By Daniel Stuber

Adaptive Forecasts for Strategic Planning and Budgeting: Timber Prices for the South and Pacific Northwest

Good plans are adaptive. While they provide a blueprint for management, procurement, or harvest activities well into the future, they must also allow forest and procurement managers to respond flexibly when conditions on the ground or in forest-products markets change.

Plan-disrupting changes appear to be happening more and more often lately—the increase in the number of fires, storms, and insect infestations in forests, for instance, or alterations in timber markets brought about by globalization, emerging energy demand, and unprecedented economic events. Whether changes are in supply or demand, it's clear that foresters engaged in planning and budgeting processes are in uncharted territory these days. Why? Because some of the things that we once knew to be true no longer are.

Oil prices are a case in point. Until recently, the United States was responsible for about 25 percent of global oil demand. For decades, any forecast model that assessed the direction of US demand for oil was likely to be reasonably accurate. In 2005, US demand peaked at 20.8 billion barrels per day. Then, in 2008, as the global recession hit, things changed. As Figure 1 shows, demand from the United States and other member states of the Organisation for Economic Co-operation and Development (OCED) began a decline that is ongoing.

If we look back to 1995, the scope of the change is even more dramatic. Figure 2 shows changes in consumption by the United States and China in 1995–2005, 2005–2012, and 1995–2012. While US demand has increased by just 5 percent during this 18-year period (all prior to 2005), China's demand has exploded, increasing 206 percent. The Energy Information Administration expects this trend will continue.

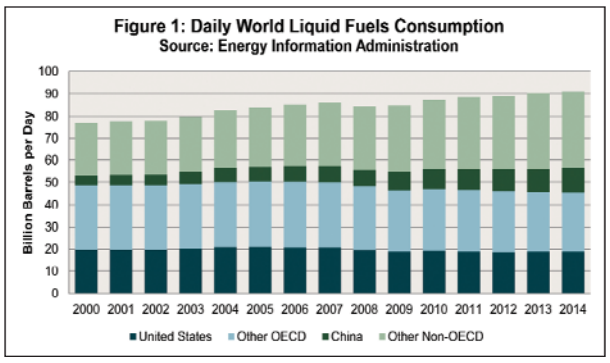
For the US economy, this turning point was disturbing news. When the United States was a more dominant consumer of crude oil and the US dollar was strong, demand for crude fell when US economic growth slowed or contracted, and this caused prices to decline. Lower oil prices would provide some relief for cash-strapped consumers in the midst of an economic downturn. Consumers could then spend the additional cash on other goods and services, thereby lifting the country out of the economic doldrums. With demand now being driven by other countries in addition to the United States, that relief valve is no longer present.

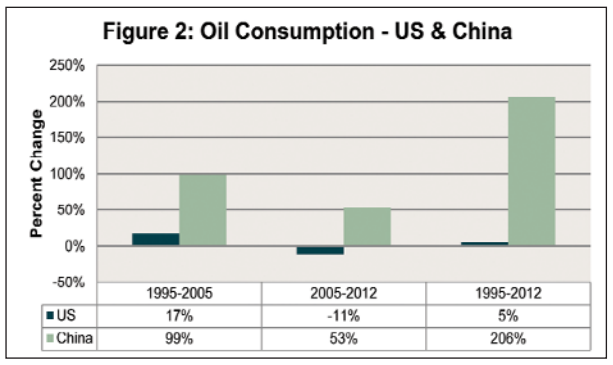
The first test of this new relationship between US demand and oil prices occurred in 2008. While US demand for oil fell 6 percent that year, oil prices surged to more than $130 per barrel. This oil shock effectively capped GDP growth and the ability of the economy to recover at previous rates.

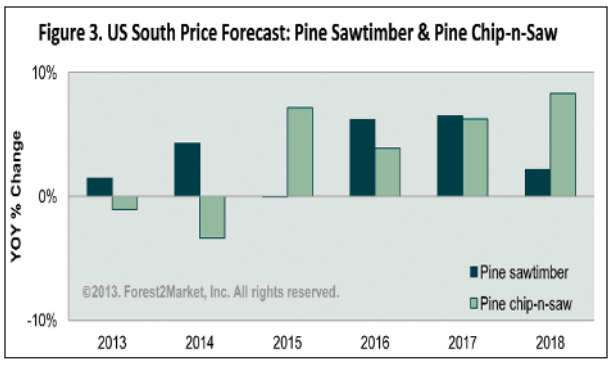
If our forecast had continued to look at just US demand as an indicator, we would have forecast lower oil prices and higher stumpage prices, because oil and stumpage prices are, in general, negatively correlated. The historical correlation shows that higher oil prices increase production costs and decrease consumer confidence, leading to a drop in demand for wood and paper products and lower stumpage prices.

