



# **Manufacturing and the Forest Products Industry**

# Speaker Background

- Kent Wheeler
  - Associate Professor, University of Washington, School of Environmental and Forest Sciences
  - Director, Center for International Trade in Forest Products
    - Ph.D. in Marketing, University of Texas at Austin
    - 33 years forestry industry experience, including 26 years with Weyerhaeuser Company
    - Career focus has been predominantly market development and plantation operations
    - Lived and worked in Tokyo for six years, Shanghai four years, and Dubai one year
    - Managed timber and bamboo plantations in China, Indonesia, Ghana, South Africa and Nicaragua



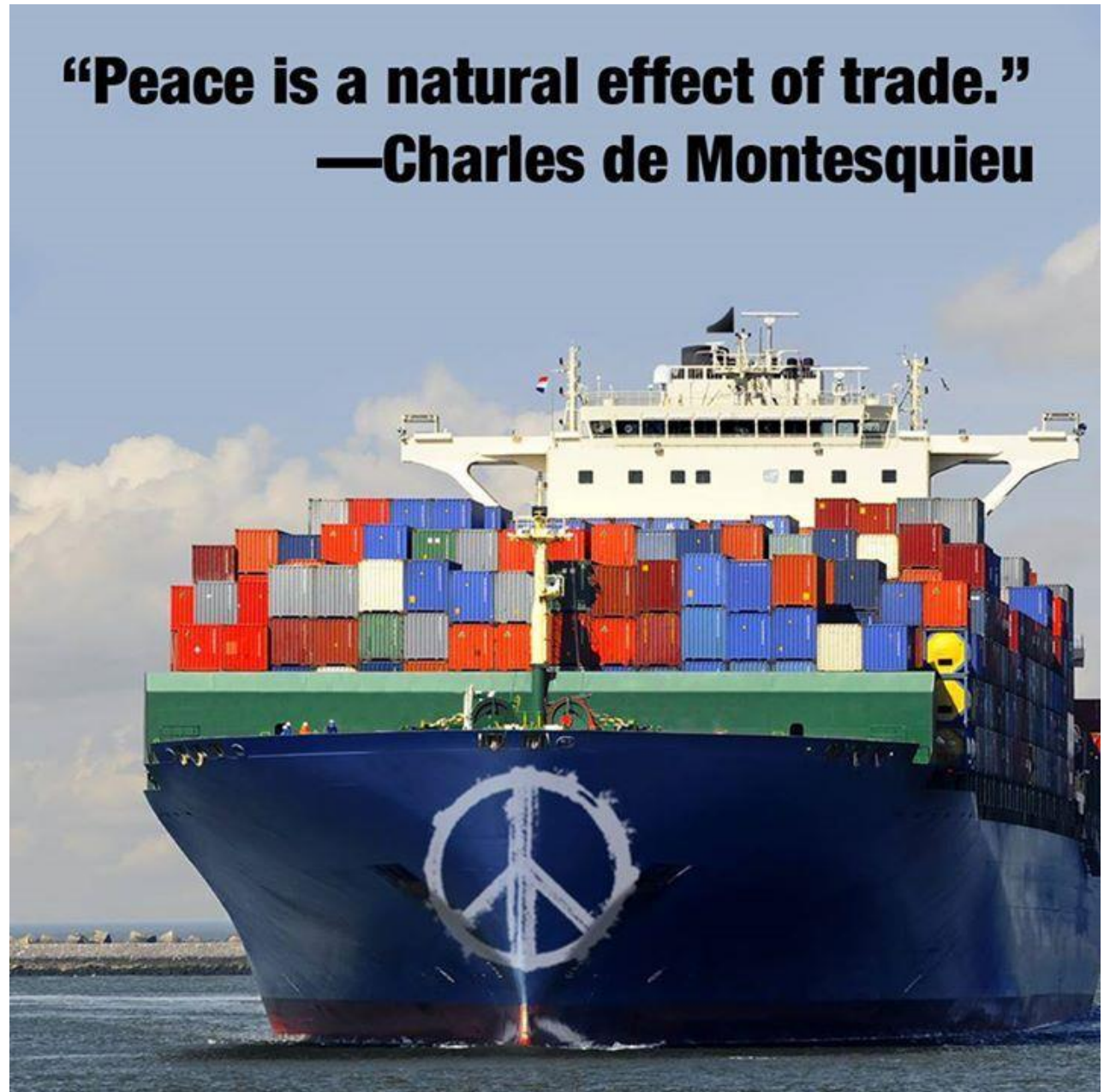


## SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES

UNIVERSITY *of* WASHINGTON

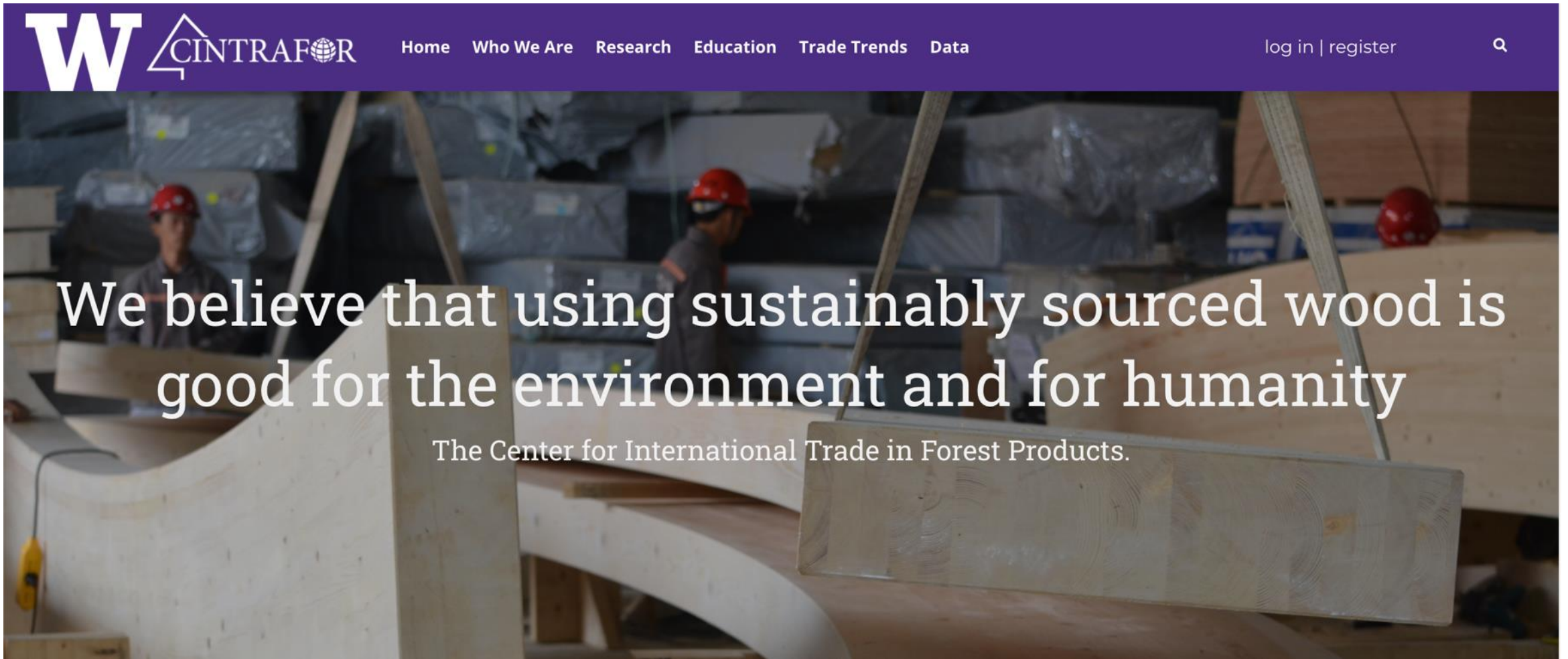
College of the Environment

**“Peace is a natural effect of trade.”  
—Charles de Montesquieu**





<https://www.cintrafor.org/>

The image shows the top section of the CINTRAFOR website. It features a purple navigation bar with the CINTRAFOR logo on the left, which includes a large 'W' and the text 'CINTRAFOR' with a globe icon. The navigation bar contains links for 'Home', 'Who We Are', 'Research', 'Education', 'Trade Trends', and 'Data'. On the right side of the bar are links for 'log in | register' and a search icon. Below the navigation bar is a large hero image of a wood processing factory. Overlaid on this image is the text 'We believe that using sustainably sourced wood is good for the environment and for humanity' in a large, white, sans-serif font. Below this text is the tagline 'The Center for International Trade in Forest Products.' in a smaller, white, sans-serif font.

**W** CINTRAFOR

Home Who We Are Research Education Trade Trends Data

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Q

We believe that using sustainably sourced wood is good for the environment and for humanity

The Center for International Trade in Forest Products.

