Historical Perspective on the Relationship between Demand and Forest Productivity in the US South: At a Glance

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Global Wood & Fiber Supply Chain Experts

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Forest2Market's mission is to empower participants in the global forest, wood products, paper products, biochemical and bioenergy industries to make exponentially better decisions through the strategic application of industry expertise and unique datasets.

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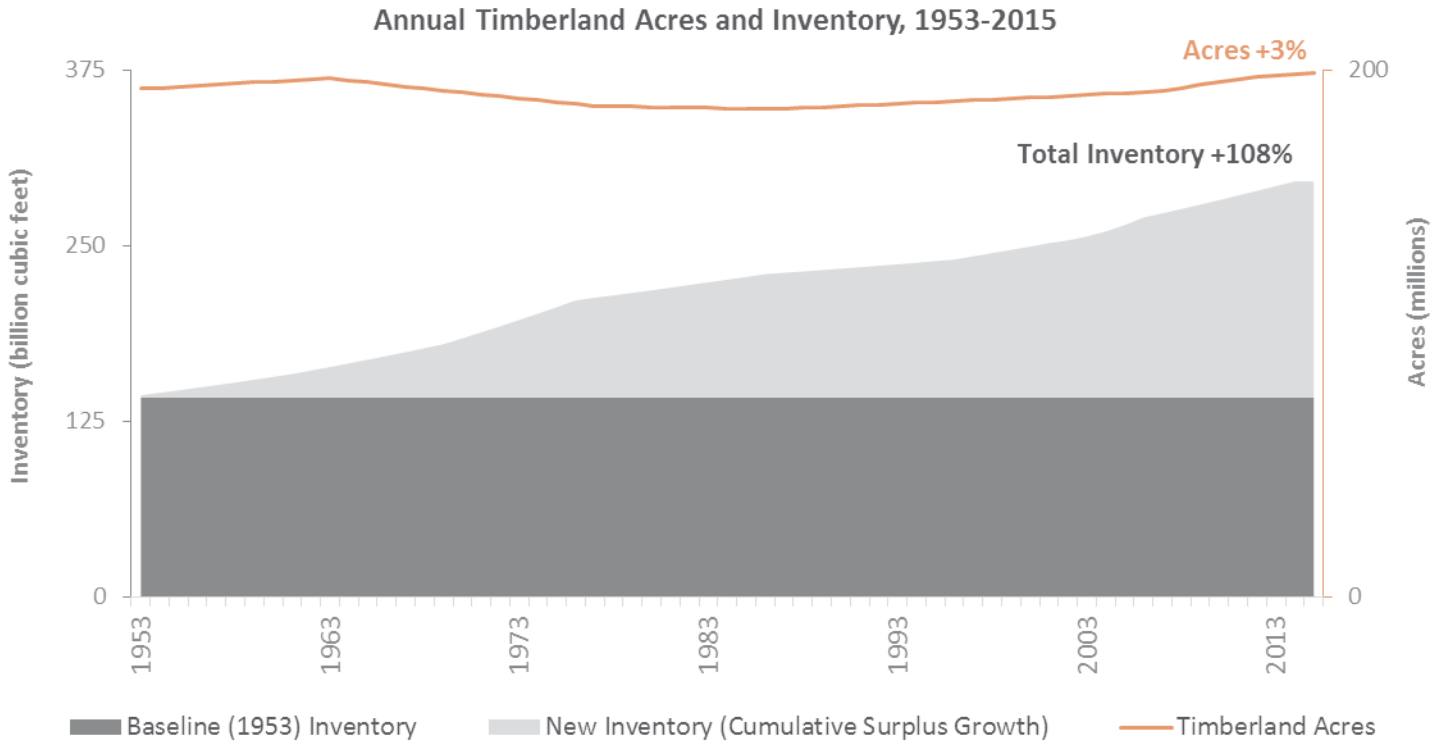
Increased demand for wood did not deplete forests in the US South; instead, it encouraged landowners to invest in productivity improvements that dramatically increased the amount of wood fiber, and therefore the amount of carbon, contained in the South's forests.