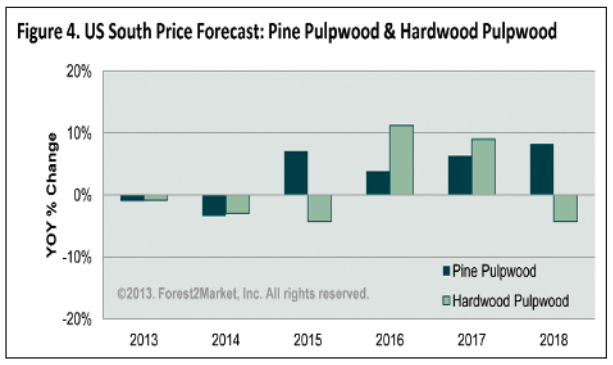
Instead, this forecast-disrupting event caused us to broaden our consideration of oil demand to include rapidly developing, non-OECD countries. Because our forecast model is adaptive, since we run it two to four times per year, we are able to assess whether historical relationships are still valid and, if not, what new variables need to be incorporated to restore the model's accuracy.

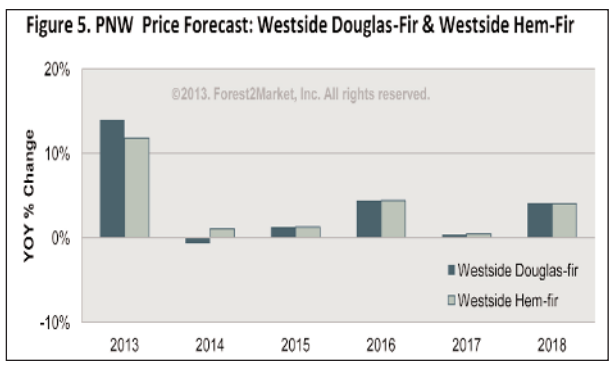
Harvest schedules and timber procurement and sales budgets are all built on forecasts, and this is the main reason they need to be adaptive, too. To support those making longer-term strategic and budgeting decisions in this new environment, Forest2Market produces a series of five-year quarterly forecasts, one for stumpage prices in the South and one for delivered prices in the Pacific Northwest. An overview of the results of our most recent forecasts follow.

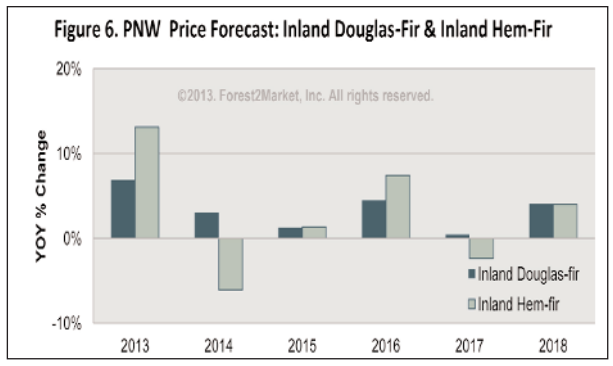












Timber Prices in the South

Figures 3 and 4 summarize the year-over-year percentage change in delivered timber prices in the US South. Please note that all annual price changes are an average of the four quarterly forecast numbers available in our five-year forecasts.

For pine sawtimber and chip-n-saw, the major variables driving price changes in the 2013–2018 period include:

▶Housing starts will climb above the one million mark by 2015. Each additional housing start increases sawtimber consumption by 60 tons.

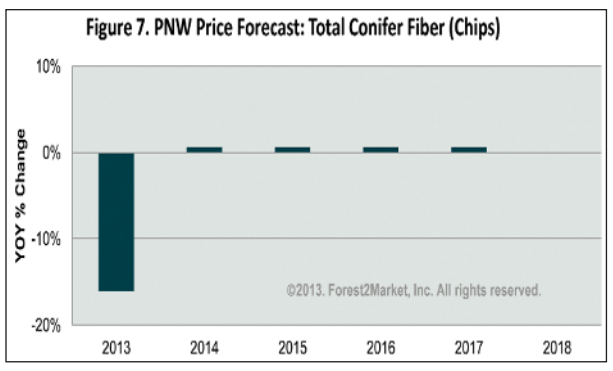
▶Between 2013 and 2015, price increases for sawtimber will be modest as a result of the expanded supply that accumulated during the housing market downturn. The availability of reasonably priced sawtimber will push chip-n-saw prices lower.

▶In the last part of the forecast, other impacts of the recession will push prices higher. Because low levels of lumber production reduced the supply of sawmill and plywood residual chips, the increased demand for longwood left less pine pulpwood to grow into chip-n-saw and sawtimber. This will begin affecting pine chip-n-saw prices in 2015 and pine sawtimber prices in 2016.

For pulpwood prices, the major drivers of change include:

▶Driven by higher demand for OSB and wood pellets, demand for pine pulpwood will increase by 17 percent during the forecast period; demand for hardwood pulpwood will increase by 9 percent.

▶For pine pulpwood, the declining trend early in the forecast period will be the result of modest economic growth and greater residual chip inventories from expansion of the solid-wood sector. Later in the forecast period, the increased demand from OSB mills coming online and/or ramping up production, the growing demand for biomass, and the appearance of the leading edge of an age-class gap (the result of a reduction in planting activity due to a fall-off in sawlog harvest since 2005) will drive prices higher.



