

The uneven growth of population in different parts of the world is gradually creating new centres of consumption of forest products with their specific desires. In developing countries the specific needs and wants of large masses will lead to growing demand for significant quantities of low-price, medium-quality products. Some of these products will have to be specifically designed for these market segments as they have already disappeared from the markets in developed countries. Traditional customs and local tastes will have an influence on the type of products demanded and the ways in which they are supplied.

In developed countries, especially in Europe, the stagnating population growth is creating new market segments. The growth of construction of new buildings is being overtaken by reconstruction and maintenance of existing buildings. Very often the renovation works are associated with upgrading of buildings for which higher value materials are needed. Ageing populations and single-member families in developed countries also open up particular market segments and niches for forest products.

**Table 1. Projections of annual growth rates of total and urban population in the world by regions from 1990 to 2025 (per cent per year) (United Nations, medium variant, 1994)**

Period	Africa		Latin America		North America		Asia		Europe		Oceania		World Total	
	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban
1990-95	2.81	4.38	1.84	2.60	1.05	1.29	1.64	3.33	0.15	0.57	1.54	1.46	1.57	2.53
2000-05	2.56	4.18	1.50	2.04	0.81	1.15	1.38	3.04	0.00	0.43	1.31	1.37	1.37	2.40
2010-15	2.37	3.86	1.20	1.58	0.78	1.17	1.15	2.66	-0.06	0.36	1.18	1.46	1.20	2.23
2020-25	2.08	3.34	0.96	1.26	0.66	0.99	0.89	2.19	-0.12	0.24	1.00	1.39	1.00	1.93

*Source:* United Nations (Department of International Economic and Social Information and Policy Analysis) (1995), World Population Prospects: the 1994 Revision, New York, and United Nations (1995) World Urbanization Prospects: The 1994 Revision.

### Urbanization is growing especially in developing countries

Developed regions and Latin America are already highly urbanized as over 70% of their populations live in urban areas. In Africa and Asia the development of urbanization is projected to be particularly significant in addition to overall growth in population. In 1995 there were 15 cities with more than 10 million people in the world. Four of them were in developed countries. The number of these mega-cities is projected to increase to 27 by the year 2015. All the new cities moving to this category will be in developing countries and most particularly in Asia where the number of mega cities will double from the current nine cities.

Increasing urbanization will differentiate the needs and wants for various forest products. It will lead to the emergence of not only concentrated mass markets for standardized, low-price products but will also encourage the creation of specialized, high-price segments to cater for the needs of the wealthier portion of urban populations.

Urbanization will further strengthen the special markets for “nostalgia”, “green” and “natural” products which in the case of forest products will most particularly include many of the non-wood forest products. Growing urban populations are also likely to increasingly demand services provided by forests the marketing of which is still to be developed.

### Economic growth

The economic growth in developing countries will be significantly higher than in developed countries as shown in Table 2. The rapid population growth in developing countries will reduce the growth rates when calculated on a per caput basis.

Although the average, aggregate-level growth rates do not reveal any of the differences between or within the countries, they do, however, give an indication of prospects of growth in economic wealth with consequent increase in demand for forest products.

In order to take full advantage of the emerging differences, proper segmentation of markets will be necessary. Saturating market segments for bulk products in developed countries will encourage suppliers to look for segments for specialty products.

### Demand for forest products will grow

According to the recently published FAO global forest products outlook study, the demand for all forest products will continue to increase. Table 3 shows in detail the actual and projected consumption of forest products in developed and developing regions.

Wood fuels form a particular category of forest products of special relevance to developing countries. They are the main kind of forest products used in the developing world. They are foreseen

to continue to play a major role also in the future. Traditionally, wood fuels have been gathered by the users with a relatively minor part being acquired through commercial channels. The supply of wood fuels is becoming increasingly commercial as the distance from urban centres to forest areas is growing and preventing direct gathering by users.

As in developing countries, also in countries in transition the importance of domestic markets for forest products will increase along with overall development. Early attention to emerging new opportunities will offer particular advantages to domestic suppliers.

#### **Environmental and social consciousness will remain high**

Environmental awareness and requirements of customer rights will become strengthened and set specific demands for forest products marketing. Consumer demand for certified products originating from sustainably managed forests with related eco-labelling will create specific segments for forest products. Consumers' participation in decision-making in the forestry sector will continue increasing and influencing product development and the way they are made available to consumers.

Active participation of people at the local community level in sustainable management of forest resources in developing countries will lead to needs for strengthened capabilities in marketing and improved access to marketing information. Small-scale operations involving large numbers of people will be increasingly important as suppliers of especially non-wood forest products. (Lintu, 1995)

### **1.2 Supply-side trends**

On the supply-side the changes in the range and composition of raw materials and the emergence of new processing technologies will open up new opportunities for product development and sustainable utilization of forest resources.

#### **Wider range of raw materials**

The increasing attention to sustainable forestry is widening the range of forest products and services made available from the forests. In addition to traditional wood products, non-wood forest products have started gaining importance as a means of increasing the value of the forest resource. Accurate quantification of non-wood forest products potential is not possible at the moment due to lack of reliable information. However, many of the non-wood forest products are already traded and the potential appears to be there for others to enter both domestic and international trade.

Several factors, some related to resource depletion, others to environmental and other restrictions, are leading to pressures to limit availability of wood raw material from natural forests. In many instances, products based on raw materials from natural forests will increasingly be directed to high-value, special products segments.

The role of wood supply coming from plantations is likely to increase. Forest plantations are fairly new as wood suppliers in the modern world. The reason for this is that the natural forest has until recently been able to provide adequate amounts of wood to industries and other users. Interest in using plantations for protective, environmental and social functions of forests is of even more recent origin.

In several European countries governments have encouraged afforestation of "set aside" agricultural land through incentives and regulations which is contributing to the increasing supply of plantation timber.