Since the middle of the twentieth century, the amount of timberland—unreserved, productive forest land—in the US South has remained stable, increasing by about 3 percent between 1953 and 2015. During this period, economic growth and increased construction spurred consumer demand for forest products, which led timber harvests—or removals—to increase 57 percent. Yet over this same period, the amount of wood fiber—or inventory—stored in Southern forests increased 108 percent.

Forest2Market's in-depth analysis of historical data over the past six decades documents the link between increased demand and increased inventory. Further, it explains that the dramatic increase in forest inventory was made possible by even more remarkable increases in productivity, especially on privately-owned timberlands. Encouraged by strong demand from the forest products industry, landowners made the long-term investments that were necessary to significantly improve forest productivity and increase inventory on a stable land base.

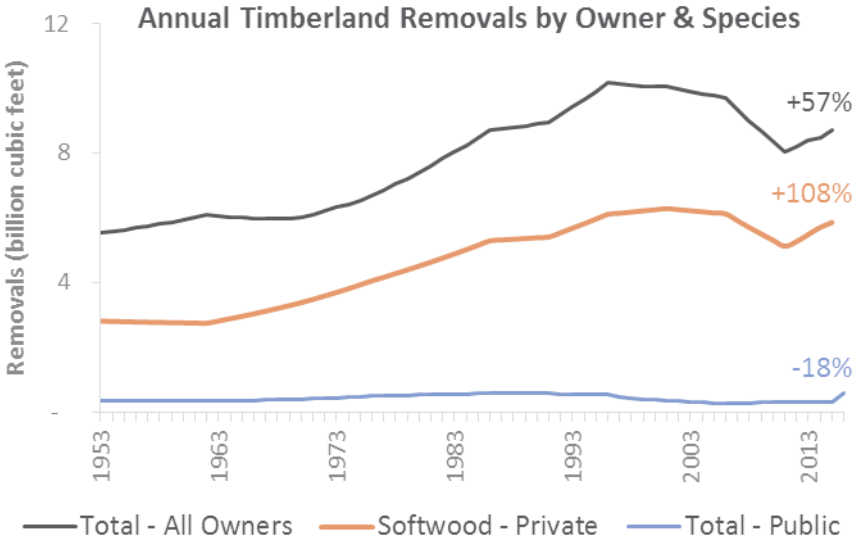


Rising Demand for Forest Products Increased Removals from Timberlands

During the latter half of the twentieth century, demand for forest products expanded significantly as the US population and Gross Domestic Product (GDP) increased. Americans built more and larger homes and, until the dawn of the digital era in the 1990s and 2000s, consumed more and more paper to conduct their business and supply their homes. All of

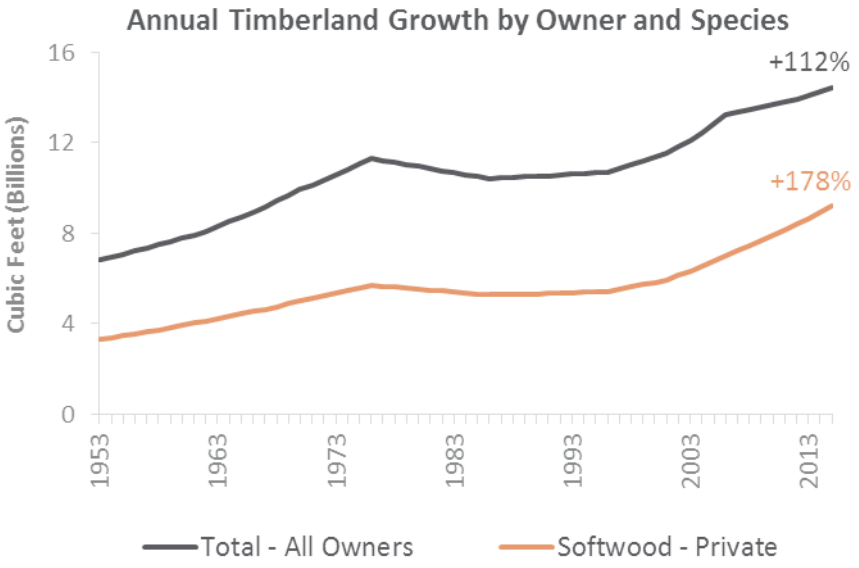
this fueled demand for timber to make the many forest products Americans use daily; as a result, timber removals nearly doubled from 5.5 billion cubic feet in 1953 to a peak of 10.2 billion cubic feet in 1996.