# Forest Certification

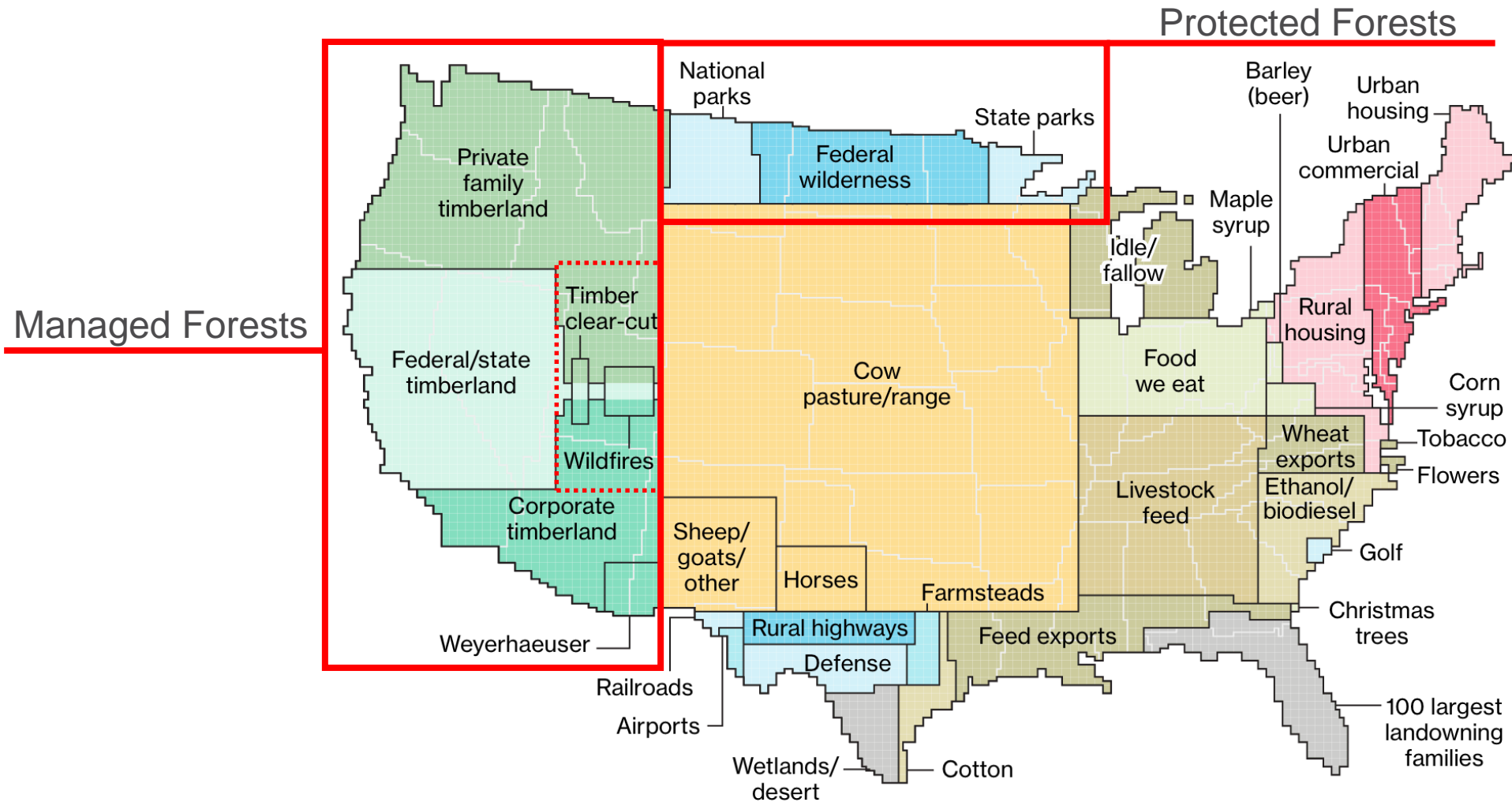
- Programme for the Endorsement of Forest Certification (PEFC)
  - Umbrella organization that endorses ~50 national forest certification systems developed through multi-stakeholder processes and tailored to local priorities and conditions.
  - For example, in the U.S. – The Sustainable Forestry Initiative (SFI)
- Forest Stewardship Council (FSC)
- In the U.S., many small private forestland owners manage sustainably and are also strictly regulated, but do not certify their forests simply due to economic considerations.