The area of forest plantations in the tropics has increased very fast. In 1980 the area was estimated to have been 17.8 million ha from which it increased to 43.9 million ha by 1990. This indicates the average rate of establishment of forest plantations to have been 2.6 million ha/year. Development has been fastest in tropical Asia where the area has almost tripled. Tropical forest plantations are



**Table 2. Assumed growth rate of real GDP (per cent per year) by region, 1994-2010 (Median scenario)**

Region	88-95	1995	1996	2000	2010
Africa	2.23	3.20	3.44	3.02	2.28
North/Central Americas	2.22	1.86	1.80	2.22	2.20
South America	2.21	1.12	3.53	3.06	2.32
Asia	7.88	8.40	4.39	4.09	2.94
Oceania	2.54	3.25	3.37	2.95	2.23
Europe	2.57	2.80	2.11	2.57	2.26
Former USSR		-4.3	1.08	1.35	2.50

*Source:* World Economic Outlook (International Monetary Fund, May 1996) for data to 1996. FAO Provisional Outlook for Global Forest Products Consumption, Production and Trade to 2010 (FAO, Rome, 1997) for the median GDP scenario from 1996 to 2010.

**Table 3. Projected consumption of forest products by developed and developing regions in the world in 2010**

Product	Unit	Developed	Developing	World
<b>Fuelwood</b>				
Actual consumption in 1994	million m <sup>3</sup>	184	1551	1735
Projected consumption in 2010	million m <sup>3</sup>	169	1883	2052
Growth rate 1994-2010	per cent/year	-0.54	1.22	1.05
<b>Industrial roundwood</b>				
Actual consumption in 1994	million m <sup>3</sup>	1070	404	1474
Projected consumption in 2010	million m <sup>3</sup>	1295	489	1784
Growth rate 1994-2010	per cent/year	1.20	1.20	1.20
<b>Sawnwood</b>				
Actual consumption in 1994	million m <sup>3</sup>	298	112	410
Projected consumption in 2010	million m <sup>3</sup>	348	126	474
Growth rate 1994-2010	per cent/year	0.97	0.72	0.90
<b>Wood-based panels</b>				
Actual consumption in 1994	million m <sup>3</sup>	97	28	126
Projected consumption in 2010	million m <sup>3</sup>	127	46	173
Growth rate 1994-2010	per cent/year	1.67	3.06	2.01
<b>Total fibre furnish</b>				
Actual consumption in 1994	million mt	211	60	271
Projected consumption in 2010	million mt	275	121	396
Growth rate 1994-2010	per cent/year	1.68	4.47	2.40
<b>Paper and paperboard</b>				
Actual consumption in 1994	million mt	199	67	266
Projected consumption in 2010	million mt	265	131	396
Growth rate 1994-2010	per cent/year	1.81	4.23	2.51

*Source:* FAO Provisional Outlook for Global Forest Products Consumption, Production and Trade to 2010. FAO, 1997.

efficient suppliers of timber with average rotations for eucalyptus, pines and teak at 8, 20 and 60 years, respectively. Nearly half of all plantations in the tropics to the end of 1990 were planted with trees belonging to four main genus/species groups: eucalyptus (23%), pines (10.5%), teak (5%), and acacias (7.7%) (Pandey, 1992).

The share of plantation forests will therefore increase in raw material supply. Standard products made of plantation timber will principally be directed to mass markets.

As in the case of plantation timber, also the use of by-products, residues and recycled materials is on the increase. Most pronounced is the use of waste paper in paper and paperboard manufacture.

### Processing technologies open up new opportunities

Several developing countries have banned log exports and in some instances also export of sawnwood in their efforts to encourage local processing of raw materials. This is moving the industry from raw material marketing to marketing of value-added products with related implications.

With the growing sophistication in secondary wood-processing technologies, requirements set to pre-processed raw materials are becoming increasingly demanding. The large processing capacity of the machinery will not only require large quantities of raw materials of even quality but also very regular supply to support their economic operation.

On the other hand, technological development is enabling the excellent use of primary raw materials of even low quality to produce high-quality products. Defects can easily be eliminated, strength properties of products improved, appearance modified, and resistance to decay strengthened, etc., by using various modern processing techniques.

The modern design and manufacturing technologies also allow production of knocked-down products in order to increase the performance of delivery systems. Container-based transport systems further encourage this development.

### 1.3 Opportunities are there

The growing and changing demand in forest products markets all over the world offers new and challenging opportunities for the forestry sector in contributing to sustainable development.

Consumers' participation in decision-making in the forestry sector will continue to sustainable management of forest resources.

New centres of consumption resulting from trends in population growth and urbanization, especially in developing countries, will influence the ways in which the needs and wants will be met. In developed countries, especially in Europe, the stagnating population associated with emergence of single member families and the increasing number of elderly persons is creating particular market segments and niches for forest products.

Urbanization will also strengthen special markets for "nostalgia", "green" and "natural" products and lead to increasing demand for services provided by forests.

Economic growth, particularly in developing countries, will not only increase the overall demand for forest products but will also contribute to the creation of market segments with different purchasing power. Domestic markets in developing countries and countries in transition with their particular wants will become increasingly attractive for local suppliers.

The demand for forest products is projected to continue increasing with significantly higher rates in developing countries than in developed countries. In developing countries the supply of wood fuels will become increasingly commercial requiring specific marketing efforts.

On the supply-side the changes in the range of raw materials will increase and change. Efforts to intensify the use of forest resources will increase the offer of non-wood forest products and increase the use of forest residues. Pressures to limit availability of wood raw material from natural forests

will increasingly direct the products derived to high-value, special products segments in the markets. Use of recycled materials, especially waste paper, will increase.

Increasing wood supply from plantations will help in producing standardized, low-price products for mass markets. The relatively limited number of dominant plantation timber species will require innovative product development efforts to meet the varying wants of customers.

In developing countries, efforts are made to increase production of value-added products and move away from raw material exports.

Development of processing technologies is opening up new opportunities for improving efficiency in raw material utilization and production of high-quality products. Technology is also assisting in the improvement of delivery systems to take advantage of modern container-based transport facilities.

The opportunities are therefore there for efficient marketing to create economic benefits and channel them to the participants concerned in the forestry sector. By directing the forest raw materials and products made from them to the most appropriate and rewarding end-uses wanted by customers, marketing contributes to sustainable management of forest resources. Marketing needs to be recognized at several stages from forests to final consumers. (Lintu, 1986)

## 2. MARKETING AND ITS FUNCTIONS

### 2.1 Definitions of marketing

Widely used definition of marketing is:

*“Marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating and exchanging products and value with others.”* (Kotler & Armstrong 1987)

The mission of marketing is satisfying **customer needs**. That takes place in a social context. In developed societies marketing is needed in order to satisfy the needs of society’s members. Industry is the tool of society to produce products for the satisfaction of needs.

