

Sources

- Source: Bowyer, 2013
 - Bowyer, J. 2013. An Environmental Quiz that Can Open the Door to Inquiry and Learning about Forests and Forestry. Dovetail Partners Inc.
<http://www.dovetailinc.org/reportsview/2012/responsible-consumption/pdr-jim-bowyerp/environmental-quiz-can-open-door-inquiry-an>
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Wisconsin's Forest Industry: Taking on the World

Scott Bowe

Professor of Wood Products

Governor's Forestry Economic Summit

December 12 & 13, 2013



Outline

- History
 - Perceptions
 - Recent History
- Current trends
 - Sustainability
 - Export Market Demand
- Outlook

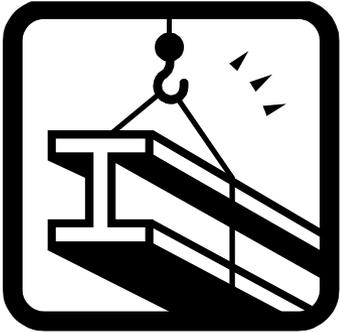
History of Wisconsin's Forest Industry

Cutover Forest in 1911



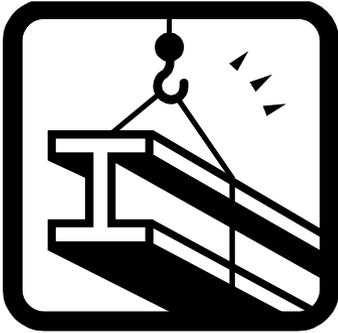
Photo courtesy of the Wisconsin DNR

Perception



True (T) or False (F):

The raw material that is used in the greatest quantity in the U.S. today, and which accounts for almost one-third (by weight) of the total raw materials used annually is steel.



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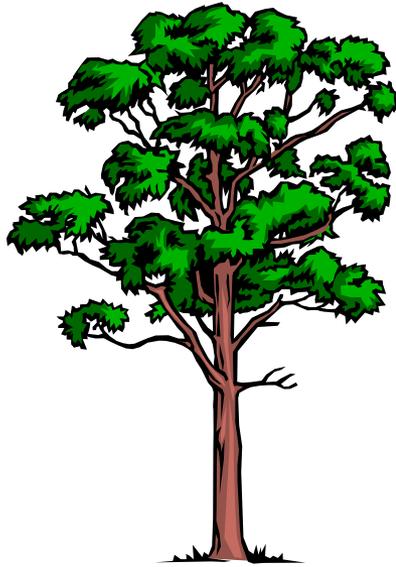
Annual U.S. Consumption of Various Raw Materials, 2010

	<u>Million Metric tons</u>	<u>Million m³</u>
Roundwood	153	341
Industrial roundwood*	135	300
Cement	71	64
Steel	80	101
Plastics	40.6	35.8
Aluminum	3.5	1.3

* Roundwood is the volume of all wood harvested. Industrial roundwood is the volume of wood used in making forest products; the difference is firewood.

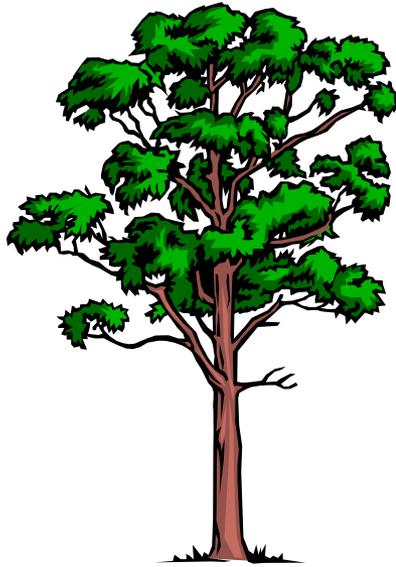
In fact, more wood is used in the U.S.
every year than all metals and all
plastics *combined!*

The area covered by forests in the U.S. today is approximately _____ of the forested area that existed in 1600.



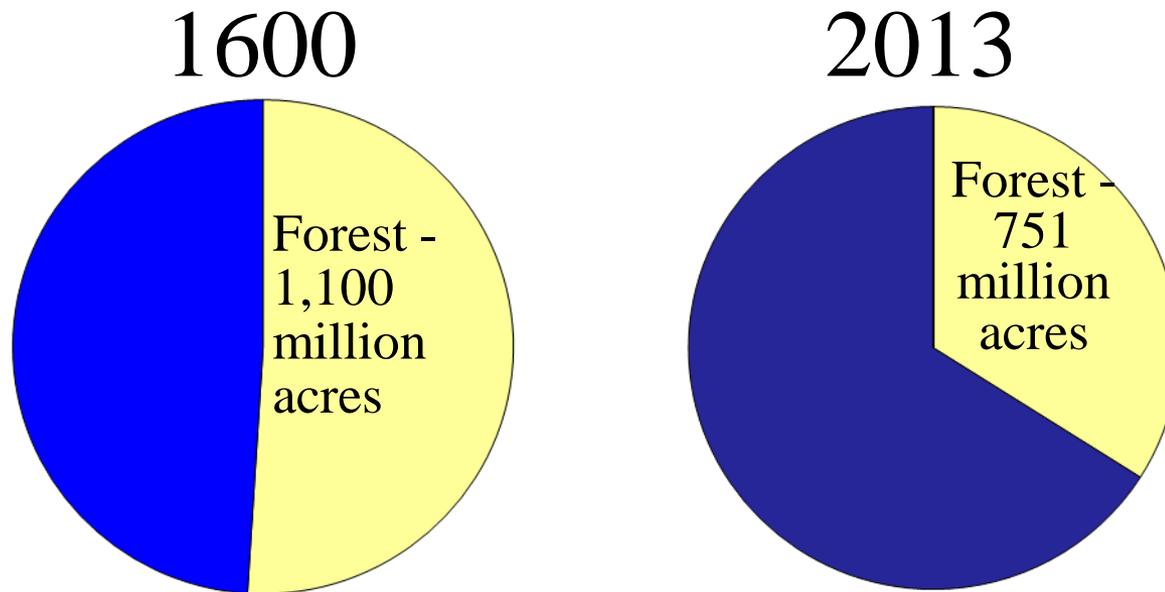
- 72 percent
- 50 percent
- 33 percent
- 17 percent