# PEFC CHAIN OF CUSTODY CERTIFICATION

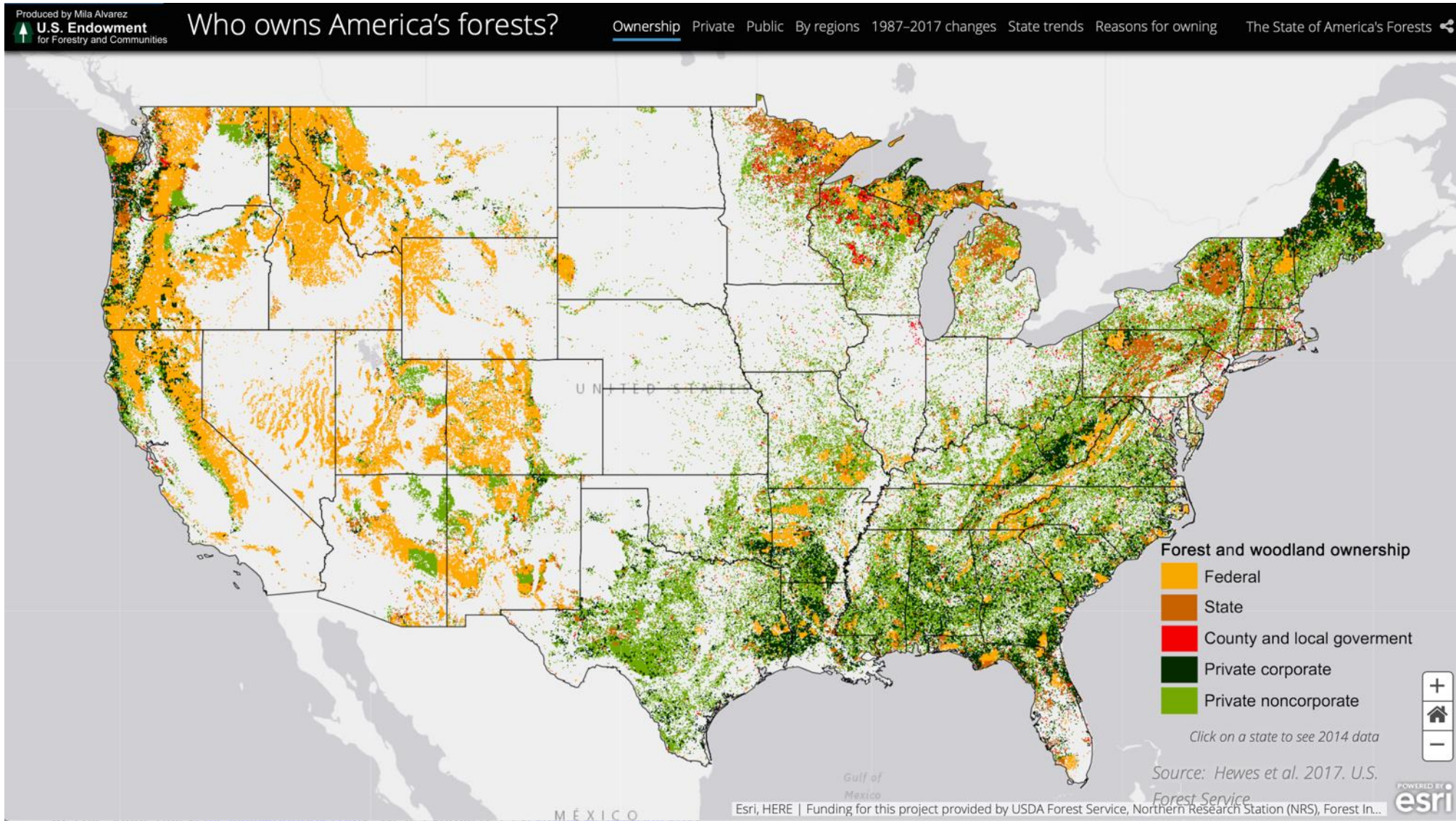


# Here's How American Uses Its Land (Merrill and Leatherby 2018)



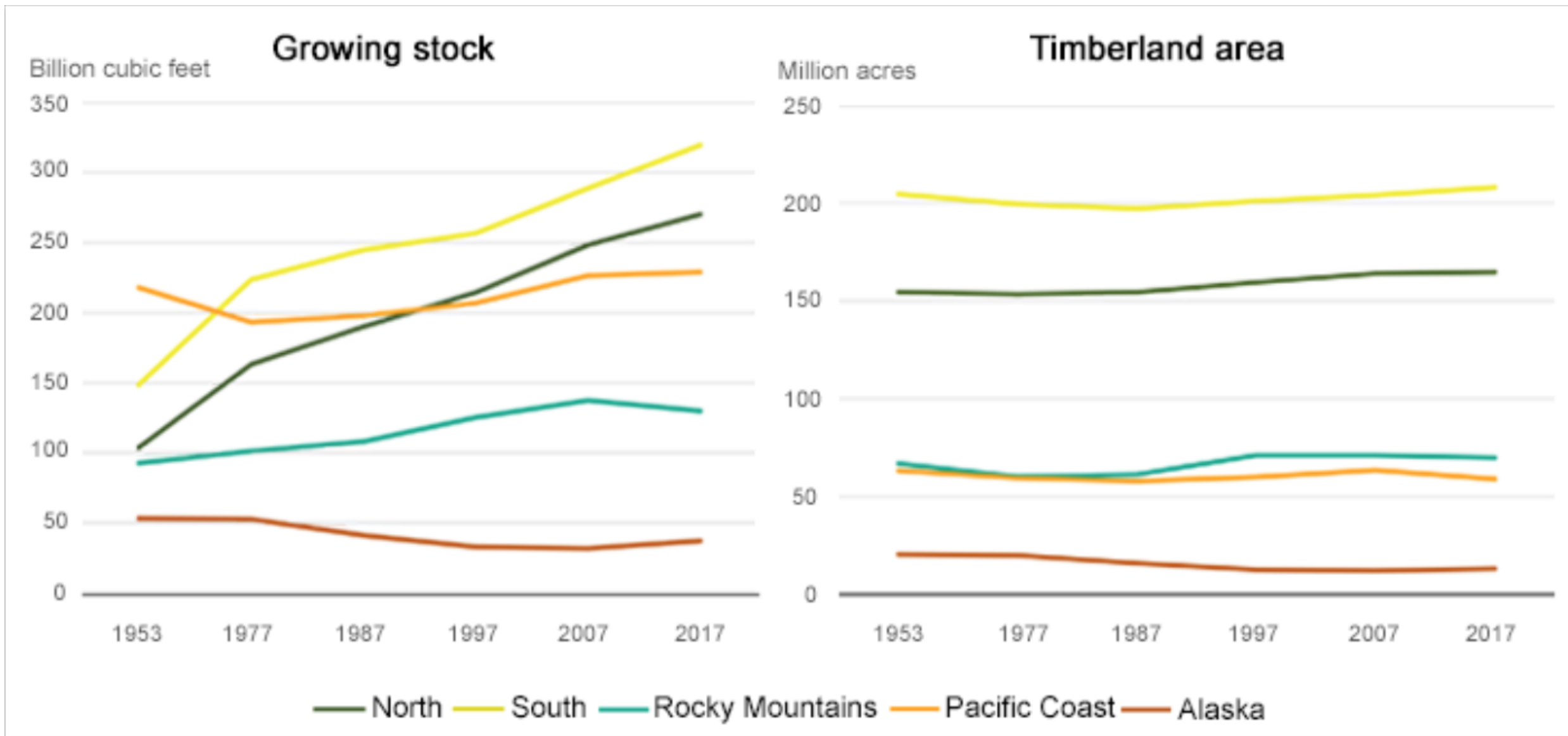
Source: **Bloomberg**, "Here's How America Uses Its Land," Dave Merrill and Lauren Leatherby, July 2018, available at <https://www.bloomberg.com/graphics/2018-us-land-use/>



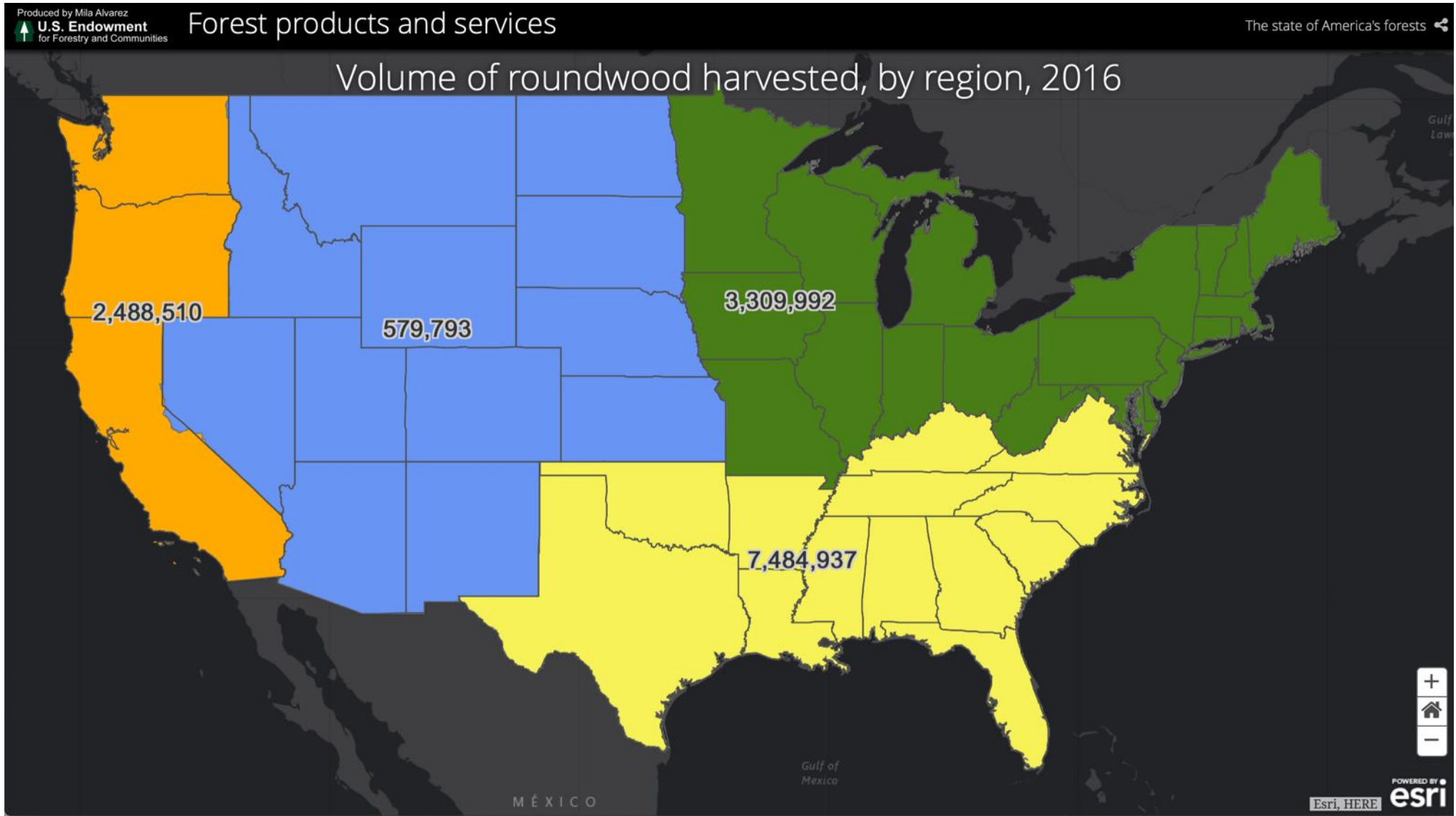


Source: **US Endowment for Forestry and Communities**, produced by Mila Alvarez, available at <https://usaforests.org>





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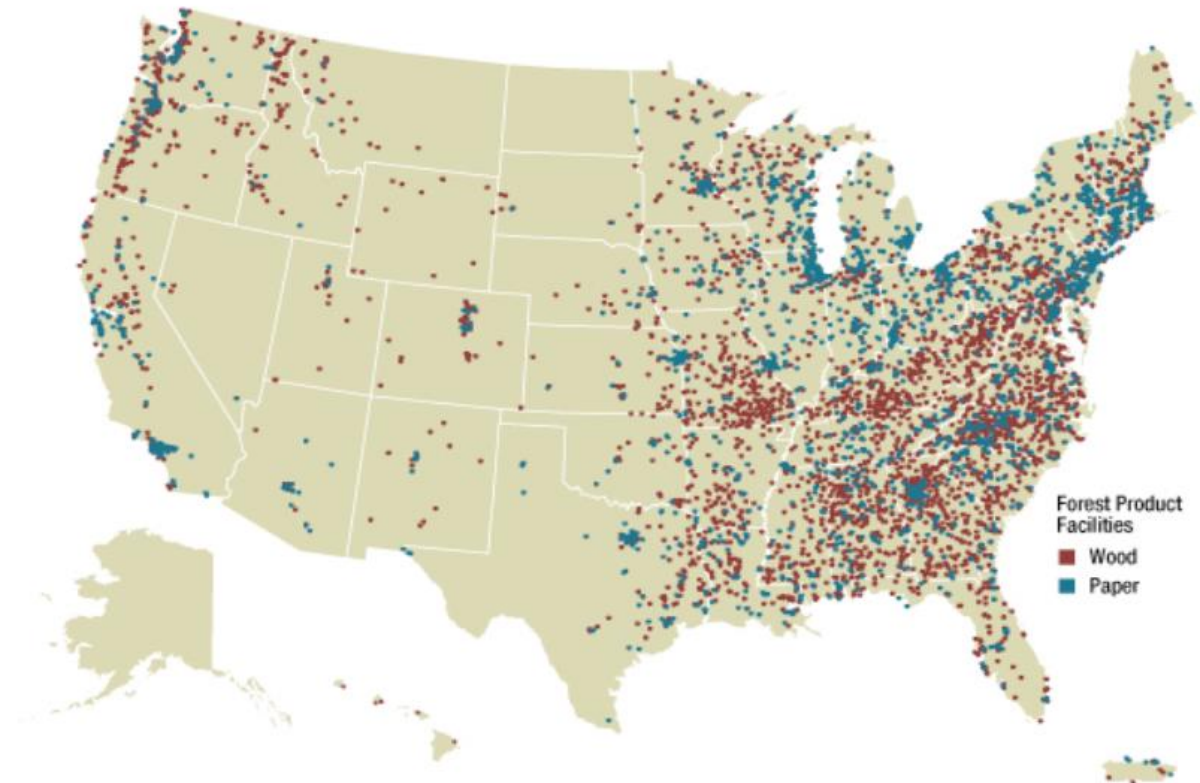


