

Changing realities in forest sector markets

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Fundamental changes in the global forest sector are beginning to shift wood products manufacturing activity towards emerging economies, while new markets for wood products are creating opportunities for producers around the world.

It has long been the case that the world's most developed economies consume a much larger percentage of basic raw materials than the percentage of global population collectively represented by these economies. Wood is no exception. A unique aspect of this particular raw material is that the way in which it is used differs widely between developed and developing countries.

For many decades the global wood harvest has been more or less equally divided between industrial wood (including timber, moulding, millwork, panels and paper) and woodfuel which is used primarily for heating and cooking (see Figure). For most of the twentieth century and still today, about 40 percent of all wood and 75 percent of industrial wood has been harvested in the developed countries (the United States, Canada, Oceania and western and northern Europe), home to less than 20 percent of the global population. These countries have also dominated the wood products manufacturing sector globally for more than a century. In contrast, the developing countries have traditionally accounted for about 90 percent of

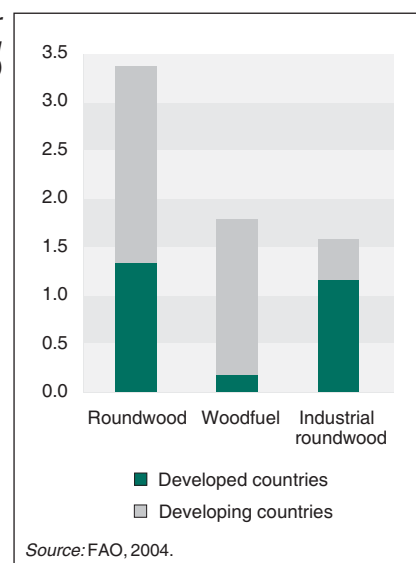
the global woodfuel harvest (much of which comes from natural forests), but only about 25 percent of the industrial wood harvest. These countries have, for the most part, been minor participants in world wood products markets (FAO, 2004).

There is growing evidence that these longstanding realities are about to change in an unprecedented way. Wood products manufacturing activity is beginning to shift from developed to developing regions. At the same time, industrial wood products consumption is growing in the developing regions. (Ed. note: See article by Hashiramoto, Johnson and Castano in this issue.) In view of the many factors underlying these changes, future wood products production and consumption patterns are likely to be driven much more significantly by developments in China, elsewhere in the Asia and the Pacific region, Latin America, South Africa, the Russian Federation and eastern Europe than by industrial growth in countries long recognized as the most economically developed. The implications for established players in the sector are profound.

At least four major factors are driving change. These include:

- globalization, which is shifting industrial capacity to countries where costs are lower;
- the extensive development of fast-growing tree plantations and the rapid emergence of new supplies of industrial wood;
- the relatively recent and ongoing development of wood-based composite products technology;
- the emergence of new important players in wood products manufacturing and consumption—especially China, but also other Asian countries, the Russian Federation, eastern Europe and some countries in Latin America.

Worldwide harvest of timber in developed and developing countries, 2003 (billion m³)



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CHANGING REALITIES

Globalization

Globalization is changing the nature of manufacturing worldwide. The cumulative effect of numerous factors—including the development of global communication networks that allow near-instantaneous transmission to distant locations, the extension of transportation networks to far corners of the globe, universal availability of the latest and best technologies worldwide, and the lowering of barriers to international competition through the World Trade Organization (WTO) and other mechanisms—has been effectively to shrink the globe. One result is rapid expansion of industrial capacity, including wood products production capacity, in countries characterized by low labour rates and (often) low costs of regulatory compliance.

Increasing global competition is clearly having an impact on the forest and wood products sector. Several of the largest emerging global economies, and most notably China, appear to have targeted this sector as a focus of employment and industrial growth. Other regions have moved aggressively to create planta-

tions of fast-growing trees and to position themselves for future forest-sector development.

Plantations and increased supplies of industrial wood

The convergence of several trends has led to significant increases in the global supply of industrial wood:

- investment in fast-growing tree plantations worldwide;
- the re-emergence of the Russian forest and wood products sector;
- increasing harvest activity in the world's tropical forests.

For the most part, the new wood supplies are located in developing countries. Most tree plantations are in Asia, Oceania, South Africa and several countries in Latin America. Current investment trends will only accentuate this situation.