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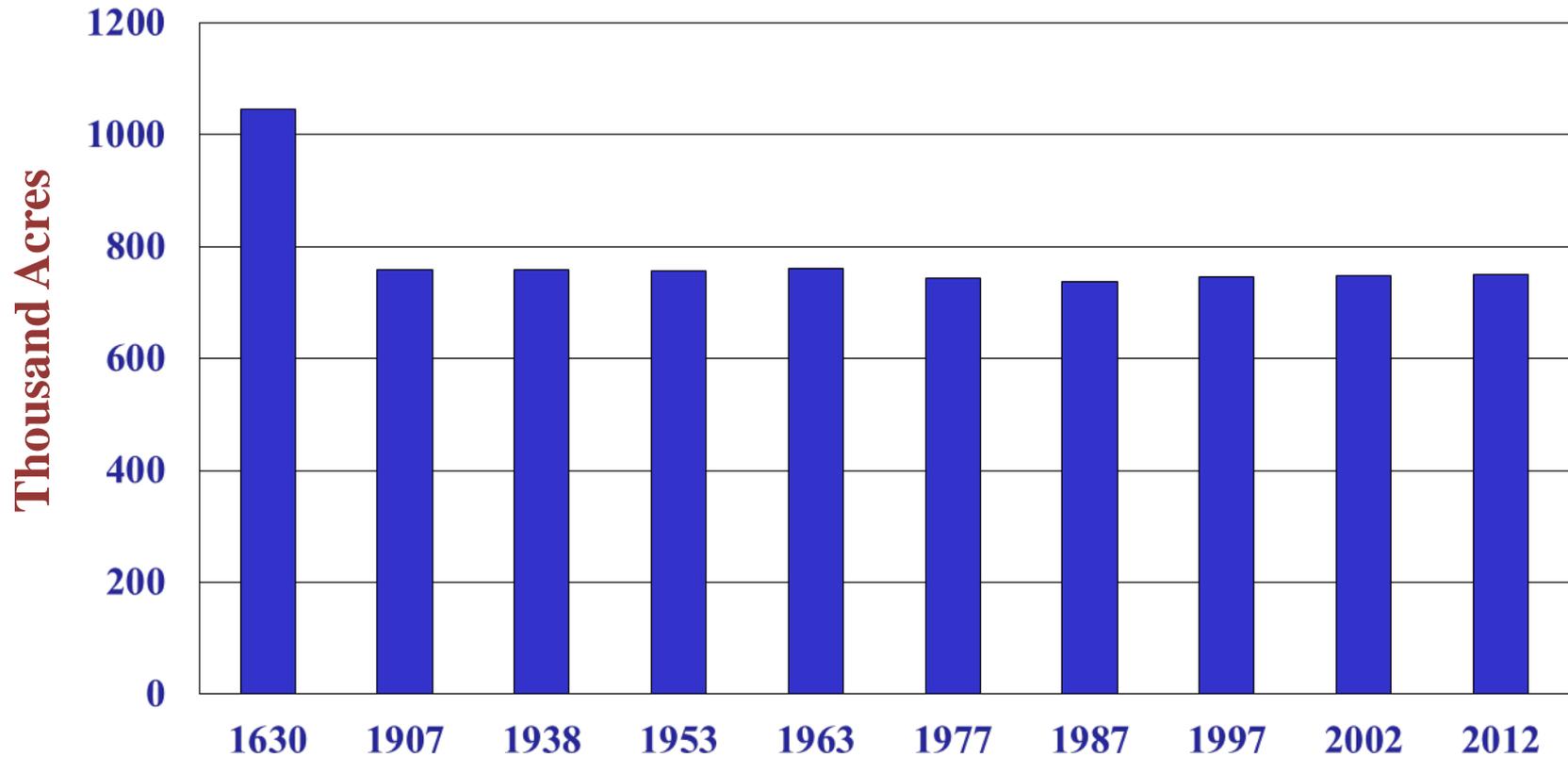
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- 17 percent

Forests now cover 72% of the land area in the U.S. that they did at the time of European settlement



Source: USDA - Forest Service

Forest Area in the United States 1630-2012



Source: USDA-Forest Service, RPA Update. (2012).

Which of the following statements most accurately describes U.S. forests:

- Forest harvest exceeds growth by 20 percent.
- Forest harvest exceeds growth by 5 percent.
- Forest harvest roughly equals growth.
- Forest growth exceeds harvest by 29 percent.
- Forest growth exceeds harvest by 72 percent.



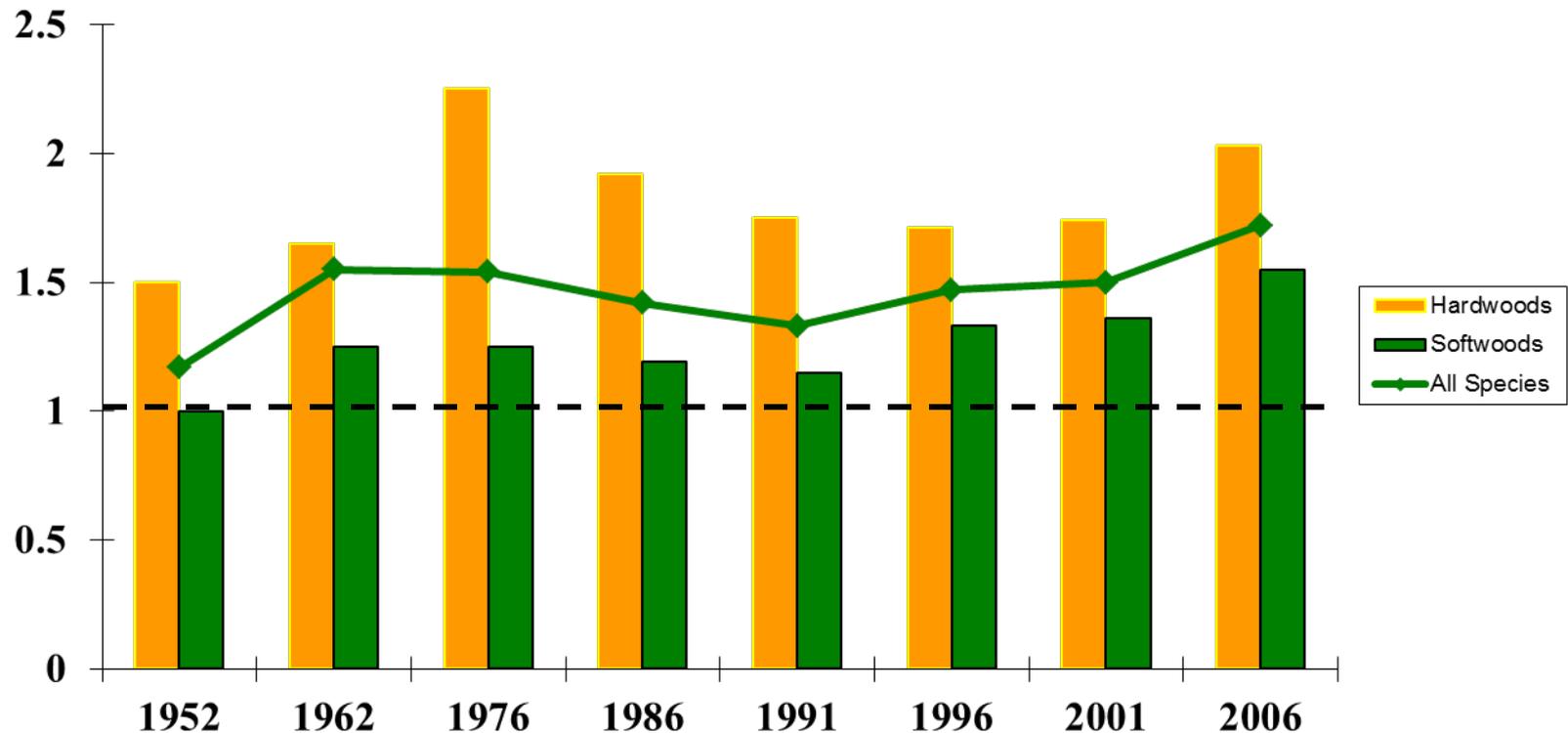
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Net Growth/Removals Ratios – U.S., 1952-2006