▶For hardwood pulpwood, the 2014–2015 declining trend will be caused by the relationship between pine sawtimber and hardwood pulpwood harvest activity. Since hardwood pulpwood is largely the byproduct of pine sawtimber harvest activity, the supply of hardwood pulpwood increases when pine sawtimber supply increases. In 2016 and 2017, a rise in stumpage prices will be driven by increased demand for biomass fuel.

Timber Prices in the PNW

Figures 5, 6, and 7 summarize the year-over-year percentage change in delivered timber prices in the Pacific Northwest. Drivers of price changes over the forecast period include:

▶Westside and Inland log prices will end 2013 higher due to the recovery in housing starts and demand for quality logs from China.

▶Log prices will not increase as sharply as they have following other recessions, since the sharp drop in housing starts left significant volumes of standing timber in the forest. However, a decrease in the supply from British Columbia, the result of the mountain pine beetle infestation that has killed millions of acres of

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INDUSTRY NEWS

Alabama Plant to Make "Hydrophobic" Pellets

Zilkha Biomass Fuels LLC recently announced that it has secured $5.3 million in federal and Alabama state New Markets Tax Credit equity to help the company retool an existing wood pellet plant in Selma, Alabama, to produce the Zilkha Black Pellet. Zilkha biomass pellets are made of compressed wood using a proprietary production process that creates a low-dust, "hydrophobic" (waterproof) pellet that can be transported like coal, stored outside, and burned by coal plants using their existing equipment. The plant is expected to produce 275,000 tons of pellets per year. Zilkha is headquartered in Houston, Texas.

According to Wayne Vardaman, executive director of the Selma & Dallas County Economic Development Authority, total capital investment in the plant is estimated at more than $45 million. The plant will support 52 new jobs, plus an estimated 100 full-time indirect jobs, primarily in logging and trucking. Zilkha estimates that it will use 650,000 tons of raw materials per year from the area's wood basket. The Selma facility will be the first full-scale commercial Zilkha Black Pellet plant in the world.

Zilkha Biomass Fuels LLC

According to Zilkha Biomass Fuels LLC, its Zilkha Black Pellets are waterproof biomass pellets that can be transported like coal.

WeyCo to Restart Alabama Plant

Forest products giant Weyerhaeuser has resumed production of its Trus Joist TJI joists and Microllam LVL (laminated veneer lumber) products in Evergreen, Alabama. The company said it would invest in the engineered lumber products facility after a four-year closure due to previously weak wood products demand in North America. It plans to hire about 100 new employees at the facility by the end of 2014. The plant has an estimated annual production of 120 million lineal feet of TJI Joists and 2 million cubic feet of Microllam LVL.

"Customer demand for engineered wood products has improved over the last year, and our Evergreen facility is the ideal location to add production capacity," said Jan Marrs, manufacturing manager for Weyerhaeuser Engineered Lumber Products. "With our markets improving and positive support from both the state and local community, we are looking forward to restarting this facility."

In Alabama, Weyerhaeuser also operates a lumber manufacturing facility in Millport and a Nursery Tree Improvement Center in Camden, and manages more than 547,000 acres of timberland in 23 counties.

New Mill in Maine

J.D. Irving Ltd. recently announced that it will invest $30 million in a new state-of-the-art softwood sawmill at Ashland (Nashville Plantation), Maine. The facility will include biomass boilers, dry kilns, and a planer mill. The new mill is expected to open in late spring of 2014 and employ 60 people.

According to the company, the logs for the new sawmill will be procured from the company's Maine freehold woodlands as well as other woodlot and timberland owners in the state. The lumber produced, which will be certified under the Forest Stewardship (FSC) Council and/or Sustainable Forestry Initiative (SFI) programs, will be sold to major retail lumber yards located throughout the US Eastern Seaboard.

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lodgepole pine, will keep prices from declining.

▶In the Inland region, an unusual situation in the current market will limit increases in hem-fir log prices. Historically, Douglas-fir prices have been higher than hem-fir prices. In the first two quarters of 2013, hem-fir prices rose above Douglas-fir levels. We expect that hem-fir prices will fall in 2014 and return to the historic trend.

▶Total conifer fiber prices will drop significantly in 2013 and see only modest gains for the rest of the forecast. This is because the chip market has seen a sharp increase in supply (increased lumber production) and a much weaker increase in demand (lower demand for newsprint and writing papers).

We are fortunate to operate in a market that serves basic human needs: housing, packaging and paper products, and electricity produced from wood. As our population grows, not only will our forest resources be in higher demand, so too will the inputs (capital, labor, and energy) that are used to manufacture and build these products. In an increasingly smaller and global world, predicting the future becomes more important—even if it is more difficult. Just because everything changes doesn't mean planning is obsolete. It just means that the tools and processes we use to manage forests and develop strategic plans and budgets need to adapt as well.

Daniel Stuber is vice president–operations at Forest2Market (www.forest2market.com). He oversees the development, design, and operations of analytics and forest metrics. FS