Source: **US Endowment for Forestry and Communities**, produced by Mila Alvarez, available at <https://usaforests.org>

# Industry is Located Where the Trees Are

- Most wood products produced in the U.S. depend on private timber
- Private timber owners manage their land on a variety of objectives, but those prioritizing industrial production prefer:
  - Climate conditions conducive to growth
  - Geography conducive to low cost harvesting
  - A variety of potential buyers within an economic haul distance

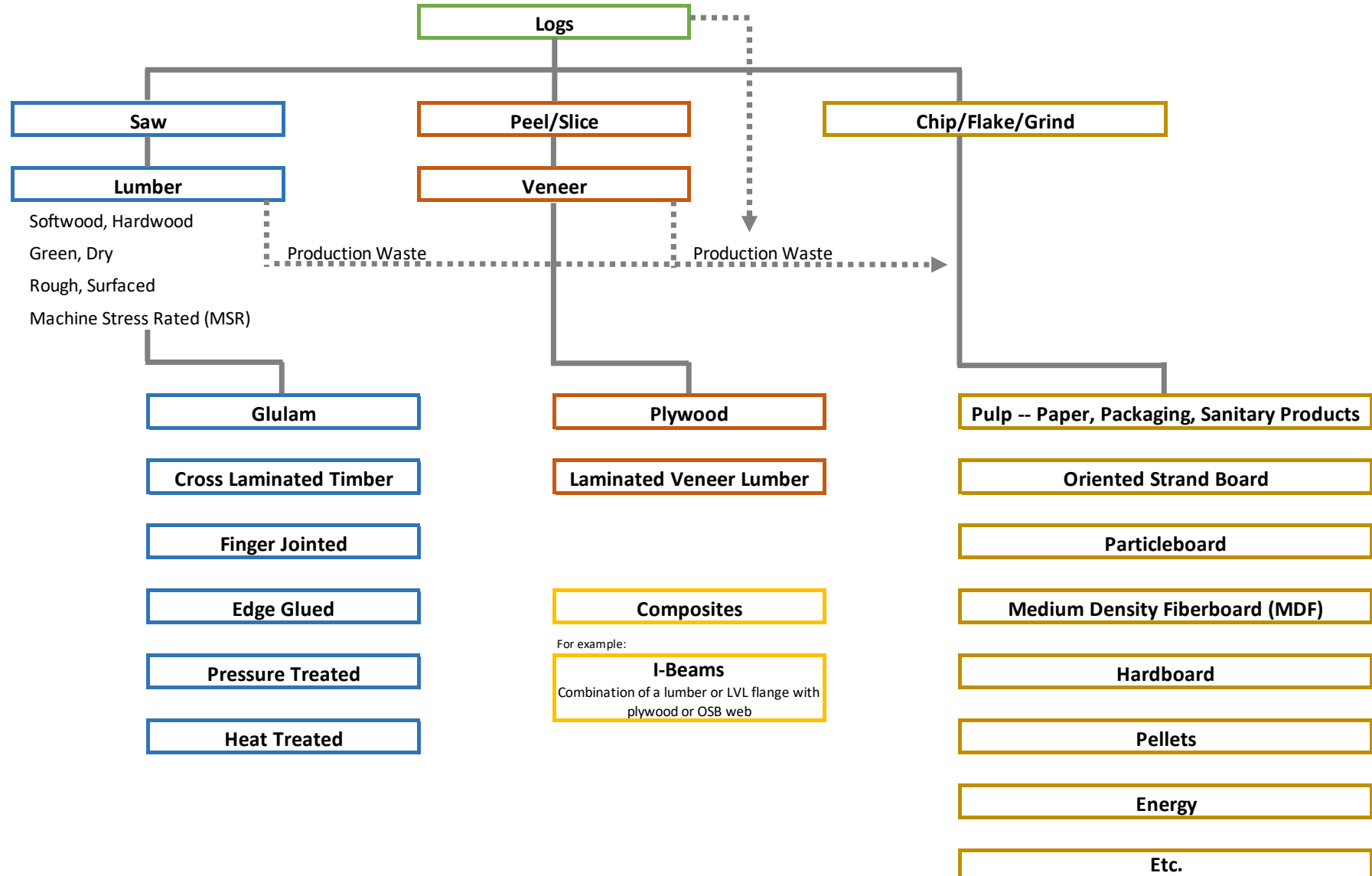
## U.S. Forest Products Industry



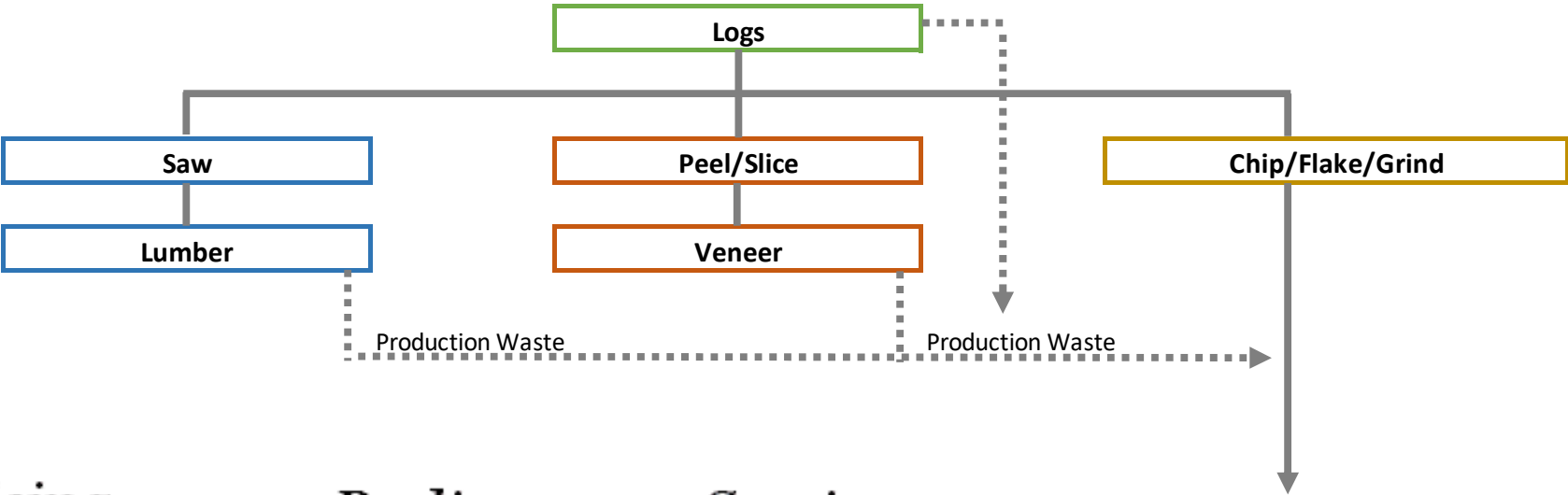
Source: U.S. Environmental Protection Agency (2011)  
(<http://www.epa.gov/sectors/sectorinfo/sectorprofiles/forest/map.html>)