When net forest growth divided by removals = 1.0,
timber inventories are neither expanding or declining.

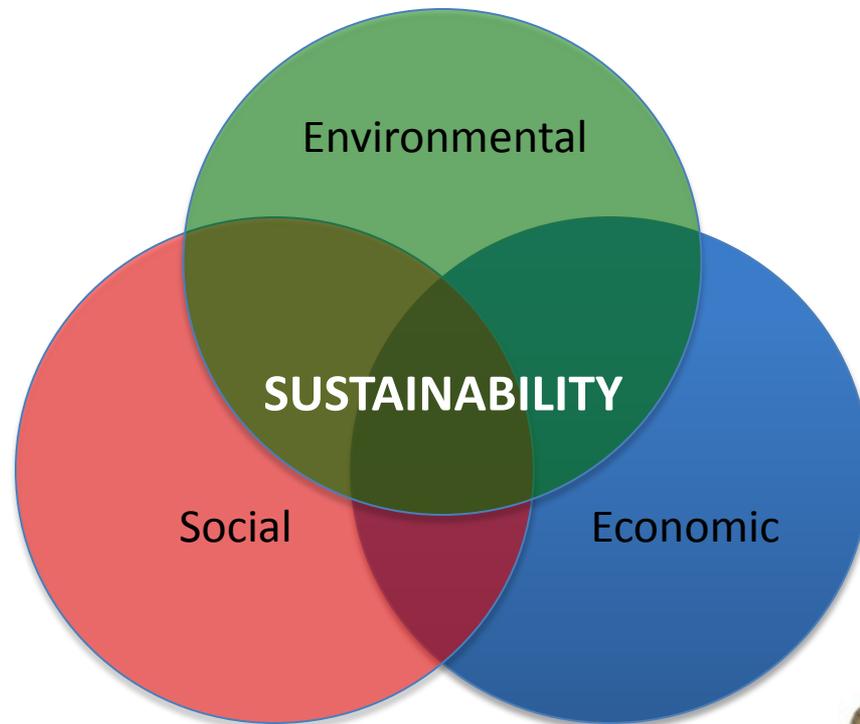


Growth/Removals Ratios – U.S., 1952-2006

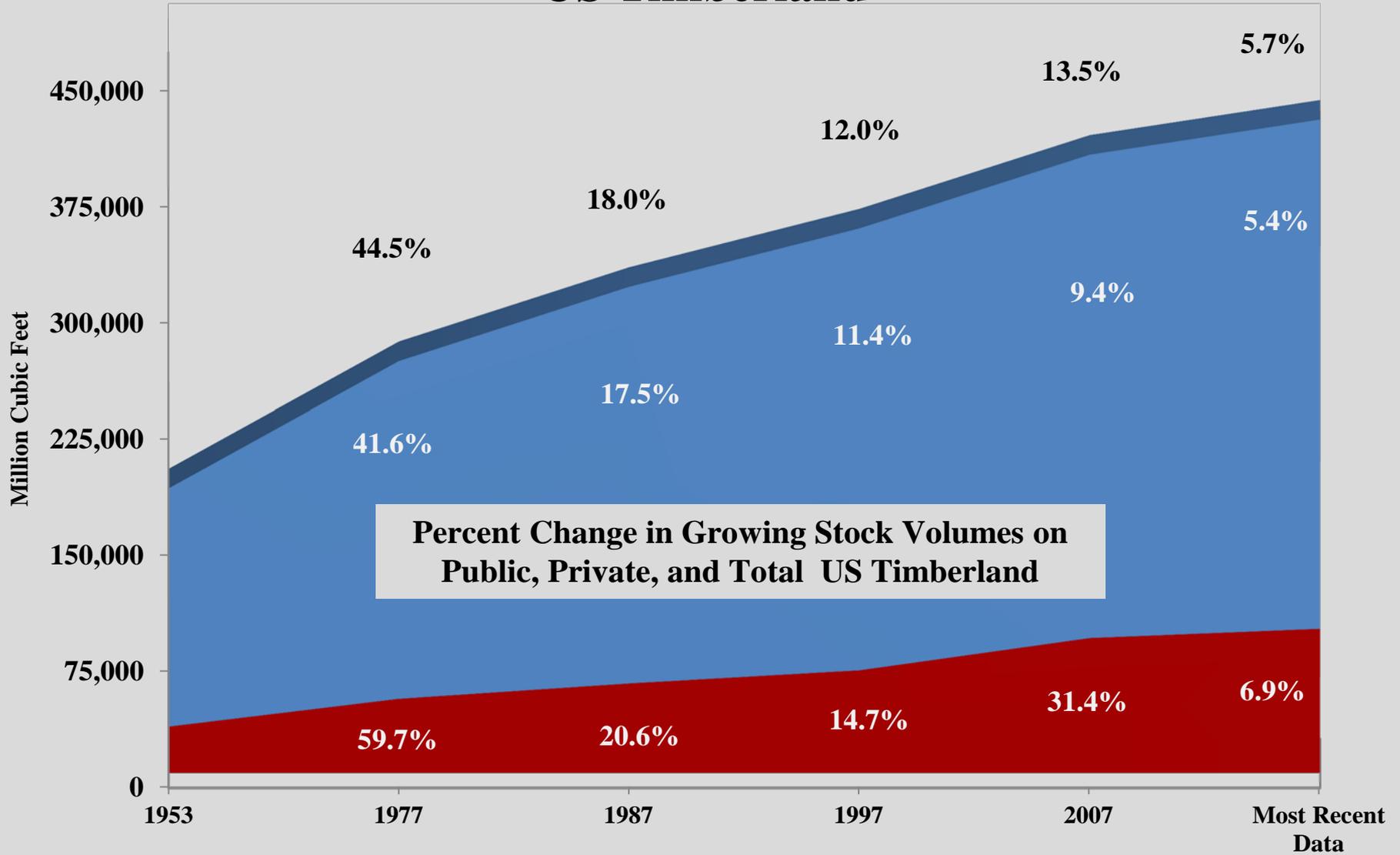
Year	Softwoods	Hardwoods	Total
1952	1.00	1.50	1.17
1962	1.25	1.65	1.55
1970	1.23	2.01	1.48
1976	1.25	2.25	1.54
1986	1.19	1.92	1.42
1991	1.15	1.75	1.33
1996	1.33	1.71	1.47
2001	1.33	1.71	1.47
2006	1.55	2.03	1.72

