Visions of the Future
Forest Products Industry

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at Georgia Tech

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The Forest Products Industry of 2035?

Many studies, reports, visions, and roadmaps offer valuable insights

- Business
- Technology development

Many opportunities for the forest-based industry

Information on slides:

- Messages from reports
- *My views and opinions*
Worldwide demand of traditional paper products grows 1.5% per year for next 40 years

- Steady growth in packaging grades
- In printing and writing grades, decline rate peaks in 2015-2018 but demand continues declining at least to 2030

Global pulp shortage in 2020: 5-7 million tons per year

- Especially softwood bleached kraft

Many opportunities in the emerging biobased economy

- Forest resource is excellent foundation
- $200 billion a year sales of new forest-derived biobased products in 2015: $130 chemicals/plastics, $70 composites
Wood: Available, More from Plantations

Wood removals in 2050 three times current rate

Forest plantations are more productive than natural forests and will become larger portion of global wood supply

Will GMO trees be a factor?
- Biotechnology can grow superior trees faster
- Europe sees little impact by 2050
A Sustainable Forest Products Industry?

Many calls for a sustainable industry – *a long way to go*

Renewable fuels – good progress, right direction

Not enough attention to energy and water footprints
  - Concerns about future access to water
  - Technologies to reduce water use per ton not widely used
  - Little or no recent progress in energy use per ton

EPN chart for 2000-08
North America has world’s oldest fleet of bleached kraft pulp mills – mills will need new equipment or close

Recovered fiber will become larger share of furnish
  • Higher waste recovery rates, lower fiber quality
  • Impacts on strength and runnability

Mills will become host platforms for bioproducts
  • Synergies for reducing energy, water, wastes, capital
  • Existing infrastructure, employees, permits

**Mills will be pushed for significant reductions in energy, water, emissions, and wastes**
Necessity of Invention

Best technologies available today are not sufficient

New technologies are needed by 2030 to impact 2050, and needed by 2015 to impact 2035

Research is needed, but too few good ideas
  • Energy reduction in pulping and papermaking
  • Lighter basis weights, with less long fiber, more recycled
  • New products from forest resource
  • Advanced manufacturing, information & control technologies
  • Biotechnology, nanotechnology

Few breakthroughs are likely by 2035 – the R&D pipeline for breakthroughs is nearly empty
Outlook for Innovation Is Bleak

Industry spends less on R&D than competitive industries:
- R&D % of sales: 0.24% paper, 0.7% textiles, 1.3% plastics
- Patent intensity: 1.2 paper, 4.1 textiles, 10.7 plastics

Lacks capacity for mid and long-term R&D

Federal R&D money favors incremental steps
(and low amounts support the forest products industry)

Universities are performing more applied R&D and less basic research and knowledge generation

Where will new breakthroughs come from?
Transforming the forest products industry through innovation

Call to Action

A vibrant future industry promises new business opportunities
• Growing global demands in traditional products
• Opportunities for new forest-based bio-products

Sustainable manufacturing requires new technologies

Significant level of R&D is required to enable a growing, sustainable industry in 2035
• Allocate sufficient people and money for innovations
• Encourage development of breakthrough technologies
  • Work together on areas of common interest
  • Take advantage of public funds
  • Build on existing centers of excellence
For More Information

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