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Hardwood Review express

Want More Forests? Buy More Wood Products!

USDA Scientist Demonstrates Correlation Industry Knew All Along

Credit the USDA Forest Service for recently becoming more public and proactive in promoting the wood industry. For the second time in three months, agency personnel have extolled the virtues of using more wood. This is a welcome development and another step towards getting a federal endorsement of U.S. hardwood sustainability, which was a key goal identified at the 2010 Hardwood Leaders Forum.

Back on March 30, U.S. Secretary of Agriculture Tom Vilsack announced a new federal green building policy that included the recognition of a broad range of green building certification standards (not just LEED) and the promotion of wood use in construction. "Our country has the resources, the work force and the innovative spirit to reintroduce wood products into all aspects of the next generation of buildings," he was quoted in a USDA press release, "As we move forward with restoring America's forests, we are getting smarter and more efficient in how we use wood products as both an energy and green building source, which helps maintain rural jobs."

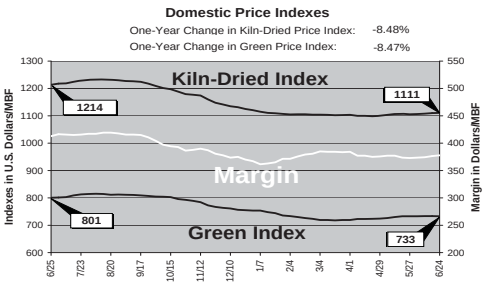
Then, just this month, a Portuguese university published a book on *Sustainable Development in the Forest Products Industry*. Chapter 2, "Global Sustainable Timber Supply and Demand," was researched and written by Dr. Peter J. Ince, research forester with the USDA's Forest Products Laboratory in Madison, WI (a copy of the chapter can be found at www.treesearch.fs.fed.us/pubs/37326).

Ince's chapter summarizes findings of a 2010 global study correlating the intensity and types of industrial wood use with rates of deforestation. The conclusion? "Industrial timber use has provided timber revenue that has helped make timber supply and demand more sustainable in the leading timber producing regions of the world. Economical industrial timber utilization is a vital element in sustaining forests and avoiding large-scale deforestation."

Defeating a Faulty Hypothesis

Ince notes that a common but simple hypothesis is that industrial timber harvesting and forest product demands are correlated with global deforestation. Part of what makes that hypothesis sound reasonable is the public's misunderstanding of the term "deforestation." Harvesting a forest—even by clearcutting—is not deforestation. The clearcut simply turns a mature forest into a regenerating

Hardwood Lumber Price Indexes



Indexes represent the average published prices of 7 key hardwood items. The margin is the difference in dollars between the kiln-dried and green indexes, as read from the right-hand axis.

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forest…but it's still a forest. Deforestation occurs when forests are cleared and the land is converted to other uses, such as agriculture or infrastructure. Comparing the distribution of global deforestation and timber harvest actually reveals significant inconsistencies that must lead to rejection of the simple hypothesis. What Ince found, instead, is that the global regions with the highest levels of industrial timber harvest and forest products output are also the regions with the *lowest* rates of deforestation.

So, the common hypothesis that harvesting and deforestation are correlated is correct, but the correlation is the opposite of what most believe. Ince provides a more appropriate hypothesis:

> Forest products and industrial roundwood demands provide revenue and policy incentives to support sustainable forest management and, in turn, industrial timber revenues and economical forest management have helped avoid large-scale systematic deforestation in those regions with the highest levels of industrial timber harvest.

Size Matters

The revised hypothesis introduces the term "roundwood," and it is not to be overlooked. Roundwood is timber harvested for manufacture into forest products, and is compared to "fuelwood," which is wood harvested for energy (traditionally for heating and cooking, but now also for biomass energy conversion). Ince found that the correlation between high harvests and low deforestation only holds for roundwood timber harvests, not for fuelwood harvests.