Sustainability

- What do I think sustainability means?
 - Environmental
 - Social
 - Economic
- Public?
 - Preservation



Net Volume of Hardwood Growing Stocks on US Timberland

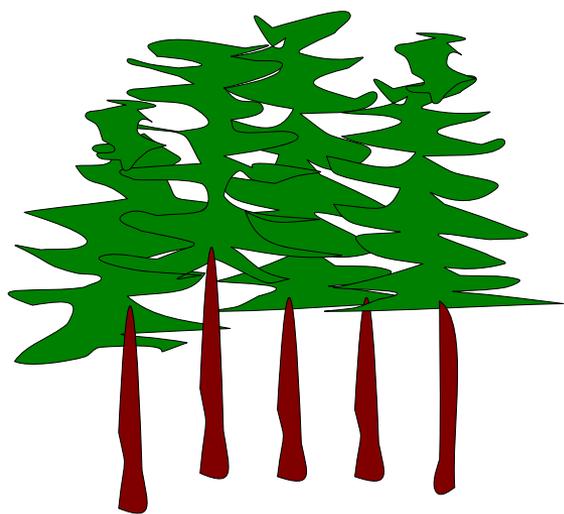


Source: UDSA Forest Service

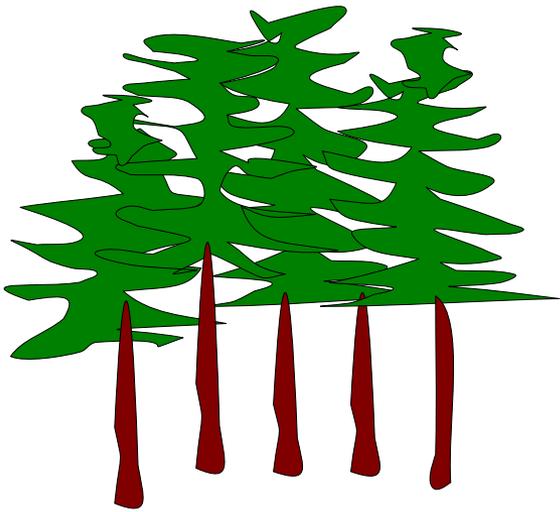
■ Total Public ■ Privately Held

Graph: HMR Executive®

True (T) or False (F). At current rates of deforestation, forty (40) percent of current forests in the U.S. will be lost by the middle of this century.



True (T) or False (F). At current rates of deforestation, forty (40) percent of current forests in the U.S. will be lost by the middle of this century.



In fact, the area covered by forests in the U.S. is increasing.





NEW



Musicwood

Directed by Maxine Trump

2012, 80 minutes

Purchase: \$350 **\$315** / Classroom Rental: \$125

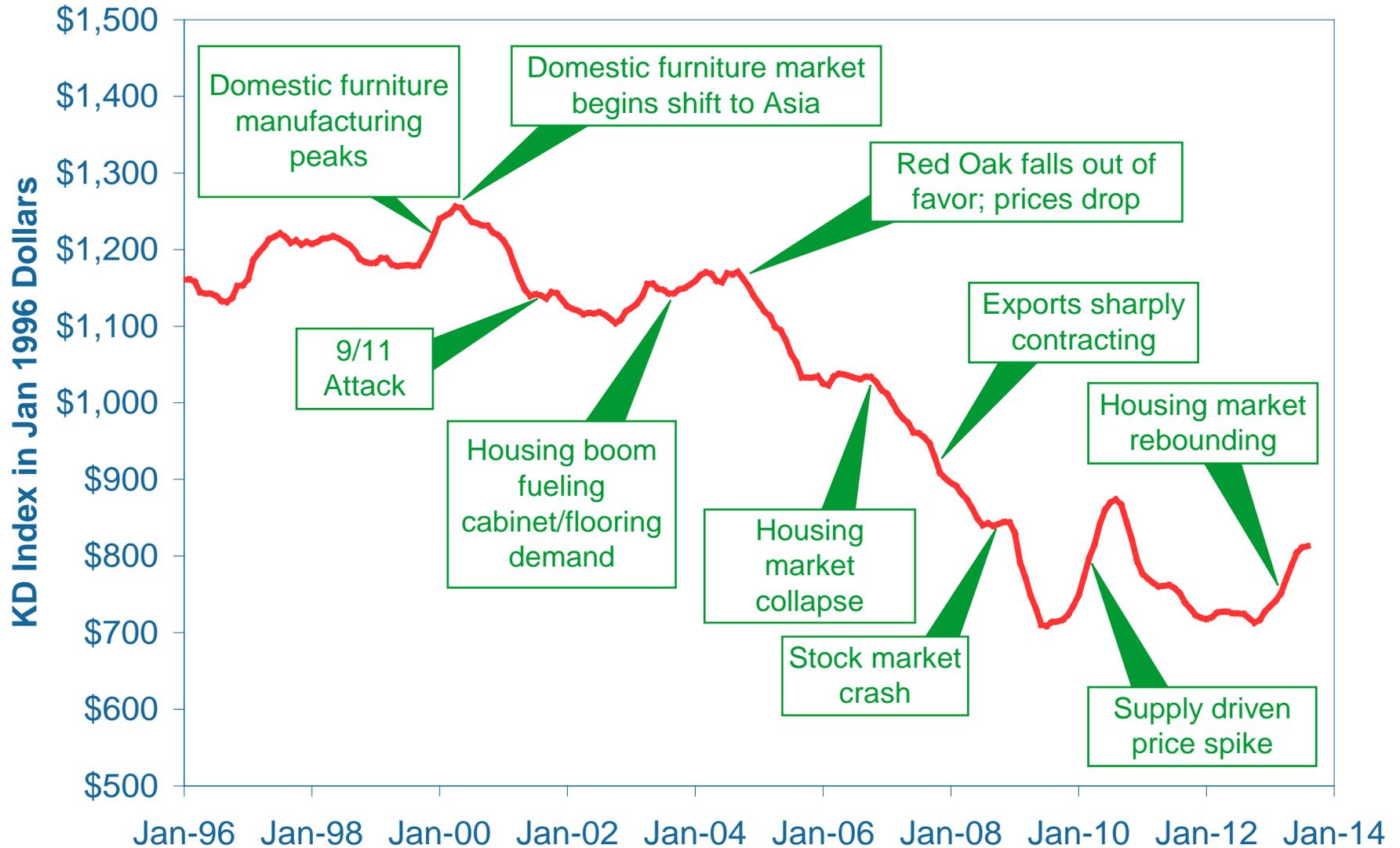
For hundreds of years, the acoustic guitar has been made from the same species of Spruce. Today, due to an extreme logging practice known as clear-cutting, this tree is in danger of disappearing - and with it, the acoustic guitar. In this captivating documentary, owners of the top gui-