There are broad and narrow definitions of marketing. Different types of approaches to marketing are needed when analysing the possibilities to improve marketing.

Marketing has a **connective function in society**. It connects supply and demand or production and consumption. At micro-level, marketing builds and maintains the relationship between producer and consumer.

At business unit level, marketing can have **an integrative function**. It integrates all the functions and parts of a company to serve the markets.

The narrowest definition is to see marketing as **a function of a business enterprise** between production and markets taking care that products move smoothly from production to customers.

### 2.2. The societal function of marketing

In modern society production and consumption are apart from each other. Marketing connects them. From the societal point of view, marketing is a philosophy which shows how to create effective production systems and consequently prosperity.

Business is a subsystem of society, which has both a social and an economic role. Thus, a company must operate in a way that will make possible the production of benefits for society and, at the same time, produce profits for the company itself. (Davis, K. *et al.* 1980) The role of marketing in society means also responsibilities. In addition to economic and social responsibility, ecological responsibility is nowadays emphasized. According to some definitions, environmental responsibility is part of social responsibility. Improvement of marketing is related to the changing emphases of economic, social and environmental responsibility. Goodpaster and Matthews (1982) analyse three patterns of

thought which can be distinguished for a company's social responsibility: 1. *The invisible hand*; 2. *The hand of government*; and 3. *The hand of management*.

1. ***The invisible hand*** view (promoted by e.g. Milton Friedman) concludes that the only social responsibilities of business organizations are to make profits and to obey laws. Free and competitive market-place will ensure the moral behaviour of companies. The common good is best served when individuals and organizations pursue competitive advantage.
2. ***The hand of government*** view (promoted by e.g. John Kenneth Galbraith) concludes that companies are to pursue rational and purely economic objectives. It is the regulatory hand of the law and political process which guides these objectives towards common good.
3. ***The hand of management*** view (presented by Goodpaster & Matthews) would put the responsibility of a company's actions into the hands of the company itself. It is concluded that the moral responsibilities of an individual may be projected into an organization, and that the concepts of an individual's responsibility and a company's responsibility are largely parallel. Therefore, organizations should be no less or no more responsible than ordinary persons.

The development of marketing is clearly related to adopted values which may be seen in the patterns of thought mentioned above.

### 2.3 The traditional and integrating functions of marketing

Traditionally, marketing has been seen as a link between production and customer. The situation could be captured better by using the term selling. Selling is associated to the so-called "Production and Sales Eras of Marketing". Slogans: "Make what you can make" and "Get rid of what you have made" describe the traditional view of marketing/selling.

The following figure shows the role of traditionally oriented marketing in (traditionally oriented) management.

Marketing was born out of a need to take better into consideration the demand factors in production planning. The function of marketing is to channel information of consumer needs to the production and satisfaction of needs to consumers. The basic power of marketing is the aspiration to produce and sell only that kind of products which have demand. Marketing integrates the whole company to serve this demand. Marketing aims at effective production systems, where information is transmitted effectively between production and consumption.

Figure 1. The traditional function of marketing

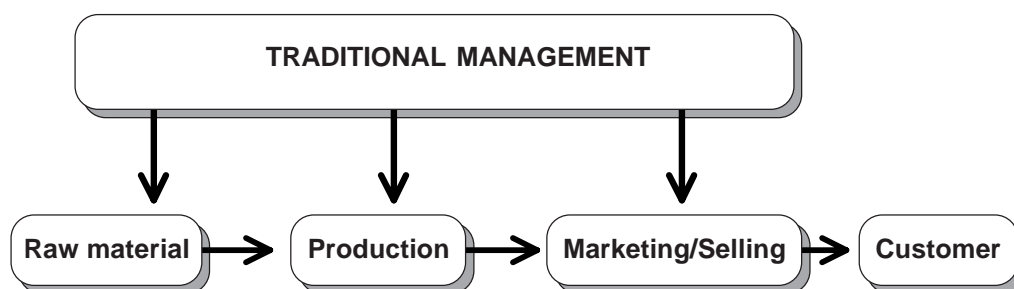
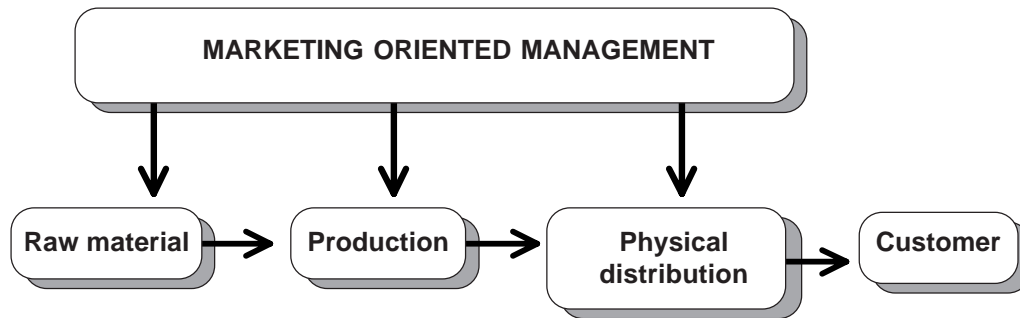


Figure 2. The integrating function of marketing



### 3. IMPROVEMENT OF MARKETING

#### 3.1 Values of marketing

Typical features of future markets:

- customer needs will be more diverse and versatile;
- companies will grow bigger and more international;
- the information environment will be transparent, global and fast;
- there will be more stakeholders (most noticeably the greens) on the markets;
- social and environmental problems seem to stay.

There will be increasing demand for companies to act **socially and environmentally** in a responsible way.

Zinkhan and Pereira (1994) talk about philanthropic economics. “While organizations in the future may need to develop long-term strategies which build beyond good service and quality products, businesses may need to enter into partnerships with consumers (and other stakeholder groups) by supporting socially relevant issues. This trend is called *philanthropic economics*”.

