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Woody Biomass Utilization Technologies: *The basics*

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In partnership with:
USDA Forest Service Region 5

<http://ucanr.org/WoodyBiomass>



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Purpose:

Interested in alternatives for woody biomass utilization based on challenges and opportunities that will work today

Outline:

- Logic of utilization
- Key criteria

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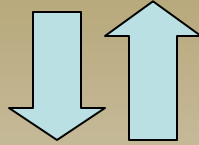


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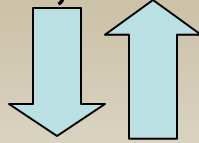


Overview: Value chain considerations

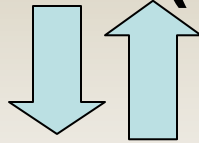
Resource : quality, price, availability



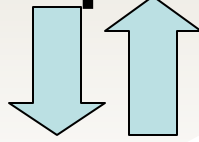
Transport: mode, distance, terrain



Process – Product (technology)



Transport



Market

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Woody biomass in California



Key criteria: Raw material form is important



Every process has a raw material specification



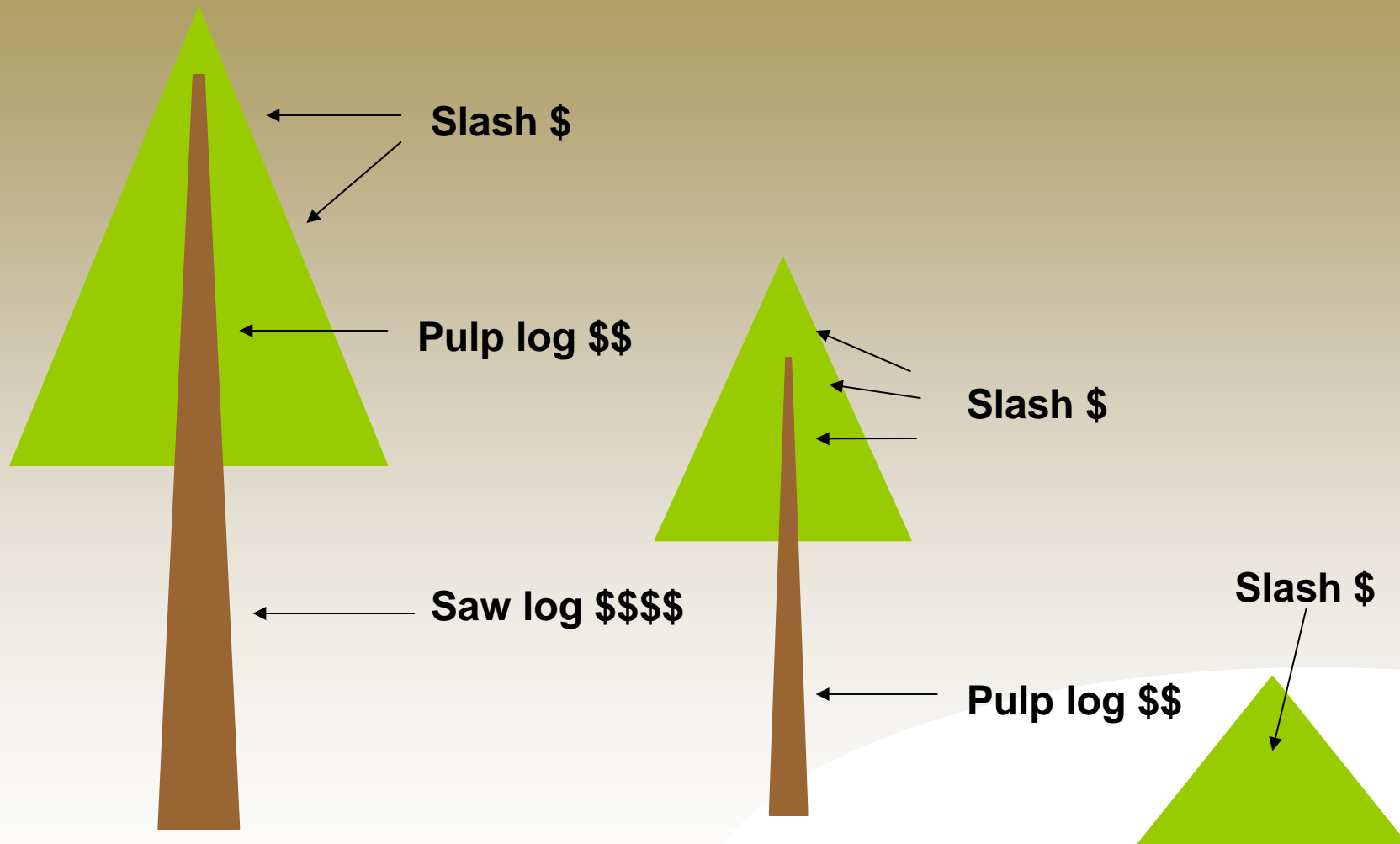
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Value helps to move residuals