tar makers unite with Greenpeace and travel to the largest forest in the US to meet with Native American landowners in the hope of finding a sustainable solution.

"An unflinching look at the complex politics behind the logging of the Tongass National Forest.... In addition to amazing footage of the Tongass, interviews with guitar makers, environmental groups, and leaders of the Tlingit and Haida tribes, the film includes great musical performances." —Greenpeace

Recent History

Recent History



Trends in Demand for Wood Products

New Single Family Home sales is the key statistic to watch – Sales drive housing starts – this drives demand for wood products!

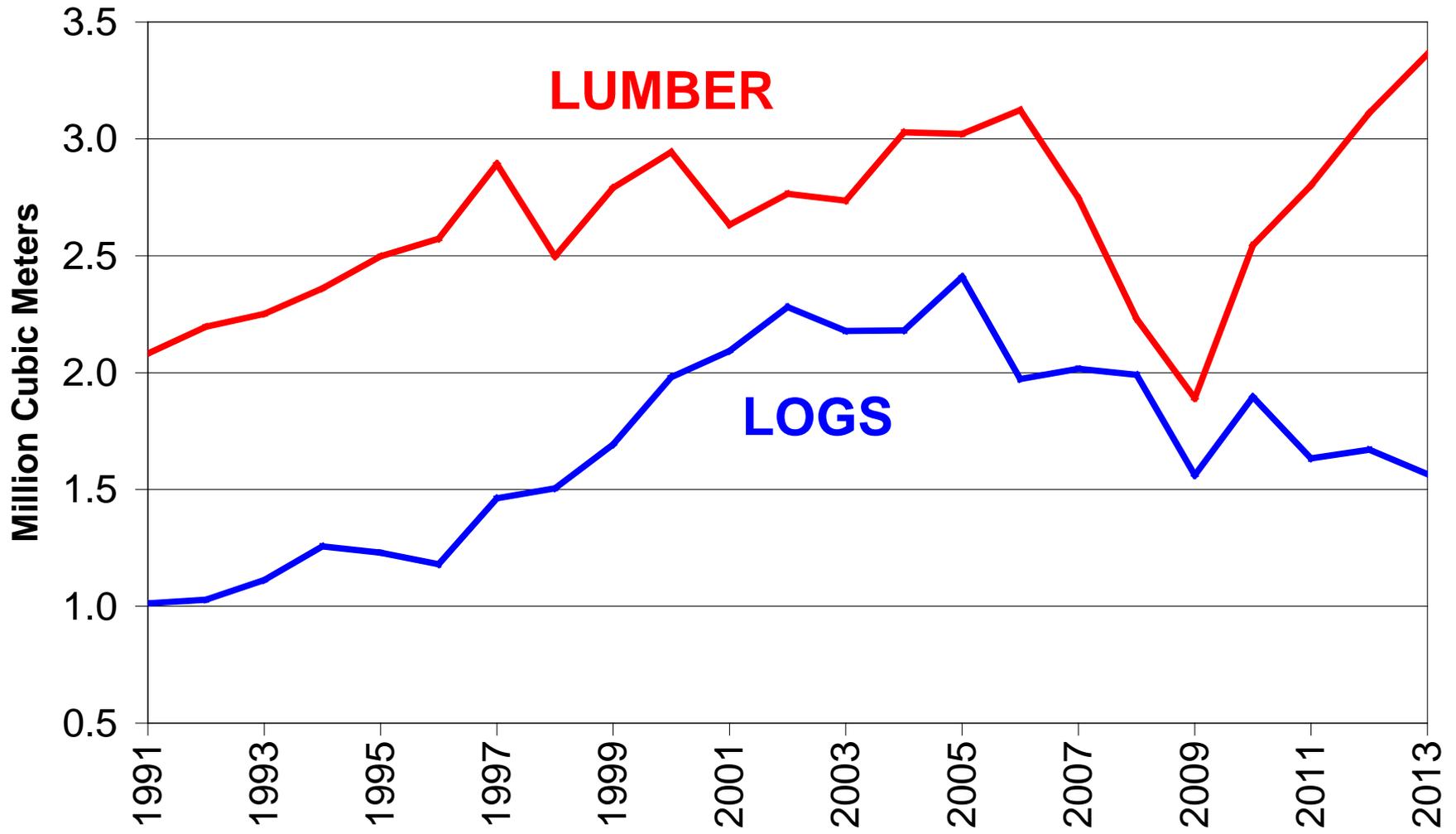
Thousands, SAAR



Source: Census (<http://www.census.gov/const/www/newressalesindex.html>)