The achievement of social responsibility is not only the marketer’s duty, but also the consumer’s obligation. If behaviour of these customers is necessary for achieving social responsibility in marketing, it is essential to influence this behaviour. This is done through the design and implementation of a socially responsible marketing mix (El-Ansary 1974). We can say that marketing has to educate consumers towards more responsible behaviour.

Performing socially responsibly may gain competitive advantages to the company, while consumers and investors are more informed than before and are pressuring organizations to place more emphasis on social causes (e.g. green marketing).

Green groups, customers, legislators and competitors are putting pressure on companies to integrate environmental issues in marketing planning. This requires appropriate marketing planning systems. On the other hand, applying the principles of environmental marketing is not possible without genuine values supporting green issues. The role of business is not only to comply with existing standards, but to innovate to improve and protect the environment further.

Also, greener employees are emerging (mostly women) that require a company to act in an environmentally viable way. A socially responsible company image is good for recruiting retaining staff (Foreman and Woodruffe 1993).

Abratt and Sacks (1988) state that there is a “moral minimum” – a minimum of social responsibility which may be required of all members of society. In present society, the accepted level of responsibility for green issues is increasing. This responsibility is reflected in personal choices of green products and services – increasing demand for environmentally conscious companies.

The objectives of environmental management should be common for all sectors of society; there should be no inconsistency between industry’s view and that of other sectors.

In order to act environmentally responsible, the following issues have to be considered:

- *environmental planning* must become an integral part of organizational long-range strategic planning;
- people at all levels of organization must share a *commitment* to environmental issues;
- employees must understand they are essential to the protection of the environment and that company reputation is affected by their actions;
- a *corporate environmental policy statement* is needed to inform both external customers and internal customers (employees) of a company’s environmental objectives;
- a company must *monitor* its policies and implemented practices and correct possible inconsistencies between the two;
- *internal marketing* ensures correct implementation of environmental strategies by ensuring implementation of strategy on all levels of company and by facilitating change and developing the groundwork for integration.

### 3.2 The philosophy of marketing

#### Integrating and enlightened marketing

Marketing mediates between the company and the environment. Marketing analyses the needs of markets and customers and transforms them into business opportunities. Successful marketing means benefits to all parties. According to the broad view, marketing integrates all the activities of the company to serve the customer in a way which benefits both the customer and the company. Marketing is responsible for being expert on the customer and in informing the rest of the organization about customers and markets.

One problem for business and marketing in society is their low esteem among people. One result of this is low credibility. That causes problems in communication between companies and people.

Kotler *et al.* (1996) have suggested a so-called philosophy of **enlightened marketing**: marketing should support the best long-run performance of a marketing system. Enlightened marketing consists of five principles: *consumer-oriented marketing, innovative marketing, value marketing, sense-of-mission marketing and societal marketing.*

**Consumer-oriented marketing:** a company should view and organize its marketing activities from the consumer’s point of view. It should sense, serve and satisfy the needs of a defined group of customers. Companies must become customer-oriented and market-driven in all they do; the key to success will be a strong focus on the market-place and a total marketing commitment to providing value to customers.

**Innovative marketing:** a company should continuously seek real product and marketing improvements (e.g. innovative distribution arrangements).

**Value marketing:** a company should put most of its resources into value-building marketing investments. Long-term consumer loyalty is built by continually improving the value consumers receive from the firm’s marketing offer.

**Sense-of-mission marketing:** a company should define its mission in broad social rather than narrow product terms.

**Societal marketing:** a company makes marketing decisions by considering consumers' wants and long-term interests, a company's requirements and society's long-term interests.

### Strategic marketing

At the corporate and business unit levels marketing should merge with strategic planning or the strategy development function, with shared responsibility for information management, environmental scanning and coordination of the planning activities.

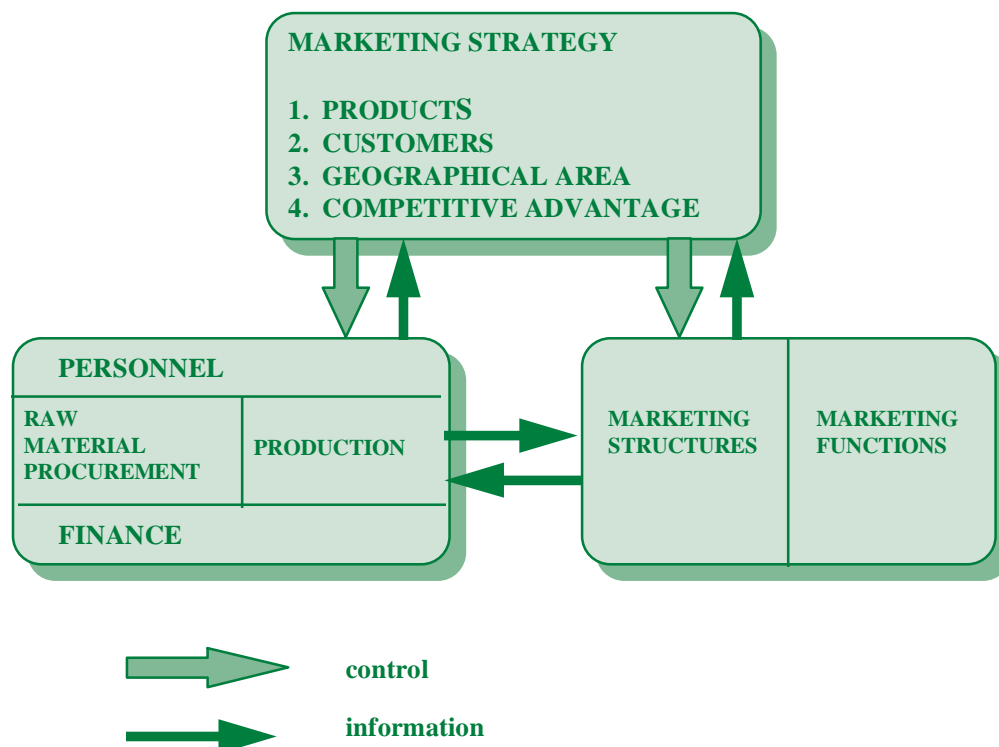
Marketing must evolve from a specialized function with short-term decisions to one taking a leading role in long-term strategy making which focuses on evolving customer needs. Marketers must broaden their set of skills into strategic thinking, communication skills and sensitivity to customers in order to enable marketing's wider role in company (Kashini 1995)

A strategic planning process should become a responsibility of marketing oriented management. Distinction between marketing and strategic planning becomes blurred. Marketing strategies will take the lead in business planning. Figure 3 demonstrates the relationship between marketing strategies and business planning.