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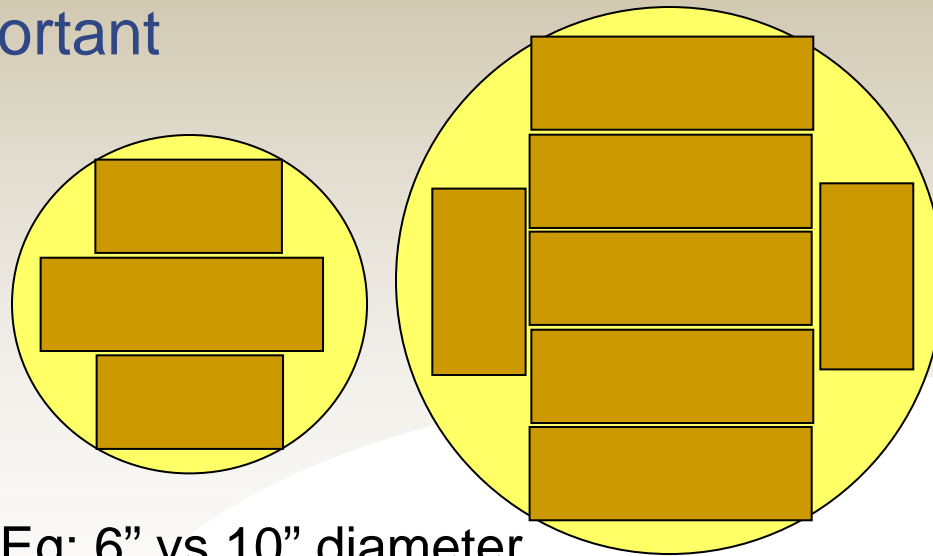


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Processing small logs

- More logs to process for same output
- Higher transportation costs
- More handling in mill
- Less valuable products
- Defects have a greater impact (knots, juvenile wood etc)
- Efficiency is very important
 - Speed and volume



Eg: 6" vs 10" diameter

It behaves badly...



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Post and Pole

- Low tech
- Low investment (~\$750k)
- 10-20,000 tons/yr
- Need to treat poles



Breaking wood down into particles minimizes the impact of defects (knots, juvenile wood, insect galleries etc.)



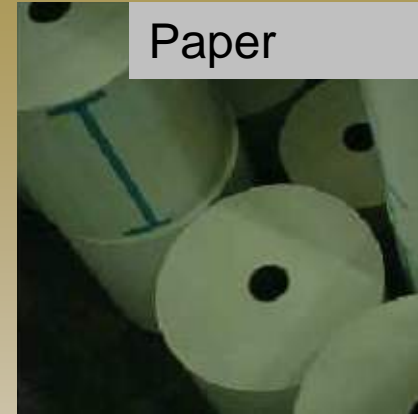
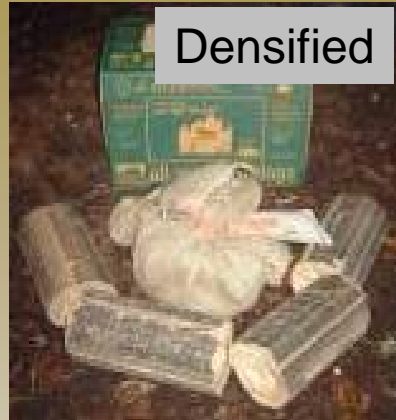
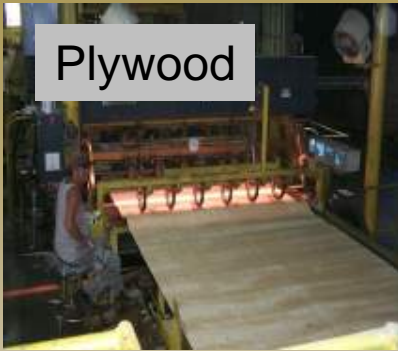
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Creating uniformity



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Leverage existing industry

- Existing infrastructure is an important opportunity:
 - Contractors
 - Primary processing (sawmills, veneer etc)
 - Powerplants
 - Panelboard
 - Pulp

- What do they pay?
- Feedstock specification?
- Opportunity to adapt to changing feedstock?