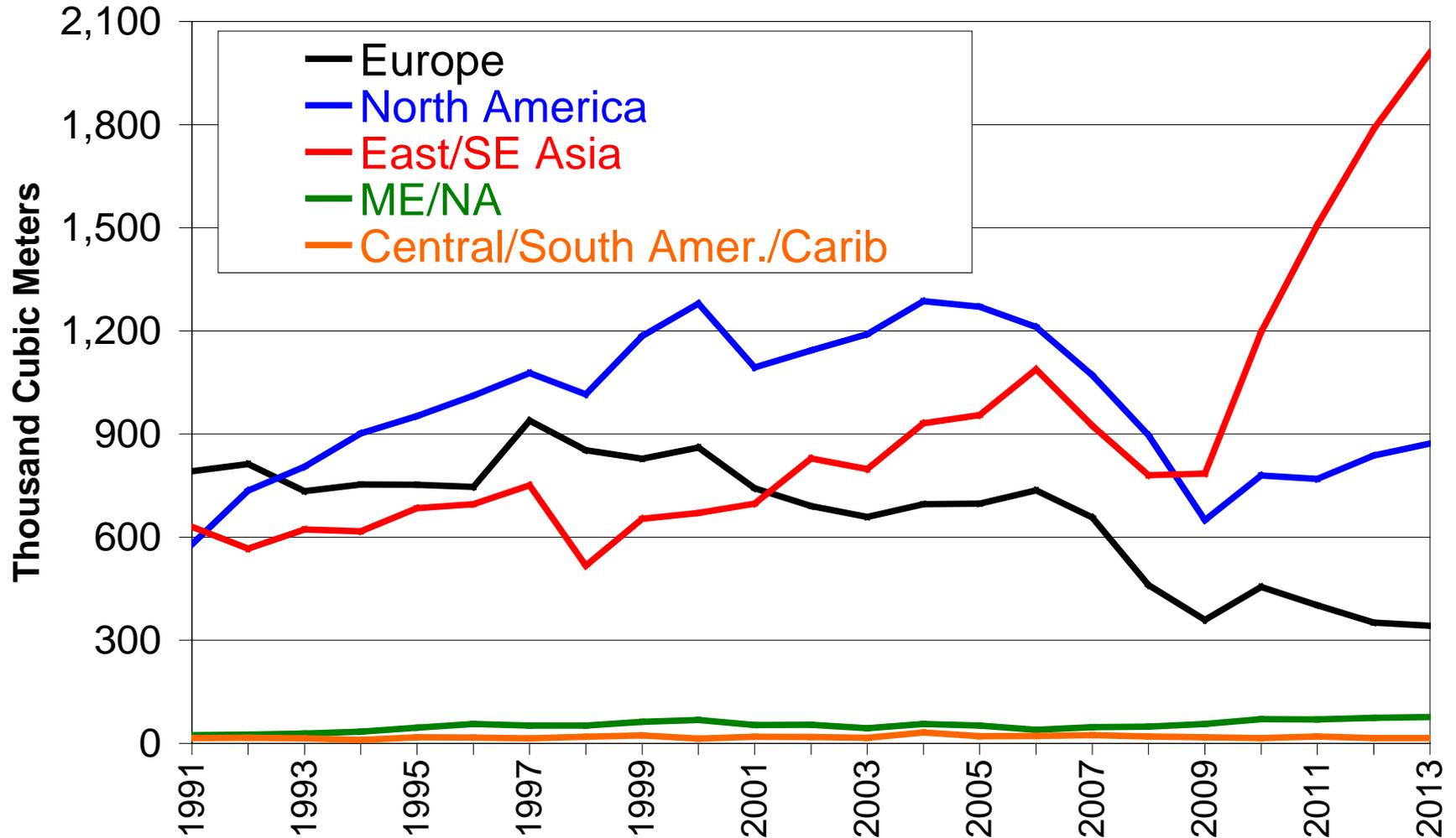
U.S. Hardwood Exports



(Source: Barrett, 2013)