### Relationship marketing

Customer relationships become the most vital strategic resource of a company. Marketing moves to a corporate responsibility for establishing and managing relationships with customers. Future marketing means changing buyer-seller relationships both on industrial customer and consumer

**Figure 3. Marketing strategies in business planning**



level. Companies move from traditional vague interaction towards partnership; e.g. joint new product development, coordinated manufacturer-retailer marketing, etc. Marketing must find a way to integrate the customer into the company, to create and sustain a relationship between the company and the customer.

“Marketing shifts from manipulating consumers to genuine consumer involvement; from telling and selling to communicating and sharing knowledge” (McKenna 1991). Consumer becomes a participant in the development and adaptation of goods and services.

### 3.3 Improved marketing technology

Information technology (IT) is altering the role of marketing and strategy within firms, while development of information technology is changing communication with customers from one-way to two-way communication. Development of IT is altering also the content, context and infrastructure by which the firm operates, and the competitive environment where it makes business. (Pitt & Morris 1995)

Information technology makes it possible to create a feedback loop for marketing “that integrates the customer into the company, allows the company to own a market, permits customization, creates a dialogue and turns a product into a service and a service into a product” (McKenna 1991).

According to McKenna (1991) marketing must become both **knowledge-based and experience-based**.

*Knowledge-based marketing* requires the company to master a scale of knowledge: of the technology in which it competes; of its competition; of its customers; of new sources of technology that can alter its competitive environment; and of its own organization, capabilities, plans and of ways of doing business.

*Experience-based marketing* emphasizes interactivity, connectivity and creativity. Companies must spend time with customers, constantly monitor competitors and develop a feedback-analysis system that turns this information from market into new product intelligence. At the same time, these companies must evaluate their own technology and cooperate with other companies to create a mutually advantageous systems and solutions.

## 4. CONCLUSIONS AND PROPOSALS FOR ACTION

The role of improved marketing in the forestry sector will increase in importance and allow industrial and community level enterprises to take advantage of the emerging opportunities to contribute to sustainable development. Improved marketing requires:

- 1) adoption of responsible marketing values;
- 2) use of proper marketing philosophies; and
- 3) better marketing technologies.

Marketing technologies give the tools. Marketing philosophies tell how to use the tools. Marketing values tell why marketing is needed.

*Values of marketing* (companies have to do the right things)

Human needs are the core of marketing thinking. Quality of life contains long-run societal and environmental welfare. There is increasing demand for companies to act socially and environmentally responsibly. There has to be a balance between economic, social and environmental values. This is the starting point of improved marketing.



*Philosophies of marketing* (companies have to do things right)

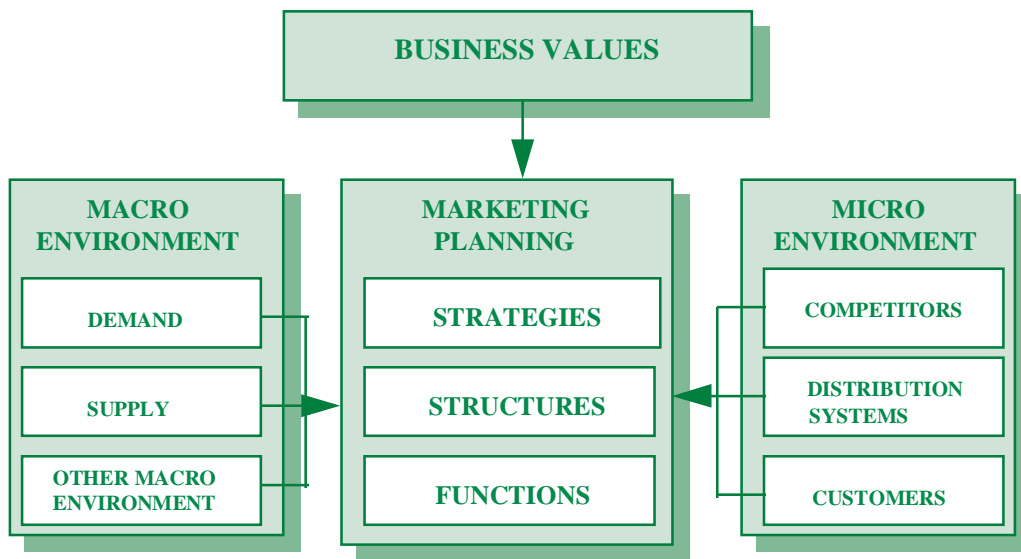
Marketing thinking shows how to create effective production systems and consequently prosperity. The basic power of marketing is the aspiration to produce and sell only that kind of products which have demand. Marketing philosophy concentrates the efforts of industry on human and societal needs and integrates the functions of an enterprise to serve them.

*Technologies of marketing* (companies must have proper tools for marketing)

Figure 4 demonstrates the use of marketing technology. As said earlier the key point of marketing technology is information. Improved marketing requires improved information which is the base for improved decisions. A proper planning system is the prerequisite for adequate decisions.

Development issues which need to be addressed adequately in making marketing an efficient function in enterprises will include improvement and strengthening of access to marketing information, full recognition and understanding of basic decisions of marketing planning, improved knowledge of current marketing practices and development of the human resource for the marketing function in the forestry sector.

**Figure 4. The context of marketing planning**



(Juslin, H. 1994)

**Basic information for marketing planning**

Strategic business and marketing planning constantly require information from both the macro and micro environment. It is the task of marketing to produce that information.

- Basic decisions of marketing planning
- Marketing strategies
- What kind of products to produce
- To whom to produce or what are the customer groups

What are the geographical limits of the markets  
What are the differential advantages to be used in marketing

#### Marketing structures

What kind of marketing organization to use  
How to recruit and train the personnel  
What kind of planning and information systems to use  
What kind of marketing channels to use  
What channels of physical distribution to use

#### Marketing functions

How to carry out personal selling  
How to carry out marketing communication  
How to carry out marketing information collecting  
How to carry out product planning  
How to carry out pricing  
How to carry out physical distribution

#### Improved knowledge of current marketing practices

All the development efforts to improve marketing would have to be based on full understanding of the current practices and the roles of involved parties to avoid any unnecessary upsetting of existing structures. Preparation of case studies and improvement of case study methodologies is a contribution to this direction.