**Infrastructure is difficult to bring back
...when it is gone it is gone**

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Scale

Scale of markets vs biomass availability

- **Bulk** (100,000+ ton/yr)
 - A monster to feed?
 - Long term (~10+ years) supply commitments required
- **Small-medium markets** (<60,000 ton/yr)
 - Less risk
 - Less controversial
 - Socially acceptable

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Technology

- Wood technology can do almost anything
- There are many existing proven technologies
- Even more “emerging technologies”
 - Carry out due diligence
 - Silver bullets do not exist

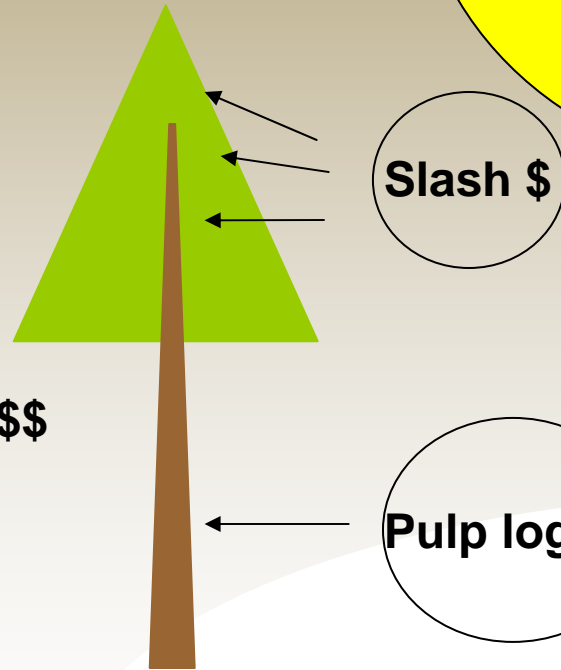
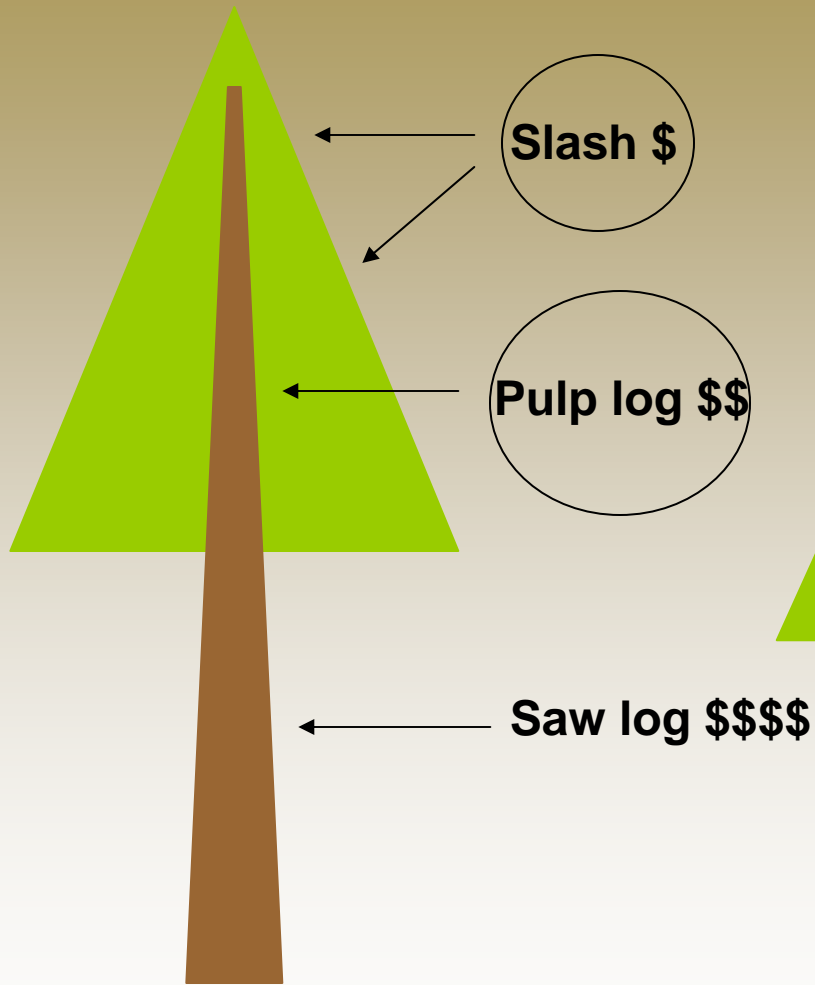
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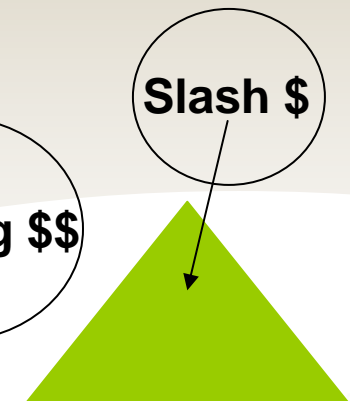
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Value helps to move residuals



What product or process could add value ?



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Key questions to ask for any technology

- *Is the technology commercially deployed (proven)?*
- *What is the feedstock specification?*
- *What are the markets for the output products?*
- *Do the economics work?*
- *Is the process a net energy user?*
- *Permitting requirements?*
- Do not rely on technology vendors for balanced information – carry out due diligence

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