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FOREST BIOMASS LOGISTICS: CHALLENGES AND RESEARCH ISSUES

THE BIOMASS SUPPLY CHAIN

Feedstock Supply Harvest and Processing Transport Logistics Conversion

- Inventory
- Silviculture
- Genetics
- Productivity
- Sustainability
- Wildlife
- Markets
- Policy
- Land-use
- Landowners

- Integrated ops
- Biomass harvest
- Efficiency/Cost
- Field processing
- Feedstock quality
- Field storage
- Impacts
- Life Cycle Analysis

- Product form
- Density
- Efficiency/Cost
- Siting

- Feedstock quality
- Process technology
- Efficiency/Cost
- Markets

\$1B

\$1.5B

\$0.8B

\$12B

SOUTHERN FOREST FUTURES

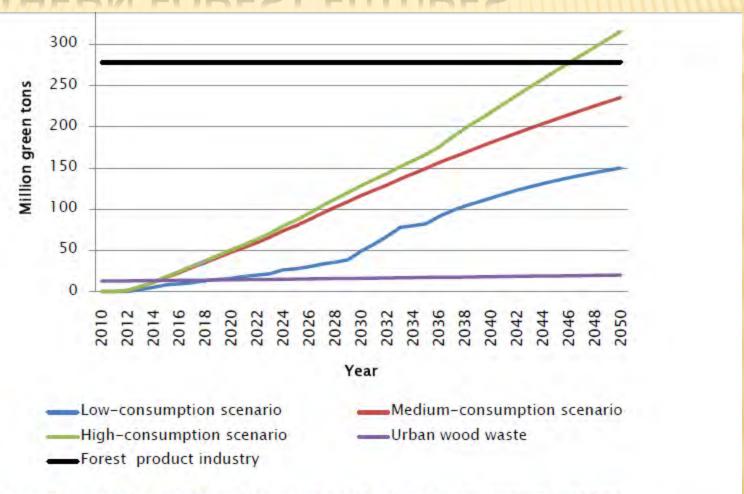


Figure 37— Woody biomass demand for energy in the South under low-, medium-, and high-consumption scenarios, with demand from traditional forest industry and availability from urban wood waste, 2010 to 2050.

BIOMASS HARVESTING Desired Outcome **Existing conditions**

LOGGING RESIDUES



UNDERSTORY HARVESTING



FUELWOOD CHIPPING



HIGH PRODUCTION HARVESTING



SHORT ROTATION HARDWOODS



WOODY BIOMASS LOGISTICS

- * Feedstock specific, no universal system
- Cost-limited, no pot o' gold for anybody
- Forests have other social values and competing uses
- Scale of industry is critical—
 - +9500 trucks/truckers?
 - + 1500 logging contractors?

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WOODY BIOMASS RESEARCH ISSUES

- What types of forests will provide supply?
- What kind of systems will be used?
- What are the feedstock quality specs?
- What is the impact of removal on forests?
- Lots of room for innovation—5% savings in harvest costs is worth \$150M/yr