Roundwood harvest levels in North America and Europe are by far the highest among all global regions (Figure 1), yet Europe's forest area expanded from 1990 to 2005, while the U.S. lost less than a half million hectares per year, mostly to urban expansion. North America and Europe are also the only global regions experiencing net carbon sequestration in their forests (gaining more carbon than they are losing).

By contrast, roundwood harvests in Africa, South America and Asia are low compared to total harvests, and these regions have experienced the largest losses in forest area (approximately 4 million hectares per year in Africa and South America). Although the fuelwood harvest is substantial in those regions, the timber revenues from fuelwood harvests are generally low compared to roundwood harvests, yielding relatively meager returns for forest management. Forests in these regions have been largely marginalized or exploited, rather than sustained by economical management for timber.

Scarcity Drives Value; Value Drives Sustainability

One reason Ince cites for the declining forest area in Africa and South America is their relatively large forest

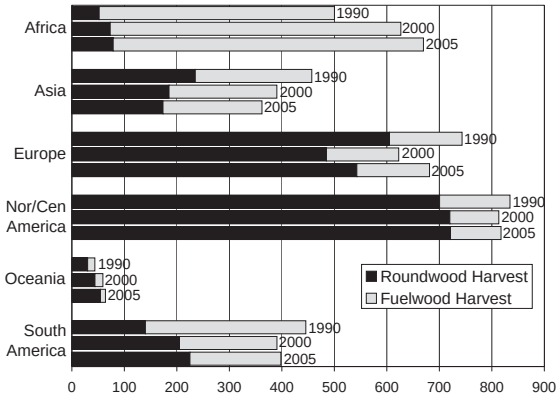

Figure 1. Global roundwood and fuelwood removals (million cubic meters per year) (data; FAO; 1990 and 2000 harvest type breakouts estimated from Ince chart).

inventories. Wood remains relatively abundant and cheap in those regions, and thus doesn't provide economical incentives for forest management to reverse deforestation trends. South Asia, on the other hand, has experienced significant declines in forest area. Lower forest inventories and the large and growing demand for forest products has led to the expansion of timber plantations in Asia.

A separate report from the International Tropical Timber Organization (ITTO) validates the conclusion that rising forest value supports sustainable forest management. In its just-released *Status of Tropical Forest Management 2011*, the ITTO notes a 46% increase in the area of tropical forest "under management consistent with sustainability" in just the last 5 years. Why the sudden increase? Because many countries are positioning themselves to take advantage of incentives that may become available for reducing deforestation and forest degradation through programs like REDD+, an international collection of schemes in which wealthy countries would pay poorer, tropical countries to protect and preserve their forests, mostly in the name of climate change mitigation. Forests that had little economic value now have the potential for large payoffs, and are thus being placed under sustainable management plans or protected in non-harvest preserves.

Sustainable Natural Forest Ecosystems Depend on Industrial Use

If we want natural forest ecosystems to continue to exist, Ince says, then we must avoid large-scale deforestation and sustain intact forest ecosystems within the balance of human development. Timber supply will experience a sustainable future only if the demand for timber is met with sustainable forestry policies and practices. And, sustainable policies and practices will only be supported when the economic viability of forest management vs. competing land uses (agriculture, grazing, urbanization) is maintained.

In Africa, for example, high rates of fuelwood removal

probably contribute to deforestation because growing fuelwood generates lower returns than other uses of that land (or generates lower returns than the investment it would take to manage the land for sustainable fuelwood production). Similarly, in North America, where demand for wood fiber (especially pulp) has waned, the rate of expansion in forest plantations has diminished.

Implications for U.S. Biofuel Development?

From a forestry and forest products standpoint, Ince says an important concern deriving from these findings is the potential impact of expanded biomass energy demand on the sustainability of forests and forest products. On the one hand, an economically vibrant industrial forest products sector has been the key to forest policies and practices that support sustainable timber supply and demand. On the other hand, high levels of fuelwood harvest are correlated with high rates of deforestation. This suggests the future impacts of wood energy demands on sustainable forest management are somewhat uncertain.