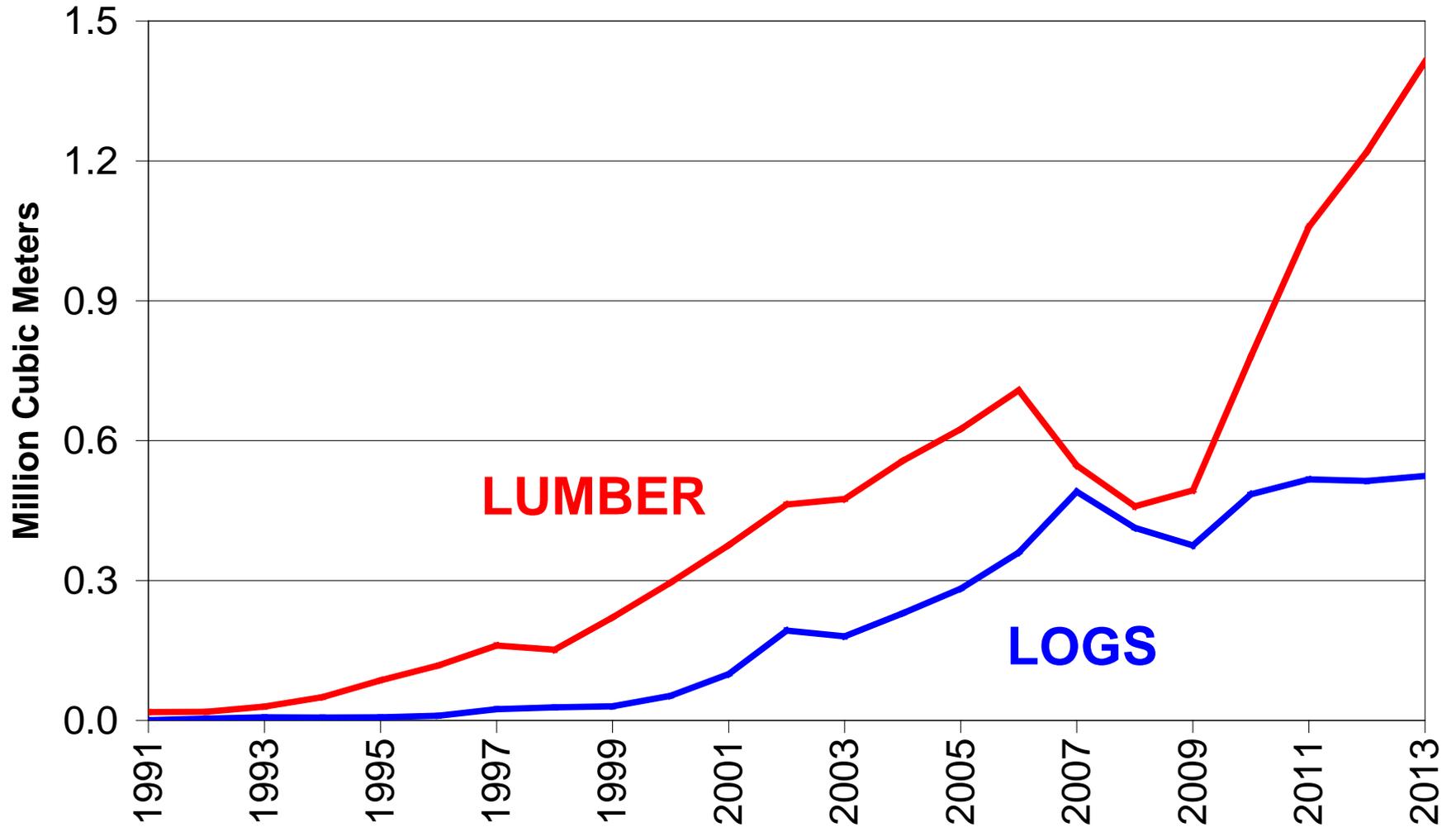


U.S. Hardwood Lumber Exports

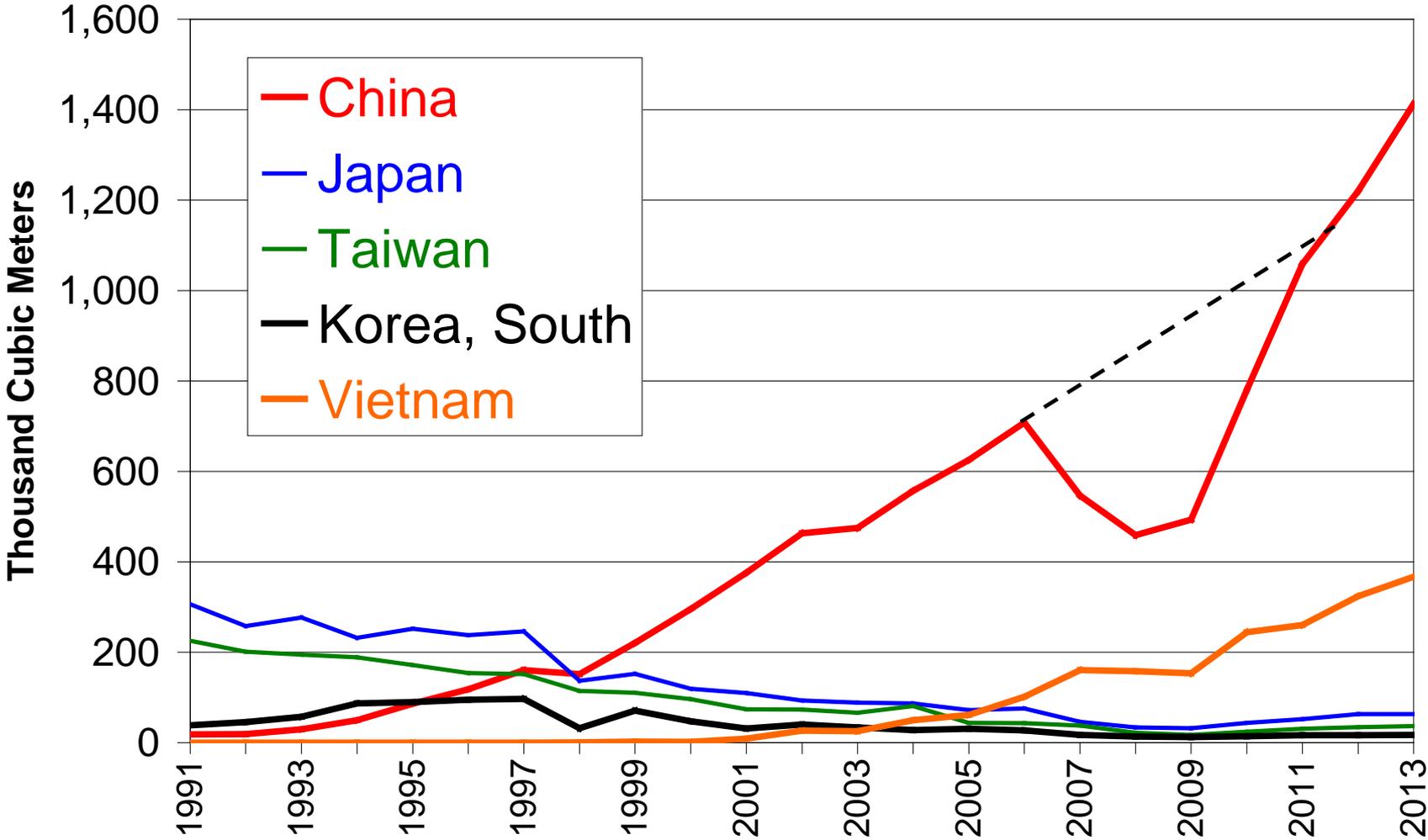




U.S. Hardwood Exports to China



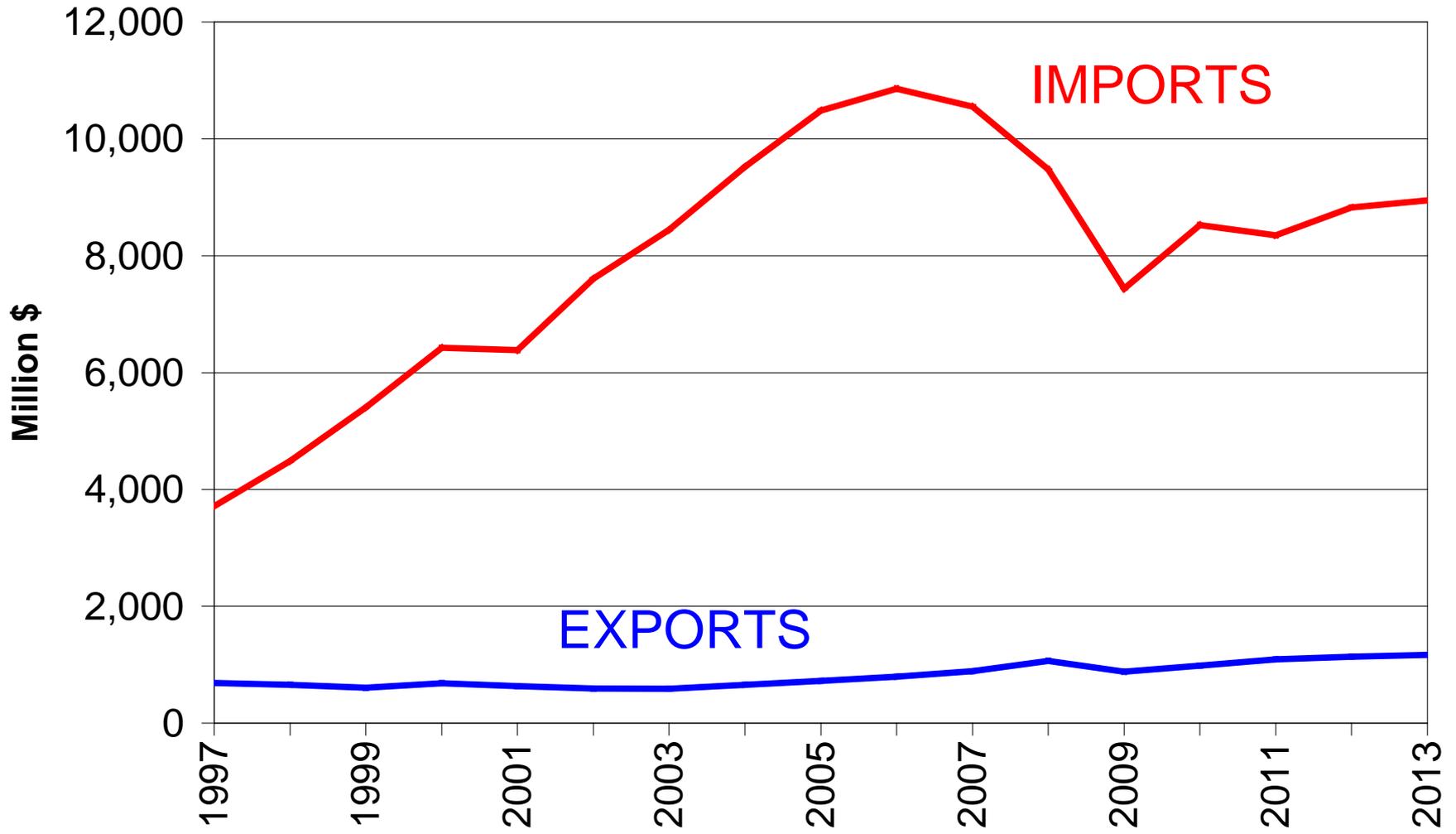
U.S. Hardwood Lumber Exports to Asia



(Source: Barrett, 2013)



Wood Furniture



(Source: Barrett, 2013)

20-Year Price Trends