The current global plantation area is about 5 percent of the world's forest area. This 5 percent accounted for about 35 percent of global roundwood production in 2000, and the role of plantations is expected to increase. New plantation establishment continues at a rate of about

4.5 million hectares annually. Moreover, most plantations are relatively young, with large areas having been established over the past two decades; large volumes of wood will therefore become available to world markets as they reach harvestable age within the short term. It is likely that more than one-half of the growing-stock harvest will be plantation grown by 2050 (Brown and Ball, 2000).

The re-emergence of the Russian forest sector will add substantial volumes of wood to the global supply. With more than 50 percent of world softwood resources and hardwood forests that cover a slightly larger area than the hardwood forests of the United States, the Russian Federation has the potential to provide very large new supplies of wood and wood products to world markets. The Russian Government has recently estimated that its potential for annual production of timber is 559 million cubic metres (Benin, 2004). Given the Russian harvest levels of recent years (172 million cubic metres in 2002 [Ekström, 2003]), over two-thirds of the potential Russian harvest represents new supplies for future export and wood products manufacturing.



Developing regions have traditionally accounted for about 90 percent of the global woodfuel harvest (shown, charcoal production in Brazil) but only about 25 percent of the industrial wood harvest – a reality that is about to change as they increase their capacity in wood products manufacturing

The extensive development of fast-growing tree plantations, for the most part in developing countries, is creating new supplies of industrial wood (shown, poplar plantation in Chile)



CALVAREZ

A wild card in the Russian Federation is the impact of possible changes to the country's forest laws. Proposed changes would transfer 10 to 30 percent of Russian forest lands to private ownership, which many observers believe would contribute to expanding the forest products industry towards the nationally targeted level of US\$100 billion by 2025 (from US\$10 billion in 2003).

The combination of increasing availability of plantation wood and arrival of greater wood volumes in world markets as a result of rising harvest levels in the Russian Federation and elsewhere points to the likely advent of what some are referring to as a "wall of wood." Should this massive supply materialize, it will significantly change the competitive equation in the forest sector on the global scale.

Ongoing development of wood-based composite products technology

Ongoing technology development in the wood-based composite products arena has dramatically affected wood mar-

kets while also providing new options for forest managers and policy-makers. Wood-based composite products can be substituted for products made of solid wood and also allow wood to be used in applications traditionally dominated by steel or other materials. Such products include medium-density fibreboard, oriented strand board, laminated strand lumber, parallel strand lumber and laminated veneer lumber. Composites are generally made of low-density woods of small diameter and often have properties superior to those of solid wood. Such products are also much less affected by the presence of juvenile wood than are solid wood products. As a result, large-diameter logs are decreasing in importance as a raw material for the manufacture of structural and non-structural panels and timber.

The ability to use small-diameter trees for products ranging from paper to high-strength structural products creates a disincentive to manage forests over long rotations, encourages further plantation development and shifts management

planning towards maintenance of relatively fast-growing trees – all pointing to additional opportunities for regions having access to significant plantation resources.

Growing role of China and other countries with developing and transition economies

After centuries of economic and technological stagnation, China now has the world's most rapidly growing economy following the adoption of political reforms and trade liberalization policies. China's industrial and economic growth is the result of careful, targeted planning which is focused on the development of labour-intensive industries. One of the industries singled out for attention by Chinese planners is the wood products industry, and the hardwood products segment in particular (furniture, mouldings, flooring, kitchen cabinet components and paper and fibre products). As China has relatively little forest cover and much of it is off limits to harvesting, the country has turned to

New technologies are making it possible to use small-diameter wood from fast-growing plantations in composite products of great strength (shown, Norway pine plantation in the United States)



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massive importation of both hardwood and softwood logs and timber as well as waste paper to supply the growing wood products industry (see article by Lu in this issue). Chinese waste-paper imports have increased by an estimated 19 to 34 percent over the past three years (Fales, 2003). The upward trend of imports is expected to continue.

Other countries are losing market share to Chinese manufactured wood products and are likely to continue to do so. For instance, partly as a result of a 2 366 percent increase in the value of Chinese furniture exports to the United States from 1993 to 2003, hardwood timber consumption by the United States furniture industry has been reduced by over 60 percent in just the past five years (Meyer, 2004).