#### **Development of human resource for the marketing function in forest-based enterprises**

With the increasing role of marketing in forest-based enterprises the demand for specially trained marketing personnel will increase. Some of the training needs relate to the operating staff who would benefit from short-term training courses. To satisfy the longer-term needs, university curricula for forest products marketing have to be developed and strengthened. The needs are not limited to the industrial and forestry community-level enterprises but also to organizations responsible for public sector administration related to forest products marketing.

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# Tree species information in marketing of solid wood products

Ritva Toivonen<sup>1</sup>, Riitta Laurila<sup>2</sup>

## SUMMARY

Declining resources of some traditionally used tropical tree species, together with the related environmental factors, emphasize the need to find alternative tree species for the wood-based industries. However, the attitudes both in the wood processing industry and by the end-users have been conservative towards alternative lesser used tree species. This may be due to the lack of information on the technical properties of tree species. However, especially technical but also other information about tree species would be very important in the marketing of roundwood and the products of the solid wood-processing industry. Although a large amount of information about the properties of tree species is available, it is scattered in many sources and it may therefore be difficult to use. Electronic databases have several advantages, but the existing databases may be too large or too general to be really useful. Therefore there is a need for a concise and easy-to-use database 1) to support tree species selection for various solid wood products, and 2) to support marketing of these products. This paper is the first phase of a larger research project whose aims are 1) to identify the necessary and sufficient parameters for describing the various wood properties in selecting roundwood for solid wood industry, and 2) to analyse the need for tree species related information in marketing of solid wood products.

**Keywords:** Marketing, wood properties, solid wood products, product information.

## 1. INTRODUCTION

The purpose of this paper is to discuss the needs and possibilities of utilizing theoretical knowledge of wood properties in selection of raw material and in marketing of solid wood products. The main interest is in how to make the existing theoretical knowledge of wood properties of various tree species as useful and operational for marketing purposes in solid wood industries as possible. This would benefit especially the small and medium-sized companies using a wide variety of tree species, including the lesser used species.

Declining resources of traditionally used tropical tree species, together with the related environmental factors, are giving new urgency to find alternative species for the wood based industries (e.g., Tropical Hardwood 1993; Eastin 1996). So far, the success of tropical hardwoods has been based more on their low price and, until recently, the lack of suitable substitutes. But now the declining availability of at least some of the traditionally used species has led to higher prices, which has created interest in finding less endangered substitutes (Tropical Hardwood 1993).

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The development of technology and converting processes within forest industries and the increased pressure towards more profitable and further converted production in developing countries are providing possibilities and incentives to use a greater variety of tree species. This emphasizes the importance of technical information about wood properties: It is needed when selecting new tree species as raw materials to replace the traditionally used species (Eastin 1996). In addition to information about technical and physical wood properties, knowledge about the origin of the wood material is needed. The environmental movement has progressed to a point where the acceptability and competitiveness of a timber product requires an acceptable image in connection with the environmental aspects of wood procurement and processing (Tropical Hardwood 1993).

Marketing of the semi-processed and final wood-based products, as well as procurement of timber, require increasing knowledge of wood properties. Knowledge of possibly tens or hundreds of tree species may be required and essential in providing information to the customers about the product quality in comparison with other competing materials. The acquisition of this information takes time, is costly, and the information may be concentrated for few persons.

Lack of easily accessible and shared information may result in low productivity, decrease of profitability due to use of expensive wood materials where less costly materials would be as suitable, low competitiveness or even loss of customers because their needs are not sufficiently satisfied. For example, the availability of information about technical wood properties has been found to be one of the main factors in the successful introduction of lesser used species (LUS) in Ghana (Eastin 1996). Even though a vast amount of information about tree species has been published, it is currently scattered in many different sources, and it may not be easily comparable.

Finally, it is difficult for human beings to manage the vast amount of information needed in optimal decision-making. Computerized information systems can significantly improve the management of large amounts of information. Hence, the possibility is increased that all relevant information is taken into consideration in decision making at all organizational levels and that it can be also forwarded to the customers. But existing databases (e.g. PROSPECT, More-LKS, Woods of the World) may be too large or general to be of true support for decision-making in specific industry sectors. Therefore specifically tailored and user-friendly databases may be more practical, and these databases would serve both production and marketing purposes.

## **2. ROLE OF TREE SPECIES INFORMATION IN SOLID WOOD INDUSTRY**

### **2.1 Wood properties as the criteria for tree species selection**

The properties of raw materials have an effect both in the processing conditions and in the properties of end products. When considering the problem of selecting tree species, the decision-maker is the one who processes the wood (industrial company) or the one who buys the semi-processed products, or the buyer of final products (end-user). End-users set requirements for raw materials on the basis of the properties and characteristics of the final product. On the other hand, processing methods set their own requirements. Hence, the selection criteria for tree species depend both on the type of process as well as on the end-uses of the final product.

Solid wood products can be classified according to their structural and non-structural uses, outdoor and indoor uses, visible surface and non-visible surface uses, etc. all of which have varying effects on the requirements for wood as a raw material. For each criterion or requirement set for a particular wood material, it should be possible to define corresponding technical, aesthetical or biological parameter or parameters. These parameters should be quantitative and relatively easy to measure to facilitate their inclusion in a database and their use in making accurate and objective comparisons of tree species. However, some wood properties are qualitative in nature (e.g. visual properties). For

these corresponding and sufficiently correlating quantitative parameters should be found. For the purpose of this study the properties of wood material are divided into three main categories:

#### A. Technical properties

Technical wood properties have direct influence on the behaviour of wood material in processes or in final products. These can be further categorized as: mechanical properties (density, shrinkage, strength, stiffness), tree form (stem size, taper, knots, reaction wood, spiral grain), chemical properties (chemical composition of wood, gum or resin exudation, corroding or staining components, allergens or other undesirable substances), machining properties (sawing, cutting, turning, splitting, hewing, planing) and treatability (resins, paints, preservatives, adhesives).