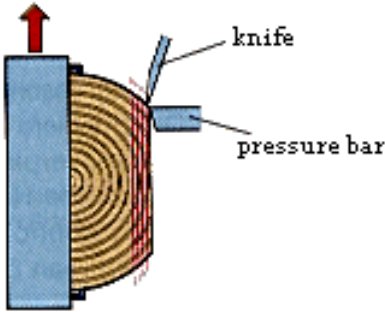
# Wood Products Taxonomy



Wood Products Taxonomy

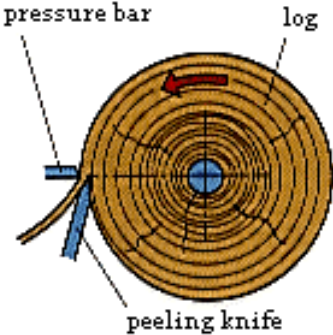


*Slicing*

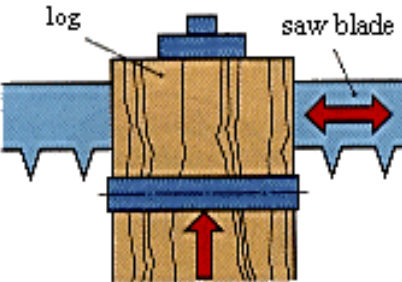


<http://www.metz-furniere.de/uberfurng.htm>

*Peeling*

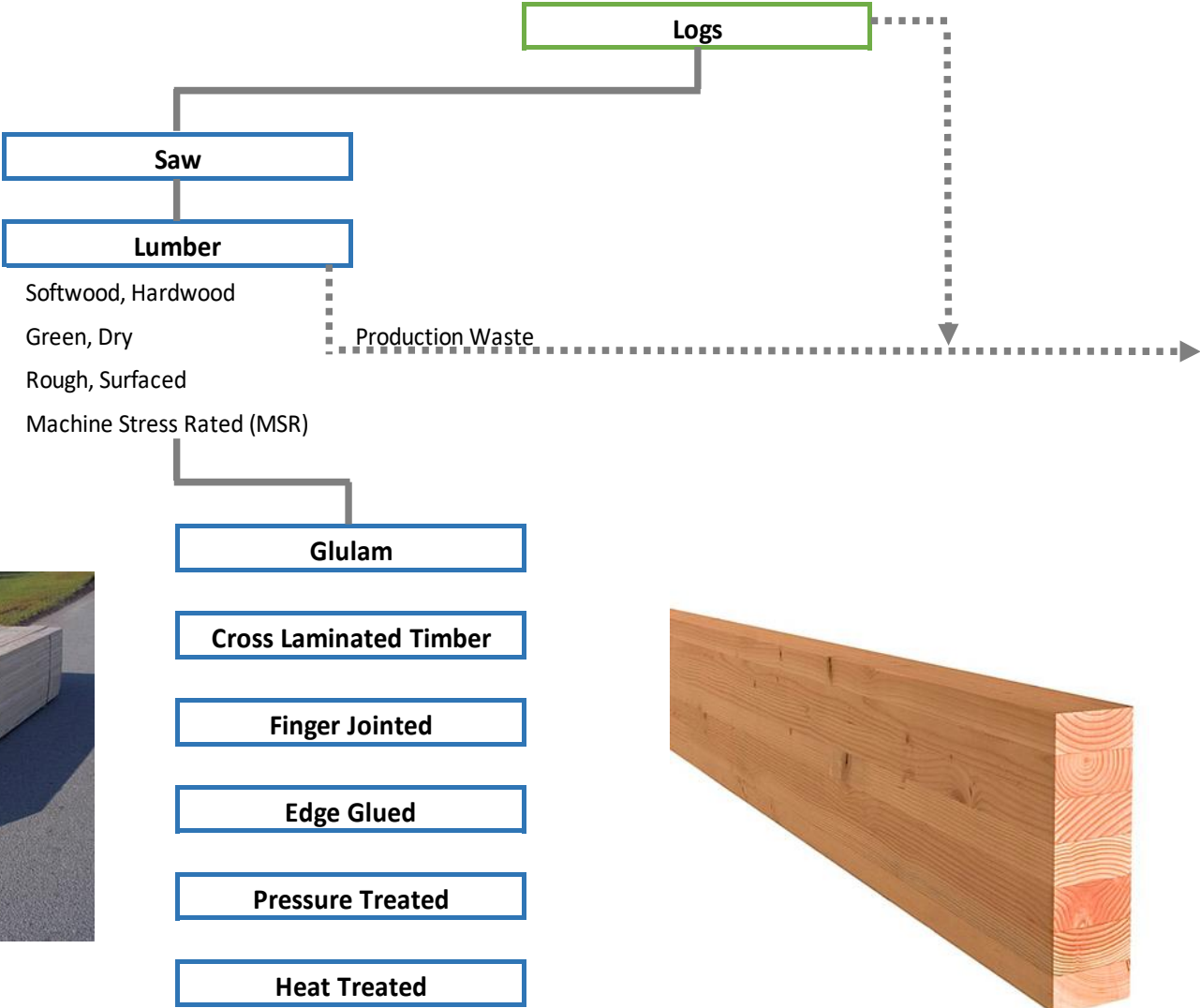


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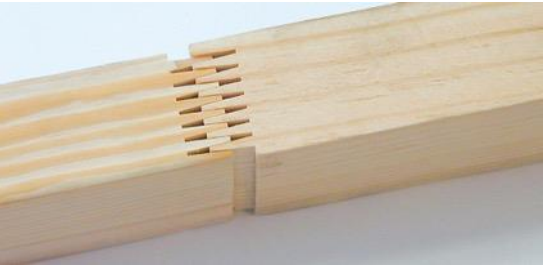


<https://cdn.newsapi.com.au>

Wood Products Taxonomy



Pressure Treated Lumber



Finger Jointed Lumber



Cross Laminated Timber



Lumber



Glulam



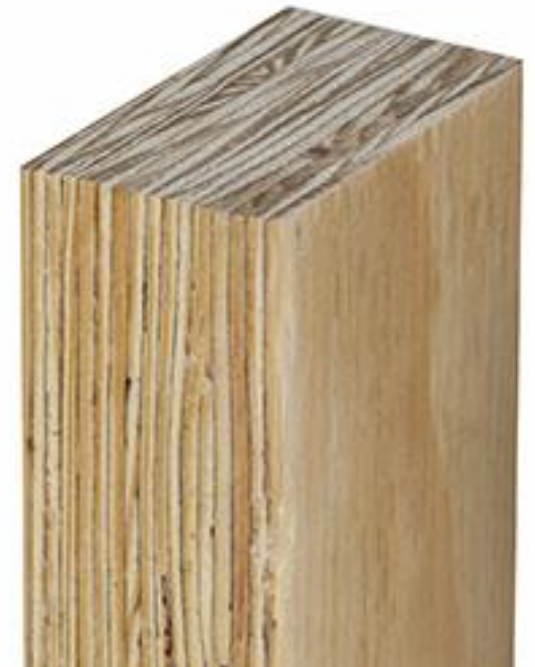
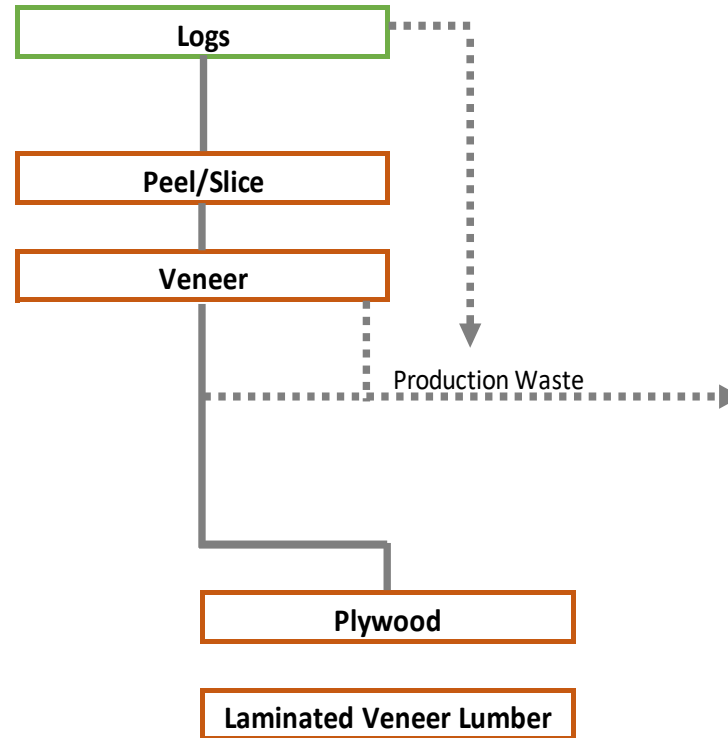