Around the turn of the century, technological improvements reduced demand for printing and writing papers, and increasing imports reduced demand for domestically-produced lumber and panels. The housing bubble of the mid-2000s buoyed domestic lumber and panel production until the Great Recession dramatically reduced housing starts and demand for these products. Today, timber removals, which have recovered due to improving housing markets, increased demand for personal hygiene and packaging products and new demand from emerging bioenergy markets, are still below their 1990s peak, but they are 57 percent higher than they were in 1953—due largely to increased removals from private softwood stands.



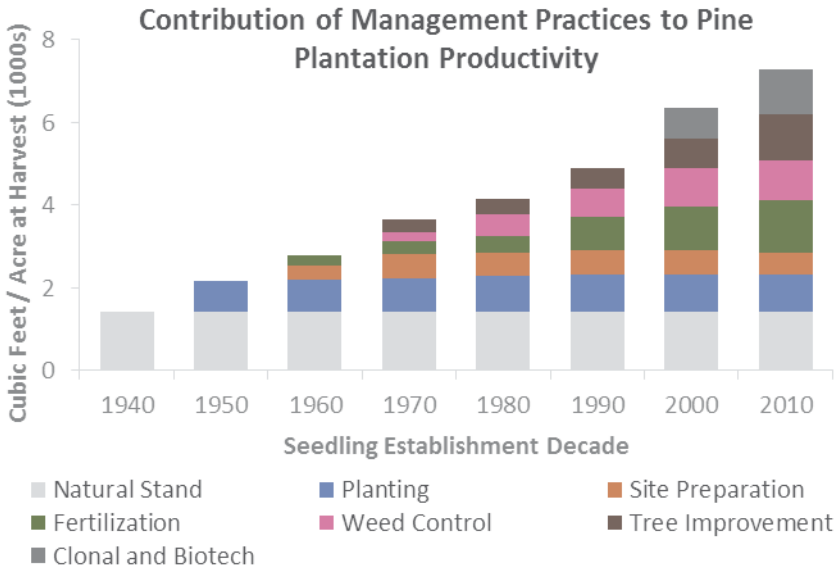
The Forest Products Industry and Landowners Responded by Increasing Forest Productivity

By the 1950s, the pulp and paper industry migrated south to take advantage of fast-growing southern yellow pine in the region's second-growth forests. Feedstock came from local landowners' and company-owned lands. As the companies and the timber on their lands grew, some diversified into supplying local sawmills, and some became vertically integrated and owned their own sawmills. In this model, lower-value small-diameter trees (i.e., pulpwood) were directed to the companies' pulp or paper mills while higher-value larger-diameter trees (i.e., sawtimber) were used by their sawmills to produce lumber or plywood.



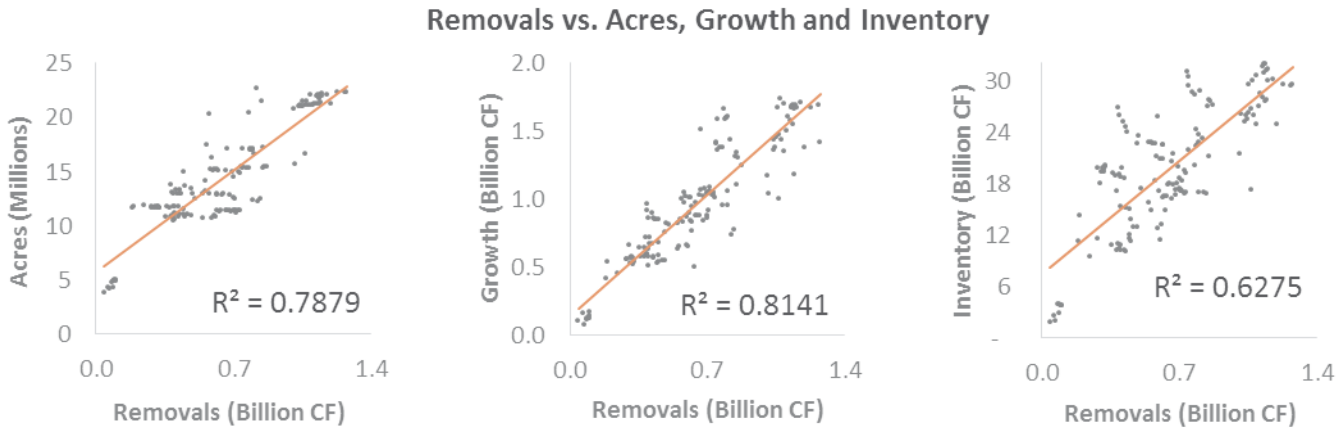
In order to ensure that their mills would have a stable, high-quality source of supply, forest products companies invested heavily in research to promote forest productivity. This research, which was conducted in partnership with the US Forest Service, university forestry departments, state agencies and industry partners, resulted in fact-based improvements to forest management practices, including site preparation, fertilization, weed control and thinning. These efforts also enhanced the quality and survival of seedlings.