The most significant single wood property is definitely the density of wood. Density is related to most other physical and mechanical wood properties, such as strength, stiffness, shrinkage and swelling (Walker 1993). Density can be measured in various ways from wood samples and also indirectly by the pilodyn method or various radiation reflecting methods. Strength properties can be measured from clearwood samples or from timber (Pope and Matthews 1995). The determination of chemical composition requires sampling and laboratory tests. In order to evaluate the machining properties trials are usually necessary. The density and anatomical structure (spiral/interlocking grain) of wood and the presence of silica are indicators of machining properties. The growth strains and deformations in drying have been predicted on the basis of chemical composition (Sugiyama *et al.* 1993) and acoustic emission (Booker 1994). The treatability or permeability of wood material is highly influenced by its porosity of wood. The porosity can be estimated on the basis of density and the anatomical structure of wood.

#### B. Aesthetical properties

All wood properties that are visible in wood surfaces or that influence the appearance of wood products can be classified as aesthetical properties. Such wood properties are, for example: colour, texture, luster, gloss, grain, figure in wood, smell.

Colour of wood can be measured by optical devices, using for example a spectrophotometer (Beckwith 1979). The uniformity of colour is important in solid wood products. With optical measurement methods the uniformity of colour can be objectively evaluated and presented as  $L^*$ ,  $a^*$  and  $b^*$  coordinates (e.g. Janin and Mazet 1987). The figure in wood cannot be measured by quantitative methods, only qualitative characterization is possible. However, relatively objective estimates can be made for both the texture and figure in wood on the basis of the anatomical structure of the wood. The anatomical structure is often recorded in taxonomic handbooks and publications. Generally such publications do not provide any information about technical properties of tree species and are thus seldom known or used in the wood-processing industry. Smell is not strictly speaking an aesthetical wood property. But because smell may have a significant effect on the attractiveness of wood in in-house building or decoration uses, it is classified among the aesthetical properties. Smell may be characterized not only by measuring the chemical subject(s) causing the smell but also on the basis of subjective criteria.

#### C. Biological properties

The biological properties of wood can be categorized as: The anatomical structure of wood texture, size and distribution of cell types, earlywood/latewood-ratio, heartwood/splintwood-ratio, size and amount of rays, the natural durability of wood and its susceptibility to insects.

The description of the anatomical structure of wood always requires samples and microscopic measurements but, once done, the general structure and variation within one species is relatively

constant. Hence information about wood anatomy is usually available in taxonomic publications. Natural durability and resistance to insects can be measured by laboratory tests. Durability can be assessed on the basis of chemical composition and heartwood content (Haygreen and Bowyer 1989).

## **2.2 Tree species information in marketing of solid wood products**

Roundwood is a raw material which is marketed for industrial companies which further process the timber. Many of these companies produce semi-processed products, such as sawnwood or plywood, which are again marketed for other processing companies, such as furniture or window and door manufacturing industries. Finally, such end-products as furniture, doors, parquet, flooring and kitchen cabinets, are ultimately marketed for the end-users. In transactions between industrial companies and timber producers, and between two companies (industrial marketing), and companies and final end-users (consumer marketing), information related to tree species and wood properties is essential.

In general, in industrial marketing it is crucial to be able to provide technical information about the characteristics of products (Ames & Hlavacek 1984). Failure here may cause the potential competitive advantages based on advanced technology, product improvements or raw material improvements not to be achieved (Porter 1985). In the solid wood products industry, information about tree species and especially technical wood properties is the core of technical service related to marketing.

One self-evident selection criterion for selection of tree species is price, another is availability. Furthermore, such factors as distribution and general service quality may affect the choice of the supplier (e.g. Eastin 1996), but these criteria are not directly related to the tree species. However, many other things, such as the environmental impacts related to tree species, may affect the choice of a wooden product.

Although environmental concerns may have declined somewhat from the levels of 5-10 years ago, all indications are that environmental issues are extremely important. Thus up-to-date information about them will interest many consumers. The fact is that end-users are, and will likely remain, concerned about environmental impacts (Cooper *et al.* 1996; Tropical Hardwood 1993). Therefore it is assumed that the final end-users are concerned about the origin of the wood material (ecological sustainability); consequently the companies' interest in green issues will also continue.

To sum up, the analysis of information requirements leads to the conclusion that both processing companies and their customers (end-users) need information not only about technical and biological, but also about aesthetical wood properties. In addition, the environmental factors related to the wood raw material are to be taken into account.

However, the emphasis in information needs is believed to be different if comparing the processing companies and the end-users of their products. The previous ones are assumed to select those tree species which are suitable for various products on the basis of technical and biological properties. Hence, the basis of the selection is determined by the technical and biological properties of the wood, and the final end-users of the wooden products do not actually need this information because the selection has already been made by the producer. Therefore the end-users can focus their attention on the aesthetical and other non-technical/biological properties, such as environmental impacts.

Considering all the points presented above, the essential information needed for tree species selection *from a producer company's point of view* can be generalized as follows (not necessarily in order of importance): the technical, biological and aesthetical properties of wood material, the availability of timber, the price of timber, delivery systems and overall service provided by the supplier, and the environmental impacts connected with tree species. Hence, this is essential information in marketing of timber for solid wood industry.



When regarding the choice of tree species from a *final end-user's point of view* the most essential information needed can be generalized as: the technical, biological and aesthetical properties of the final product (connected with wood material used), special emphasis on non-technical properties (aesthetical and environmental impacts), the price of the product, the service connected with the product, and availability of the product. Hence, this information is essential in marketing of solid wood products.

As emphasized in the results of an empirical explorative study conducted in Ghana by Eastin (1996), the ready availability of accurate technical information is critical to the successful introduction of a LUS. This can probably be generalized in any tree species which is marketed for new end-uses, or in a new market. This kind of information is essential for potential customers in comparing the new species with the previously used ones, or with other competing materials. Even though technical information may not replace a technical trial, it may be essential in persuading potential customers in considering and evaluating new tree species (Eastin 1996; Sutinen int. 1996). Especially in the companies using tropical tree species, either in the form of timber or semi-processed products, there exists new or modified re-buy situations (see Kotler 1992) fairly often. This is due to quickly changing availability of many tree species and the strongly fluctuating price levels (Sutinen int. 1996).