Veneer



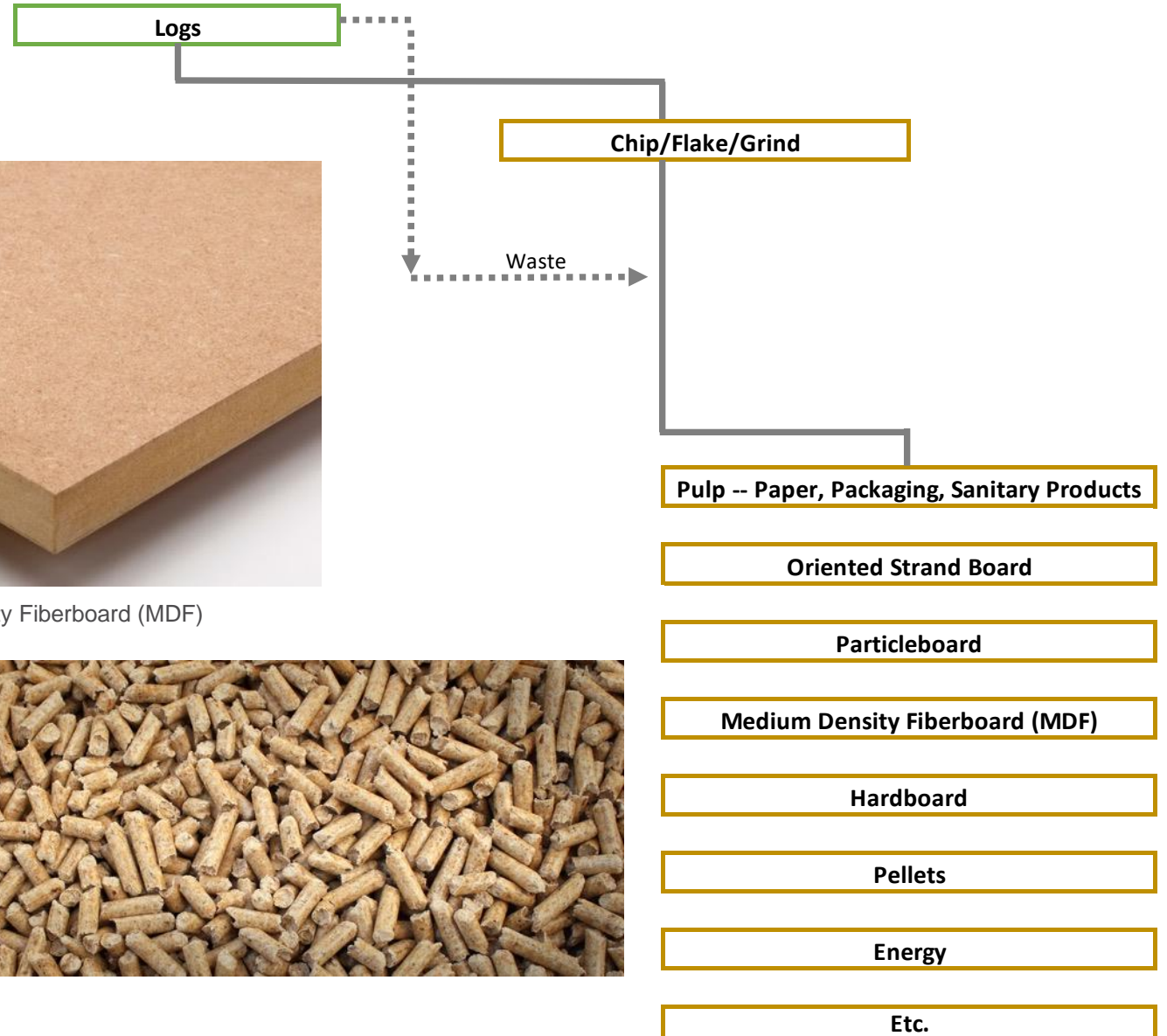
Plywood

## Wood Products Taxonomy



Laminated Veneer Lumber

## Wood Products Taxonomy



Oriented Strand Board (OSB)



Particleboard (low density fiberboard)

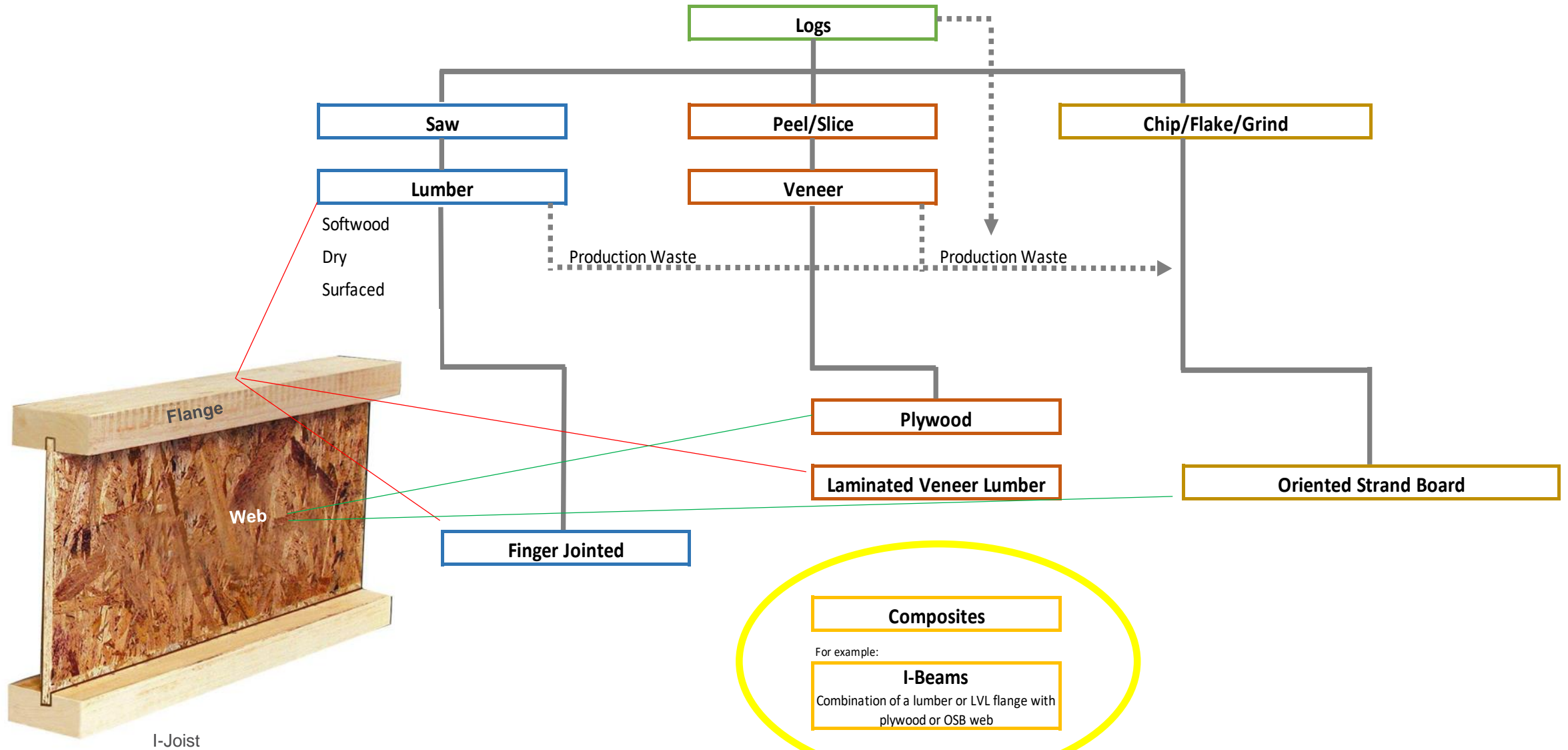


Medium Density Fiberboard (MDF)