The result was an astounding almost fourfold increase in the amount of growth achievable for seedlings established in the 2000s compared to seedlings established in the 1950s. Largely because of the implementation of these practices on privately-owned lands, total annual timberland growth increased 112 percent between 1953 and 2015, and growth exceeded removals by 38 percent on average. Healthy demand made it easy for corporate and family landowners to take a long-term view, investing in more expensive management practices up front for greater returns in the future.



The Evidence Is Clear: Increased Demand for Forest Products Is Associated with More, Not Less, Productive Forests

Demand from the forest products industry has not resulted in dramatic losses to the South's timberlands. Quite the opposite is true, in fact, as shown by both the historical data, which documents increases in timberland removals, acres, growth and inventory, and Forest2Market's independent statistical analyses. Statistical analyses show that increased demand in the US South is associated with *more* acres, *better* growth and *larger* inventories. These relationships are strong and statistically significant.



These results also bear out in Forest2Market's case study analyses of local wood basins surrounding Flint River, Georgia and St. Joe, Florida from the 1970s to today. These local wood basins tended to follow larger Southwide trends despite the fact that Flint River experienced the opening (in 1981) and St. Joe experienced the closing (in 1998) of a pulpwood-consuming mill. In both areas, sawtimber and pulpwood inventories increased alongside increased removals because annual growth outpaced annual removals. Further, the case studies show that markets and forests were not defined by changes in demand from a single mill, but rather market-wide shifts in the demand for all wood products. However, the case studies also show that when these basins had an active, centrally-located pulpwood-consuming mill, plantation

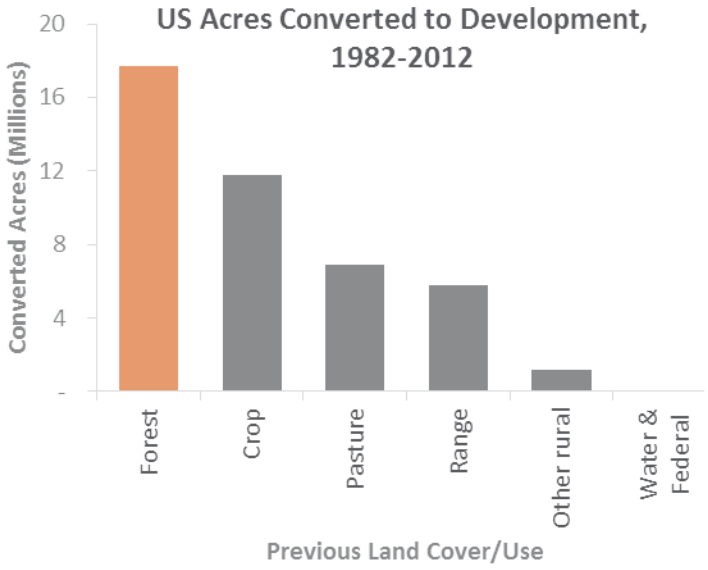
acres increased more quickly, which helped retain total timberland acres in the face of declining naturally-regenerated timberlands.