Environmental factors are the most recent pieces of information to enter the list of necessary information in marketing of solid wood products. The use of environmental information in marketing is not a simple matter. For example, cultural factors must simultaneously be taken into consideration when planning to use environmental information in marketing (Cooper *et al.* 1996). In addition, the "green characteristics" still seem to be ranked low among the criteria that consumers apply when buying timber products. According to a few studies, this conclusion seems to hold both in Europe and in Northern America (Cooper *et al.* 1996; Ozanne & Smith 1996).

### 2.3 Planning the use of tree species information in marketing

Information about wood properties and other information related to tree species is assumed to be needed especially in three different marketing functions (see e.g. Juslin 1994) which are: 1) personal contacts, 2) marketing communication, and 3) product planning. **In marketing communication**, i.e., advertising and promotion, the communication has only one direction. Hence, the information provided through marketing communication is defined by the personnel in the producer company (what they think that the customers want/need to know). The problem in planning is to be able to clarify what information the customers find important.

**In personal contacts**, the communication between the producer and the customer is interactive; it is possible to ask questions. Therefore the information provided in personal contacts can be defined by the customers (by asking questions). Thus similar problems as in planning of marketing communication do not occur. The information about tree species that is required may be very detailed, since it is defined by each customer uniquely. Answering the unique questions of each customer quickly requires a wide knowledge of tree species and their properties. Information required **in product planning** also is versatile and it must be shared between a group of people: designers, the manufacturing personnel, the marketing personnel and possibly technical advisers of the supplier company. The information required is gathered through marketing communication and personal contacts with the supplier company, but it is also available from research institutions, books, magazines, and from practical experience (Sutinen int. 1996).

In conclusion, it seems clear that in order to be able to deliver tree species information to customers, this information must be first shared by the personnel within the company. Similarly, to be able to develop products to satisfy the needs of the customers, it is necessary to share the knowledge of customer specifications between the marketing persons and product planning persons. Information

about customer needs and wood material properties must be also available in the higher levels of marketing planning. If the strategic decision is to emphasise environmental factors, i.e. to employ ecological marketing, then the environmental impacts related to potential wood raw materials must be known.

### 3. SUMMARY AND CONCLUSION

The solid wood-processing companies are assumed to make the selection of tree species mainly based on the technical wood properties, since this information is critical in product planning and processing. Therefore this kind of information about various tree species is crucial in marketing of timber for solid wood industries. In contrast, it is assumed that the end-users of the solid wood industry products place relatively greater emphasis on the visual properties of wood and on other non-technical properties. Hence, this information is crucial in marketing of solid wood products.

The marketing personnel need to be able to deliver the end-users' requirements regarding the wood material for those making the decisions about what kind of wood raw material is used. Accordingly, the personnel responsible for selecting tree species for raw material need to be able to share their knowledge with the marketing personnel who are the linkage between the company and its customers. In a small company one person may need to master all this information.

Most of the required information is already available as the result of academic research. However, this information may be difficult and time-costly to achieve. Therefore it is suggested that this information be reorganized in a form of an information system, the core of which is to be a well-formulated database of wood properties by tree species. The properties should be classified as described in this paper and characterized based on quantitative parameters whenever possible. However, some of the essential criteria for selecting tree species for particular end-uses are not quantitative, and thus are not available in the existing databases. Therefore additional research is needed to discover the relationships between the essential selection criteria (wood properties), and measurable parameters.

The final information system should provide the importance ranking of different pieces of information describing wood properties in regard to the specific requirements in the industry sector which the system is aimed to serve. The system should contain, in addition to the quantitative characterization of colour and surface quality, pictures of wood in all cut surfaces, due to the subjective nature of all visual (aesthetical) properties. In addition, information characterizing the much stressed environmental impacts should be included in the system.

The suggested database and information system would be a powerful tool in marketing of solid wood products and roundwood, especially the LUS and LUS-based products. The system would also support the tree species selection as raw material of solid wood products. It would increase the possibility to cumulate and share information within and between organizations. In this way, the information would be less connected with specific persons and thus the information would be more an asset of the organization than an asset of private persons. These potential benefits are especially significant in developing countries where the degree of industrial development is not high and the wood-processing companies tend to be rather small.

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# Summaries of voluntary papers

(also published in Spanish, French and Turkish)

## CHINA – IS IT A LUCRATIVE TIMBER MARKET?

Hong Yang, Xiaomei Jiang<sup>1</sup>

The growth of the Chinese population and the rapid development of the Chinese economy are the two major factors affecting timber demand and supply. The economic environment affecting China's timber demand and supply includes mainly the situation of forest resources and the wood processing industry, as well as wood imports. From past statistics, we know that China is an emerging market for the timber industry. The paper presents a general view of the timber situation in China, including the forest resources, production, processing and consumption of timber products for the last 10 years, projecting the timber consumption in the year 2000, imports of timber products, as well as the marketing channels. For expanding international cooperation in the wood industry and timber trade, a series of Chinese policies and measures affecting timber import and export is presented.

**Keywords:** Timber products, market, demand and supply, production, import.

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**The following summary is published only in the original language**

## **DEMAND FOR FOREST PRODUCTS CONSUMPTION AND MARKETING**

**Alfonso Froncillo<sup>1</sup>**

After presenting some background considerations on the use of wood throughout the centuries, the author formulates a number of concepts of the demand-supply of wood products. He notes that the demand for wood materials is constantly on the rise, and that the supply is not always sufficient to meet it. The functions which the forest is called on to serve in terms of preserving terrain, controlling water tables and protecting the environment in general only accentuate the shortfall of the wood supply. What is more, the new demands of an ecological nature increasingly divert woodlands from the production function in order to meet increasingly pressing needs of civilized living and environmental defence. The result is an ever more marked limitation on the availability of forestry resources.

This explains the need for a continuously updated evaluation of existing forestry resources, accompanied by construction of infrastructures able to make the wood available, plus further in-depth study of technical knowledge, of the features of wood and of its performance characteristics in the interests of finding more rational uses for wood as a raw material while avoiding waste and inappropriate applications of wood products.

The energy crisis and the significant rise in the price of oil are key points in support of the promotion and up-grading of the use of wood, including modern forms of wood-retrieval products, such as MDF, OSB, pallets, etc.

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