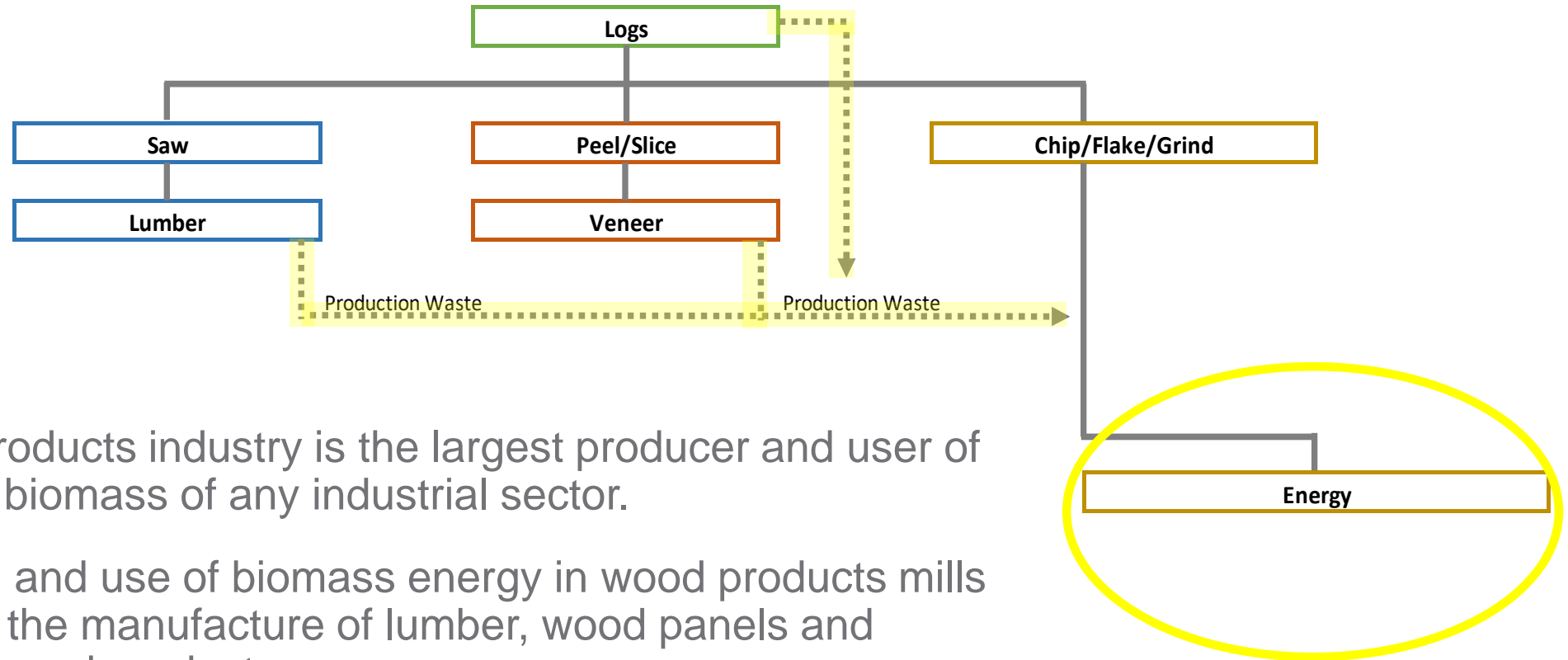
Wood Pellets

# Wood Products Taxonomy





## Wood Products Taxonomy

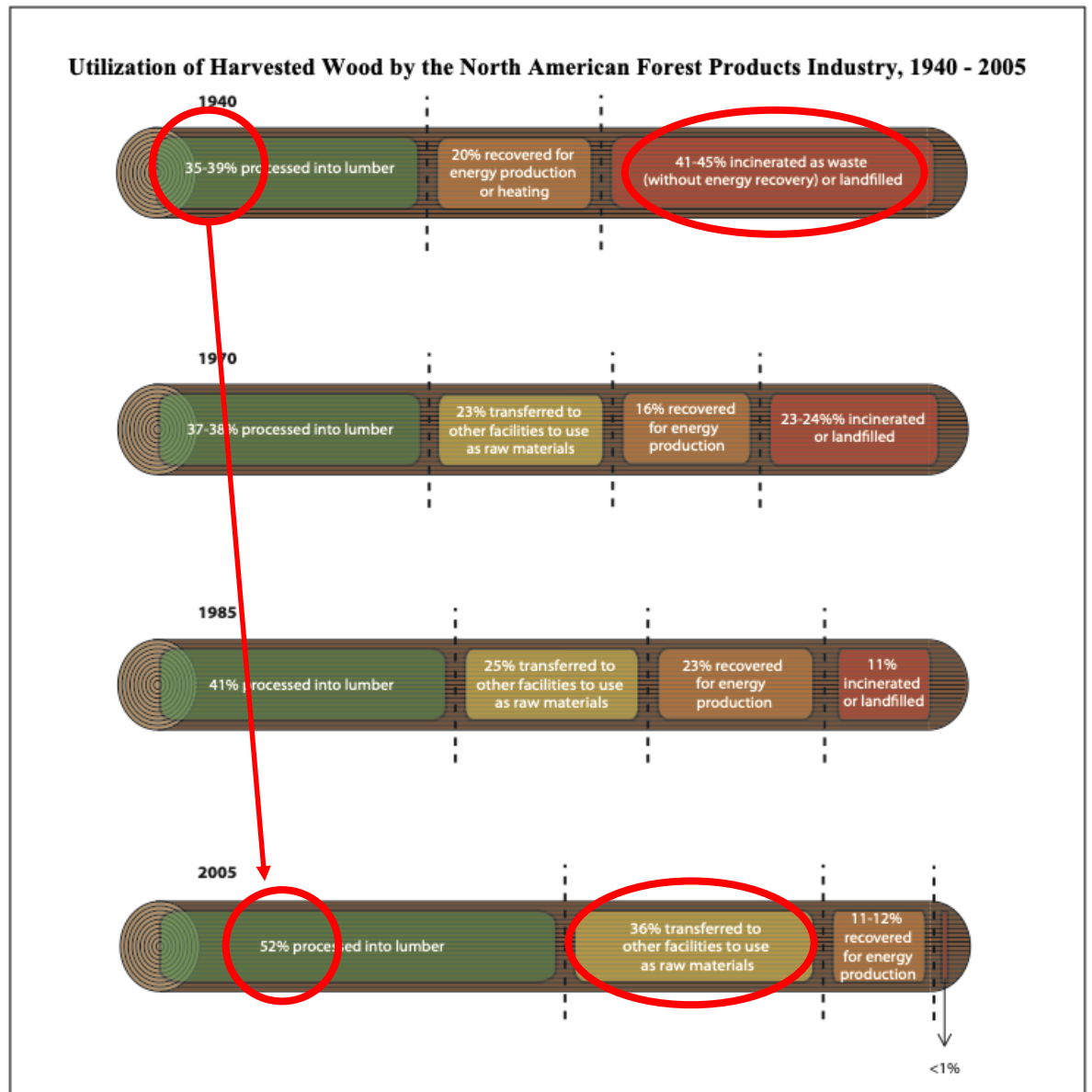


- The forest products industry is the largest producer and user of energy from biomass of any industrial sector.
- The creation and use of biomass energy in wood products mills is integral to the manufacture of lumber, wood panels and engineered wood products.
- Using forest and mill residuals for power reduces reliance on fossil fuels and the accompanying greenhouse gas emissions

Source: **American Wood Council**, <https://www.awc.org/publicpolicy/biomass>

# Wood Utilization

- Lumber processing yields have improved tremendously, from 35-39% in the 1940s to more than 52% today.
- Wood science technology has developed many innovative products to use sawmill and veneer mill waste; now accounting for 36% of the log.
- Waste that cannot be used as a raw material for other products is burned to provide heat for kilns and boilers, and electricity for operations.
- The entire log is utilized.



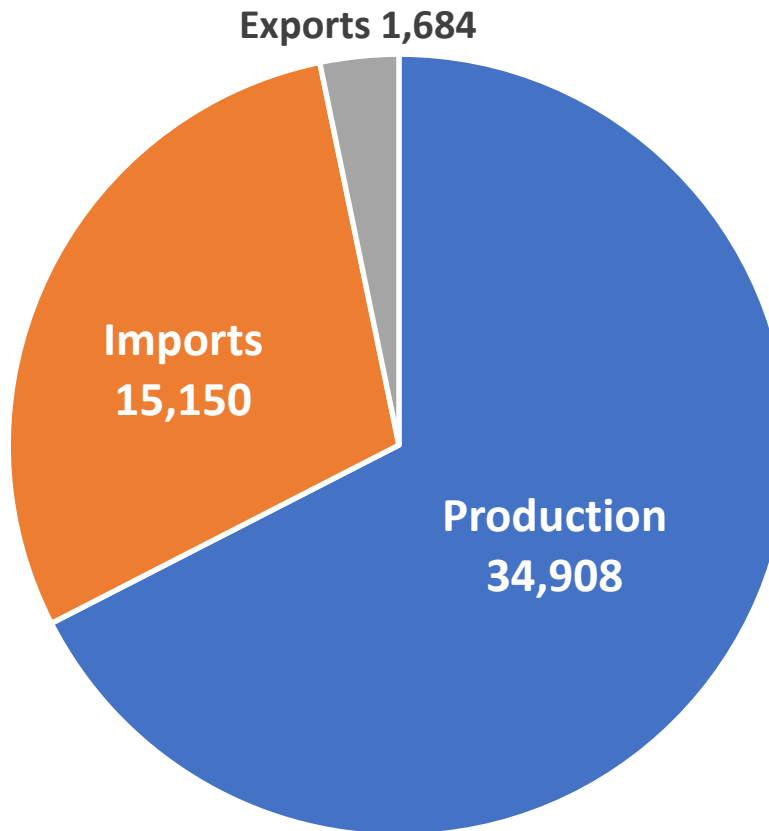
Source: **Dovetail Partners**, "Utilization of Harvested Wood by the North American Forest Products Industry," Dr. Jim Bowyer, Dr. Steve Bratkovich, Kathryn Fernholz, October 2012, available at <https://www.dovetailinc.org/upload/tmp/1581627196.pdf>

# U.S. Softwood Lumber Production, Imports, and Exports in 2018

Million Board Feet

Source: Western Wood Products Association

- 90.0% of U.S. softwood lumber imports are from Canada; amounting to 49.7% of Canada's total production.
- Another 7.4% of imports are from Europe, Chile, and New Zealand... countries with good forestry practices and a high proportion of certified, sustainable suppliers.



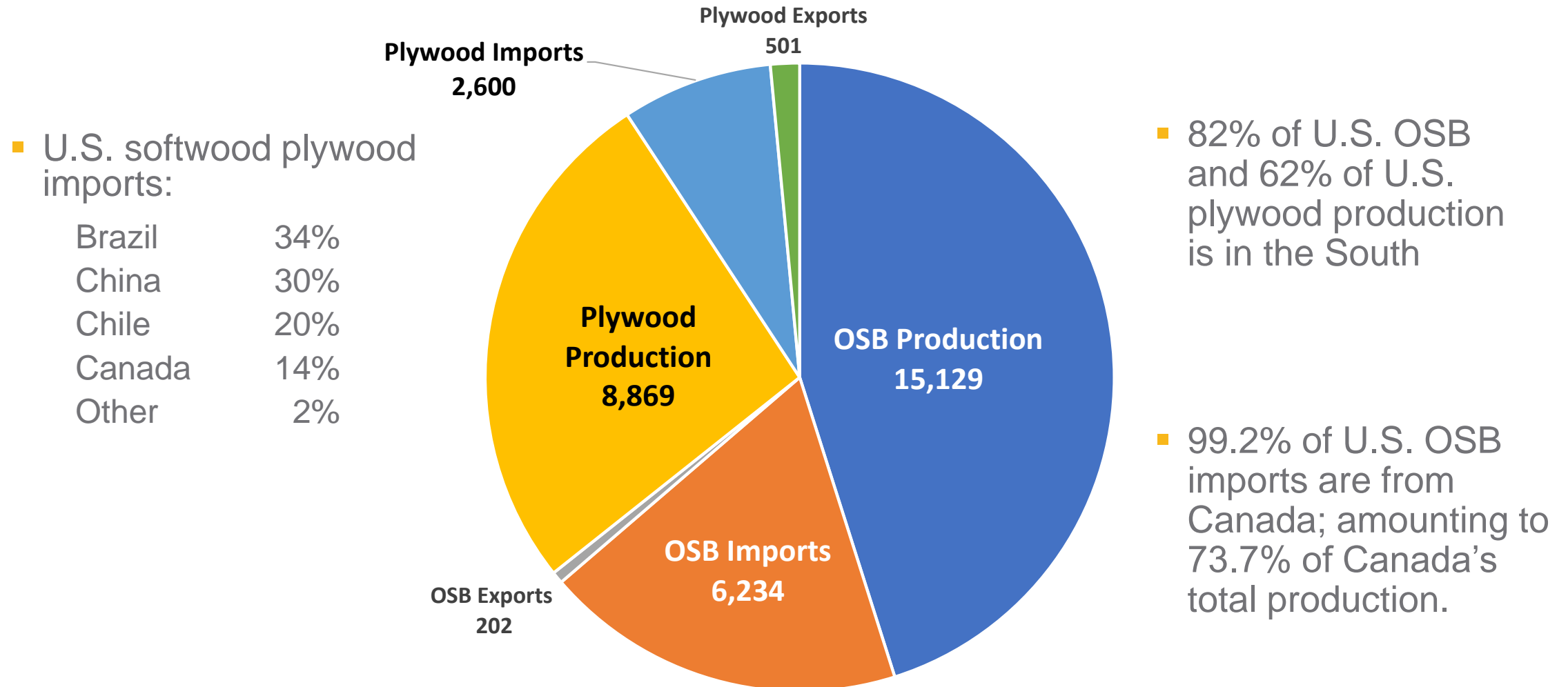
- 54% of U.S. softwood lumber production is in the South; 41% in the West.