Historically, fuelwood has been the timber commodity with the lowest commercial value; generally less than the value of pulpwood and considerably less than the value of quality sawlogs or veneer logs. Consequently, adequate flows of timber revenues that can sustain effective forest management are much more likely to be associated with high levels of roundwood harvests than with fuelwood harvests. Simply using wood as a low-cost energy feedstock is unlikely to generate the kind of timber revenues to sustain improved forestry practices unless fuelwood prices increase substantially in the future.

If technology and wood demands generate sufficiently high value for timber as a raw material, historical experience suggests forests and forest management will thrive in the future. If, on the other hand, the average value of timber is cheapened by demands for only low-cost wood energy or insufficient technology development, forest sustainability will face significant future challenges.

A Closer Look at U.S. Hardwood Sustainability

The positive correlations Ince makes in his study between high roundwood harvests and forest sustainability are borne out in USDA Forest Service forest inventory and analysis (FIA) statistics. U.S. forest area declined sharply in the late 1800s and early 1900s as the population moved West and timberland was cleared for agriculture (Figure 2). Trees were abundant and agriculture was a higher-valued use of the land. As agricultural technology developed, more food could be grown on fewer acres. Agricultural expansion slowed and marginal agricultural land was allowed to grow back into forests. Urban expansion has been the primary cause of U.S. deforestation since. By and large, however, U.S. forest area has been stable since the 1920s.

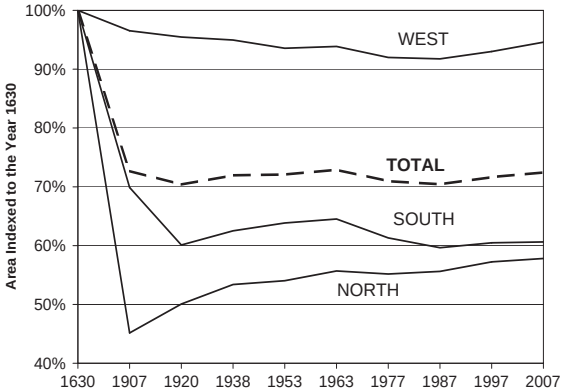

Figure 2. U.S. forest land area indexed to estimated pre-colonial forest cover in 1630 (data: USDA FIA).

The annual U.S. hardwood roundwood harvest grew 116% between 1952 and 2006. During that 50+ years of rising harvests, however, the standing inventory of hardwood growing stock more than doubled (Figure 3). Furthermore, the percentage of the standing hardwood inventory in the sawtimber size class (11.0" in diameter or greater) grew from 56% in 1952 to 67% in 2006. In other words, the U.S. has a stable forestland base, a growing volume of hardwood timber, and a greater portion of that timber in bigger trees.

The U.S. hardwood industry continues to have a great story of sustainability to tell, and we applaud the USDA and the Forest Service for stepping up to help us tell it. With Ince's study, the USDA has affirmed that a robust forest products industry *does not* contribute to deforestation, and, in fact, is *vital* to global forest sustainability.

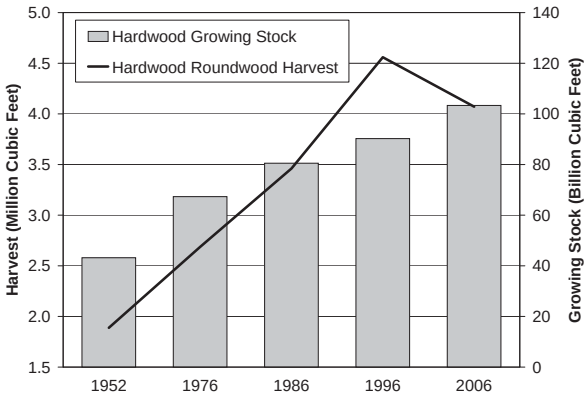

Figure 3. U.S. hardwood roundwood harvest vs. hardwood growing stock inventory (data: USDA FIA).