Forest Biomass
Bioenergy 2016

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Weyerhaeuser Company
Weyerhaeuser Company

• 116 years old
• Own 13.2 million acres of timberland including 7.3 million acres in the US South
• 100% of our timberlands are certified
• 14,000 employees
• We planted 650 million trees in the last five years
Most Admired Companies
FORTUNE Magazine, 1988-2014

World’s Most Ethical Companies
Ethisphere Institute, 2009-2010, 2012-2014

Winning Rating
2020 Women on Board
2013-Present

Top 100 S&P 500
Clean Capitalism Ranking
Corporate Knights, 2013-Present

100 Best Corporate Citizens
Corporate Responsibility Magazine, 2008-2014
Top 10 Best Corporate Citizens, 2014

Global 100
Global 100 Most Sustainable Corporations in the World
2011, 2014

Dow Jones Sustainability Index
2005-2014 (North America)
2011-2015 (World)

The Sustainability Yearbook
RobecoSAM, 2011-2014

FTSE4Good Index Series

Maplecroft
Climate Innovation Indices
Cycles 1-3 (#16)

ECPI Global Equity Indices
Global Ethical Equity
Global Eco Real Estate and Building
2007-Present

STOXX ESG Leaders Indices
2012/2013, 2013/2014
Themes - Context is the US South

Forest landowners respond to markets
The southern forestland base is dynamic
Biomass markets benefit

- Forest landowners
- The landscape
- Rural communities
The US South has seen a substantial increase in production of wood products over the last 60 years.
Historical Supply/Demand Perspective

Forest management in the south is a success story:

- Stable land base
- More harvest volume
- More inventory volume
- Greater productivity

US South Timber Inventory Volume

source: USDA USFS
SAW TIMBER IS PRIMARY LANDOWNER VALUE PROPOSITION

Increasing Value¹

- Tops & Limbs
- Wood Chips
- Commercial Thinning

- Lumber, Plywood, OSB (other composites?)
- Paper
- Pellets, Biofuels
- Heat & Power

¹ Graphic: P lumCreek
Supply growth can support an orderly expansion in timber production

• +40 percent (from 2007 levels) without productivity increases
• +70 percent with productivity increases

Question: what is the source of demand growth.

• RPA and other assessments indicate that bioenergy is only likely source
Biomass Benefits Landowners

- Some (minor) incremental revenue at final harvest and thinning
- The ability to thin on time
- Reduction in site preparation costs (preparing to plant)
- Incremental revenue and cost reduction result in better financial returns

Better financial returns incent forest land retention and investment in management
The greatest risk to southern forests is conversion to another land use – US Forest Service Southern Forest Futures Project
“Assuming that forest land rents increase with increases in non-sawtimber feedstock prices and that changes in land use are tied to forest land rents, the amount of timberland will increase with an increase in demand for feedstock for pellets, as more plantations are established on marginal agricultural land.”

Abt, Abt, Galik and Skog - Effect of policies on pellet production and forests in the U.S. South
STRONG MARKETS FOR WOOD HELP TO MAINTAIN AND INCREASE FOREST VOLUMES AND IMPROVE FOREST HEALTH IN THE US

- >750 million acres of forest area (>304 million hectares)

- Total US forest area is within ~1% of what it was 100 years ago.¹

- During the last 60 years, forest inventories have grown by more than 50% in the US.²

- US forest carbon stocks: +31% since 1990, during a period of intensive forest products industry activity.³

Insight 2: The Carbon Impacts of Market Responses to Increased Demand

Increased demand for wood can trigger investments that increase forest area and forest productivity and reduce carbon impacts associated with increased harvesting.

- The evidence for this includes (1) general observations over time, (2) empirical studies and (3) modeling.
Benefits to Rural Communities

Since the recession 1/3 of the 1.5 million forest products sector jobs, often the best paying/best benefit rural jobs, have been lost — US Endowment for Forestry and Communities

In a rural GA county with 17% unemployment a new wood-to-energy project with 75 direct and indirect jobs is the equivalent of 30,000 new jobs in Atlanta.
The South’s forests are abundant and productivity is increasing.
Markets provide an incentive for landowners to retain their forests as forests and to invest in management.
Bioenergy development can provide a significant economic boost in rural communities.
Takeaway

The forests of the US South are a dynamic resource and history tells us that as demand for wood from the forest increased:

- Output from the forest increased
- The forestland base remained stable
- The forest inventory increased dramatically

Landowners respond to positive market signals by retaining their forestland and making forest management investments.