While China is assuming an increasing role as an exporter of products of all kinds, per capita income within China is rising, and along with it consumption of a wide range of products, including various wood products. For example, wood use associated with housing is increasing – particularly its use in mouldings,

doors, partitions and furniture. Interest in wood framing as a method of construction is slowly gaining acceptance and momentum. Rapid construction of new housing units is occurring in China, with the average unit five to six times larger now than only a few decades ago. The impact on China's wood products consumption is substantial. This market growth provides a solid foundation for China's developing wood products industry. Growth of the Chinese market also provides an export opportunity for manufacturers worldwide, at least in the short term.

The Russian forest sector is beginning to recover from near total collapse following the breakup of the Soviet Union. Based on the enormity of Russian timber supplies and an improving investment climate, substantial investment is currently flowing to the Russian Federation to support forest-sector development (Ekström, 2003). At present, investments are largely focused on development of basic production capacity, such as production of logs and timber for export. Longer-term development is likely to

turn to production of value-added products. A current effort to establish large-scale wood processing facilities along the Russian-Chinese border provides an indication of what the future may hold (Taylor, 2004).

Other countries that are currently building capacity in the forestry and wood products sector include several countries in the Asia and the Pacific region, a number of countries in eastern Europe, and several countries in Latin America, most notably Brazil and Chile. The key producing countries in the Southern Hemisphere (Argentina, Australia, Brazil, Chile, Indonesia, Malaysia, New Zealand and South Africa) have slowly but steadily raised their contribution to global wood products exports over the past four decades, from under 6 percent to more than 16 percent (Whiteman, 2003). In tropical countries there is a clear trend towards development of capacity for production of primary processed and secondary processed products, with most of the output intended for export markets (Johnson, Adams and Miyake, 2003).

IMPLICATIONS FOR THE FUTURE

The changing nature of the global forest sector has a number of implications for the forest-based industries of developed and developing countries alike. In the developed countries, changes will require rethinking of business strategies, product lines, market niches and perhaps even the basic business model. In the new producing regions, all of these will have to be defined and refined as growing industries take shape.

In the short term, the emergence of large expanses of plantations in regions without large-scale forest industry infrastructure may simply translate to export of wood in log or chip form. However, over the longer term, the availability of fast-growing, low-cost raw materials will almost certainly attract investment capital for wood industry development. With most of the future increase in forest harvest activity and plantation development expected to occur in developing countries, further expansion of wood-based industrial capacity is likely in these regions.

The flow of capital investment to new producing regions and growing global competition in wood-based commodity products markets are forcing a reassessment of long-established manufacturing and marketing strategies in the developed countries, particularly in North America. Given the rapidity of change and the magnitude of the challenge, industry leaders in these countries are beginning to look beyond incremental change and to consider radical new approaches to ensuring future viability.

In the United States, for example, the federal government and the pulp and paper industry have cooperatively designed and funded research programmes to develop new approaches. One result in North America is radical new thinking about the future nature of

paper manufacturing. A transformation of the entire industry to a biochemicals, biofeedstock, bioenergy, pulp and paper industry is envisioned, with individual mills operating as integrated biomass refineries. Under this scenario, manufacturing centres will have the capacity to produce electricity, liquid fuels (such as ethanol) and a wide variety of biomass-derived chemicals and chemical feedstocks, in addition to pulp and paper. Paper will effectively become only one of a number of co-products.

The biomass refinery is poised to move quickly beyond the concept stage, with a major research effort now under way involving both the wood products and agricultural sectors in the United States and Canada. With the recognition that this development could help diversify domestic energy supplies as well as improve the profitability of both forest industry and the agriculture, a fast track to commercialization is being pursued.

As noted, composite products development has lessened the need for large-diameter trees while providing substitute products for structural sawnwood of large cross-section. Another result of the relatively recent development of structural composites could be erosion over time of markets for sawnwood of smaller cross-section. Increasing sophistication in composite technologies, combined with superior product performance and perhaps increasing economies of scale and lower product costs as production volumes grow, could make structural composites competitive in markets for light framing (i.e. for structural uses such as wall partitions where timber of relatively small cross-section is used). Such a development would further favour a plantation-based industry and could further undermine the economics of growing trees to large sizes.

In Europe, wood is expected to become

more important as a source of energy, and policies to facilitate and guide the development of wood energy are being drafted. Wood energy development is occurring within the framework of a set of European Union targets for increasing the share of energy provided from renewable sources. The target for electricity production, for instance, is 22 percent from renewable sources by 2010, up from 13.7 percent in 1997. Similar targets have been set for increased use of bio-fuels for transportation and for industrial use. Inevitably, the forest and energy industries will become intertwined, and this will influence both raw material utilization options and industry profitability. On both sides of the Atlantic, the price of wood will soon have to reflect its value as energy (Bowyer and Rametsteiner, 2004).