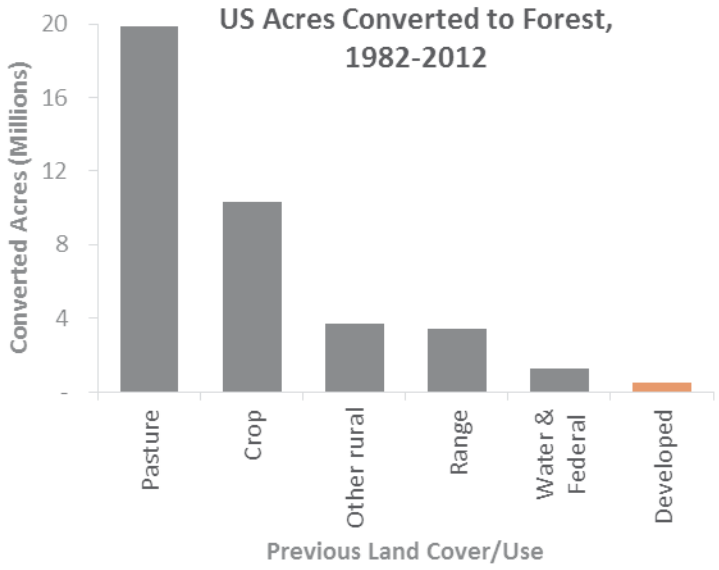
Percent Change in Annual Removals, Growth and Inventory by Basin and Product, 1970s-2015

Flint River, Georgia	Measure	Sawtimber	Pulpwood	St. Joe, Florida	Measure	Sawtimber	Pulpwood
	Removals	▲ +17%	▲ +178%		Removals	▲ +164%	▲ +478%
	Growth	▲ +46%	▲ +41%		Growth	▲ +164%	▲ +159%
	Inventory	**▲ +70%**	**▲ +22%**		**Inventory**	**▲ +167%**	**▲ +122%**

The Biggest Threat to Forests Is Urbanization, Not the Forest Products Industry

As with the total area of Southern timberland, the total amount of forest land in the United States has been stable in recent years according to US Department of Agriculture data. However, while total acreage has remained stable, US forests have not been impervious to change. National land cover/use data show that approximately 36 million acres of forestland converted to other land cover/use types between 1982 and 2012. Of these converted acres, 17.7 million acres (49 percent) were lost to development, more than any other single land cover/use type. While forest land converted to other uses, other land use types also converted to forest, resulting in a 0.7 percent net increase in forest acres. However, of the 39 million acres of land that converted to forest during this same period, only 0.5 million acres, or 1.2 percent, were previously developed; most were previously pasture or cropland.