## U.S. Oriented Strand Board (OSB) and Softwood Plywood in 2018

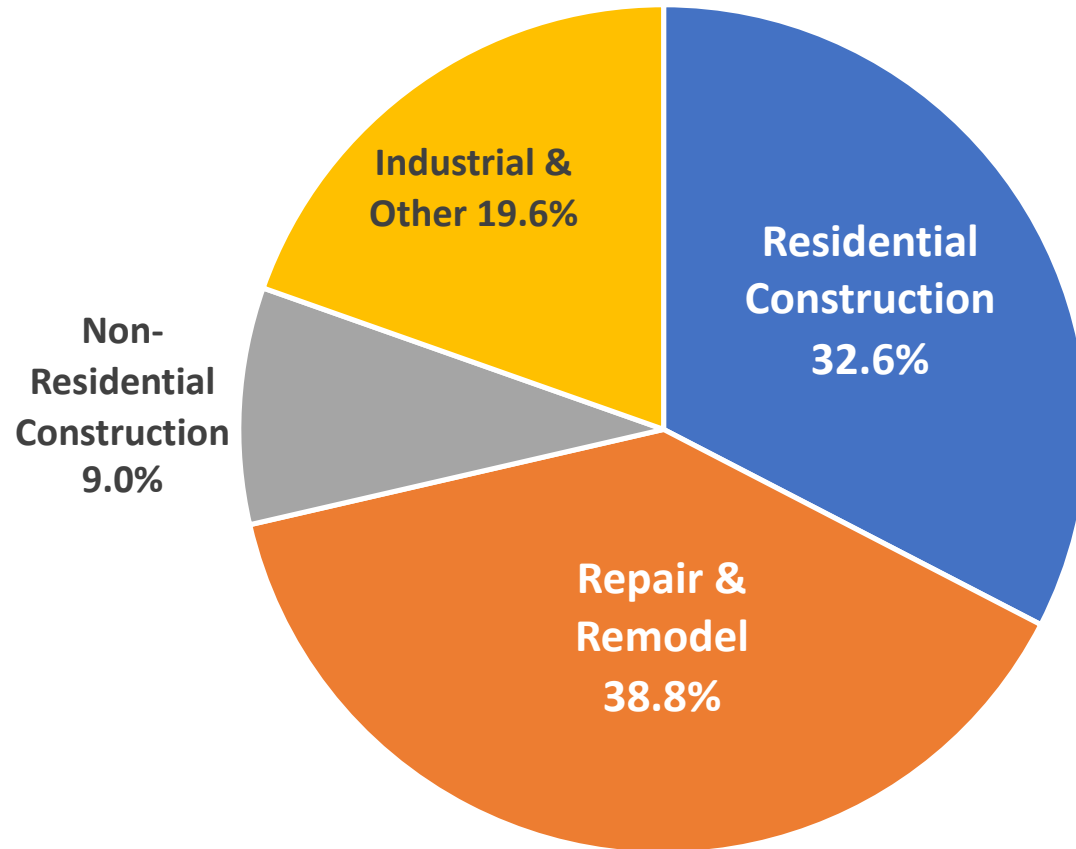
Billion Square Feet 3/8"

Source: APA, The Engineered Wood Association



# U.S. Softwood Lumber Consumption by End Use in 2018

Source: Western Wood Products Association

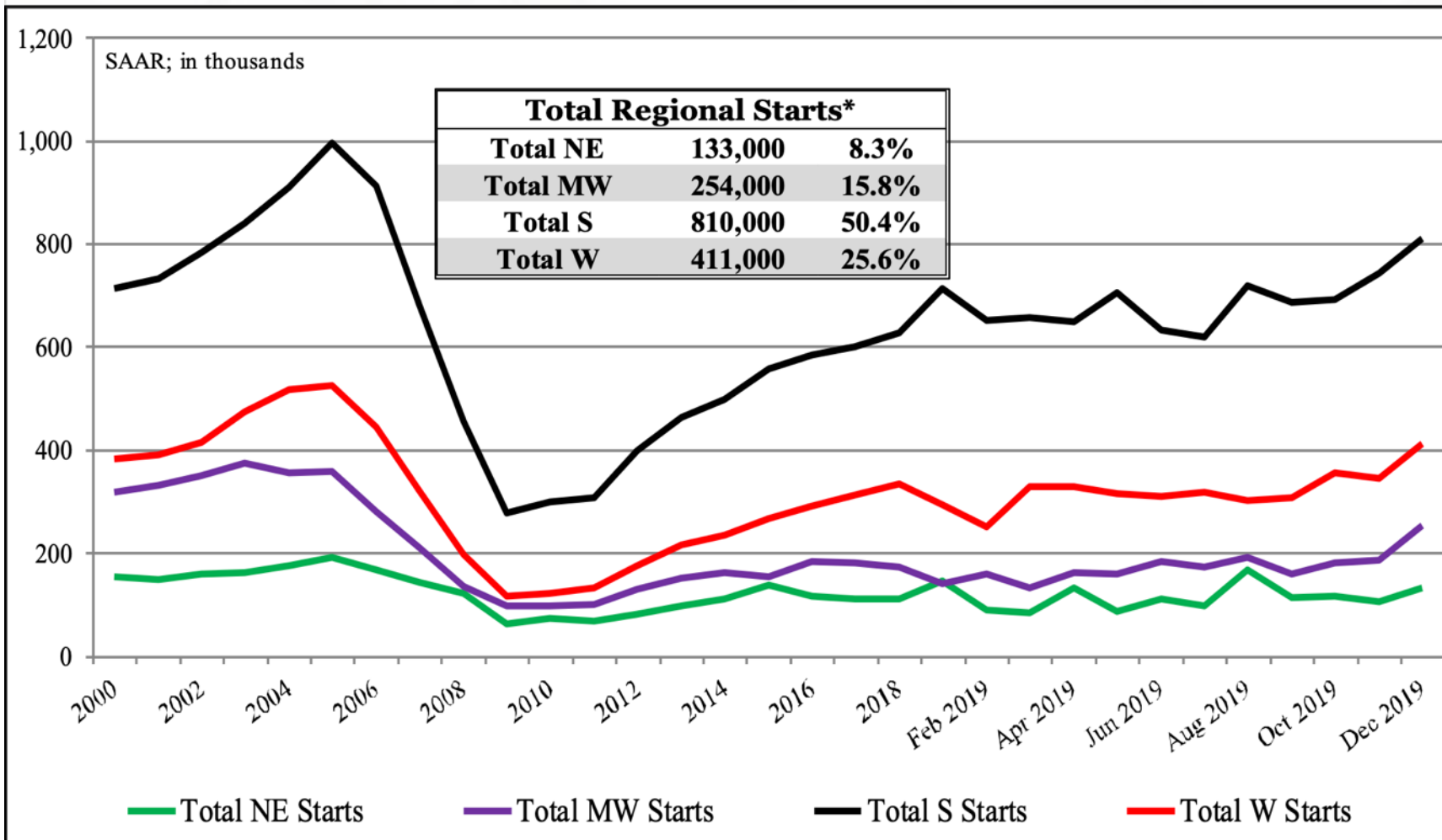


## Half-Life for Products by End Use

End Use or Product	Years
New Single-Family Home	100
New Multi-Family Apartment Building	70
Residential Repair & Remodel	30
Furniture	30
Paper	3

Source: USFS Northeastern Research Station, "Methods for Calculating Forest Ecosystem and Harvested Carbon", James E. Smith, Linda S. Heath, Kenneth E. Skog, and Richard A. Birdsey, General Technical Report NE-343, December 2005

# New Housing Starts by Region



NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family starts directly, this is an estimation (Total starts – (SF + ≥ 5 MF starts)).

\* Percentage of total starts.

Source: **Virginia Tech & USFS Housing Commentary**, <https://www.woodproducts.sbio.vt.edu/housing-report/casa-2019-12a-december-main.pdf>

- The Southern Region accounts for half of U.S. housing starts.
- Ten years after the housing crash of 2007-2009, we are not yet back to the same level of construction.
- Canadian owned-capacity has recently migrated to the U.S. South.





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Thank  
you!