A worldwide movement that is certain to be affected by changes in the sector is the forest certification movement. Most forests that have been certified to date are located in the United States, Canada and western Europe, i.e. the regions most likely to see a loss of their wood and wood products markets to producers in developing regions. Conversely, those regions most likely to be the focus of increasing harvest pressures (Asia and the Pacific, the Russian Federation, eastern Europe and Latin America) currently have only miniscule areas of certified forests, and the bulk of these are plantations. For instance, about 87 percent of the world's certified forest area in 2004 was in North America and western Europe, and another 6 percent in Oceania (Kraxner and Rametsteiner, 2004). Proponents of certification will need to refocus their efforts towards the new producing regions (Bowyer *et al.*, 2004). ♦



Bibliography

- Benin, A.** 2004. *Effects of policy developments on the Russian forest sector*. Presentation at joint 62nd session of UN Economic Commission for Europe (UNECE) Timber Committee and 32nd session of FAO European Forestry Commission, Geneva, Switzerland, October 5.
- Bowyer, J. & Rametsteiner, E.** 2004. Policy issues related to forest products markets in 2003 and 2004. In *UNECE/FAO Forest Products Annual Market Review 2003–2004. Timber Bulletin*, 57(3): 11–18. Available at: www.unece.org/trade/timber/docs/fpama/2004/2004_fpamr.pdf
- Bowyer, J., Howe, J., Guillery, P. & Fernholz, K.** 2004. *Trends in the global forest sector and implications for forest certification*. Dovetail Report. White Bear Lake, Minnesota, USA, Dovetail Partners. Available at: www.dovetailinc.org/documents/DovetailGlobal111904_001.pdf
- Brown, C. & Ball, J.** 2000. World view of plantation grown wood. In B. Krishnapillay, E. Soepadmo, N. Arshad, A. Wong, S. Appanah, S. Chik, N. Manokaran, H. Tong & K. Choon, eds. *XXI IUFRO World Congress*, Vol. 1, *Sub-plenary sessions*, pp. 377–389. Kuala Lumpur, Malaysia, 5–12 August 2000. Vienna, Austria, International Union of Forestry Research Organizations (IUFRO).
- Ekström, H.** 2003. Raw material consumption on the rise despite weak global economy: wood raw material markets, 2002–2004. In *UNECE/FAO Forest Products Annual Market Analysis 2002–2004. Timber Bulletin*, 56(3): 35–44. Available at: www.unece.org/trade/timber/docs/fpama/2003/2003FPAMA-whole-doc-webversion.pdf
- Fales, G.** 2003. China's demand for fiber imports continues to grow. *Fiber and Pulp Industry*, April.
- FAO.** 2004. *FAOSTAT Forestry data*. Available at: apps.fao.org/page/collection?s?subset=forestry
- Johnson, S., Adams, M. & Miyake, M.** 2003. China's imports drive tropical timber trade: trends in tropical timber markets, 2002–2003. In *UNECE/FAO Forest Products Annual Market Analysis 2002–2004. Timber Bulletin*, 56(3): 99–108. Available at: www.unece.org/trade/timber/docs/fpama/2003/2003FPAMA-whole-doc-webversion.pdf
- Kraxner, F. & Rametsteiner, E.** 2004. Public procurement policies boost demand: certified forest products markets, 2003–2004. In *UNECE/FAO Forest Products Annual Market Review 2003–2004. Timber Bulletin*, 57(3): 61–66. Available at: www.unece.org/trade/timber/docs/fpama/2004/2004_fpamr.pdf
- Meyer, D.** 2004. *Impacts of imports and exports on the U.S. hardwood industry*. Lake States Lumber Association meeting, Forest Products Imports/Exports-How Will It Affect Your Future? Wausau, Wisconsin, USA, 24 February.
- Taylor, R.** 2004. *Policy issues and initiatives related to the four "wild card" supplying regions*. Presentation as part of UNECE Timber Committee and FAO European Forestry Commission Market Discussions. Geneva, Switzerland, 5 October.
- Whiteman, A.** 2003. *Historical trends and outlook for the North American forestry sector: implications for the Great Lakes forest area*. Great Lakes Forestry Alliance, Second Sustainable Forest Management Summit, Sault Ste Marie, Ontario, Canada, 9–11 June. ♦