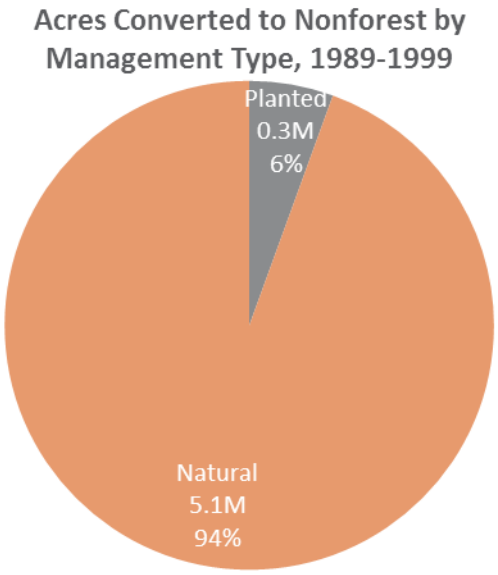




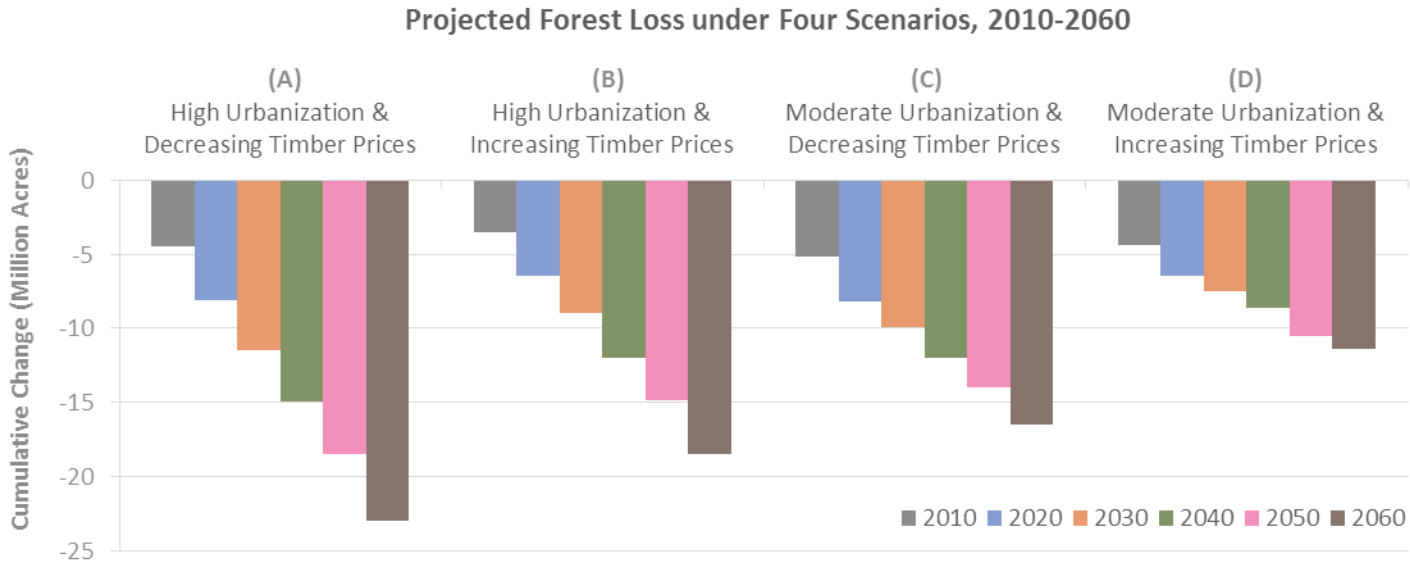
These data show that developed land uses, which expanded by 58.7 percent between 1982 and 2012, place undeniable pressure on forests. Further, once developed, land rarely ever reverts back to forests. Urbanization, not the production of forest products, is the single biggest threat facing forests today. While landowners harvest timber from their lands, they typically also regenerate that timber and keep forests forested, especially if they can find readily accessible, healthy markets for their timber.

Healthy Demand for Forest Products Mitigates Forest Loss

Demand from the forest products industry helps protect forests. For example, planted stands, which are some of the most productive, have been the least likely to succumb to the pressures of conversion. Between 1989 and 1999—the only period available for this kind of analysis—5.4 million acres of stocked timberlands in the US South were converted to nonforest uses. Of these lost acres, the overwhelming majority (94 percent) were naturally-regenerated forests, not planted stands. Not only does demand for forest products increase the productivity of forests and provide an incentive for landowners to continue growing trees, it also helps counter factors—like development—that *irrevocably* destroy this natural resource.



While timberlands in the US South have been stable to increasing since the 1950s, the pressures of urbanization are projected to result in forest loss over the coming decades. While forest loss to development is projected to continue, healthy markets for timber products are expected to mitigate, not exacerbate, the losses. One analysis by the US Forest Service modelled shifts in non-Federal forestland under four different scenarios, which varied in the amount of urbanization projected to occur and shifts in the future value of timber. Their results predicted that higher urbanization and decreasing prices for timber—Scenario A—resulted in the most forest land loss. Moderate urbanization and increasing prices for timber—Scenario D—resulted in the least forest land loss.



As with almost any product, high demand encourages producers to increase, not decrease, supply; demand for forest products is no different. As Forest2Market's comprehensive analysis of the South's forests since the 1950s shows, strong demand for forest products incentivizes landowners to maintain their timberlands and invest in forest productivity in order to increase supply, which resulted in more wood growing on trees in the South's forests. In the future, healthy markets for timber will continue to be, as they have been over the last six decades, key to keeping forested lands forested and to diminishing the threat of urbanization.