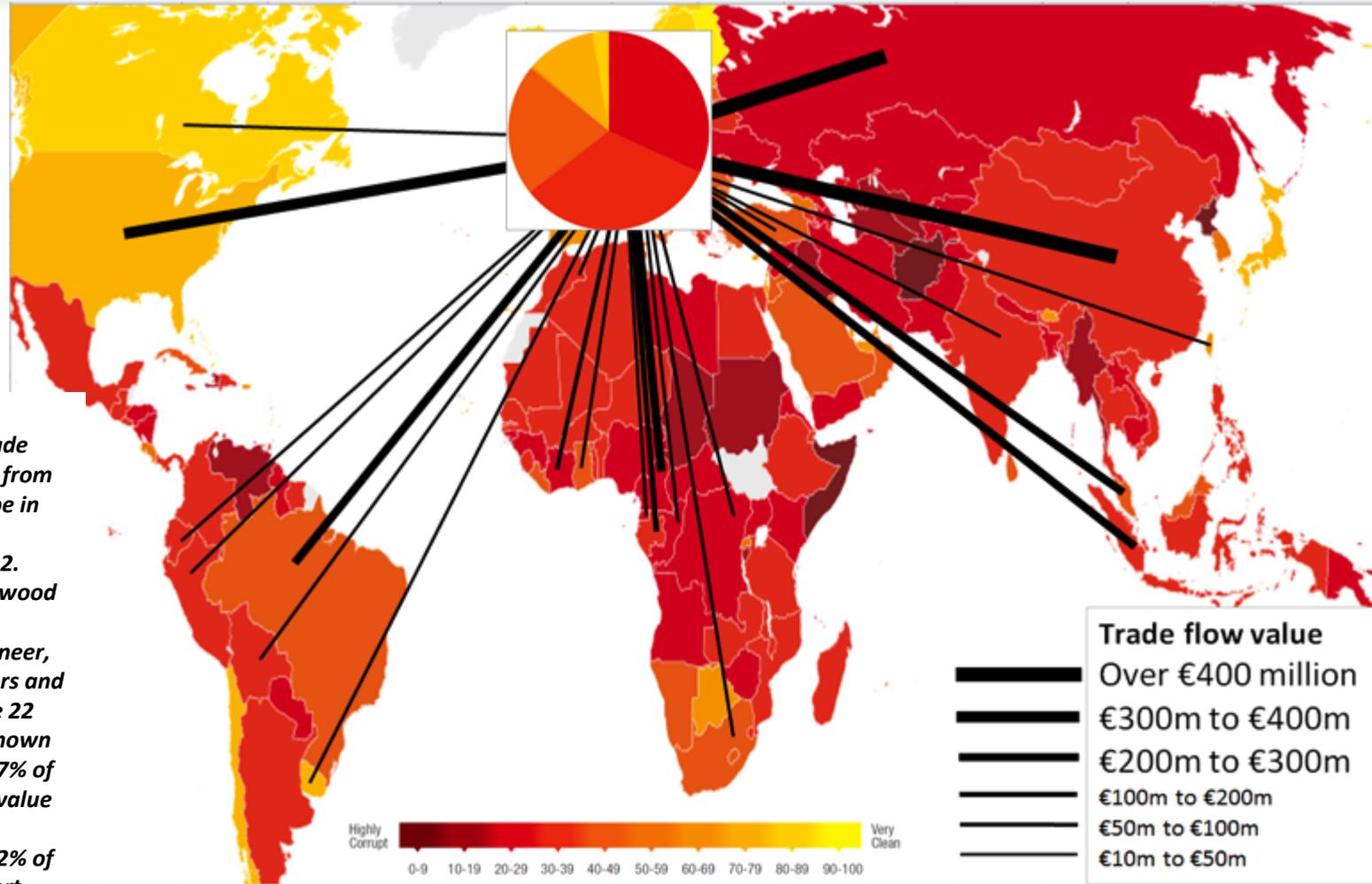
		Nominal Price Change	Real Price Change
Red Oak	FAS	+1.0%	-37.3%
	#1 Com	-1.2%	-38.7%
	#2 Com	+16.8%	-27.5%
White Oak	FAS	+21.6%	-24.5%
	#1 Com	+30.4%	-19.1%
	#2 Com	+41.4%	-12.3%
Ash	FAS	+6.8%	-33.7%
	#1 Com	+10.2%	-31.6%
	#2 Com	+27.1%	-21.1%
Poplar	FAS	+3.1%	-36.0%
	#1 Com	+8.1%	-32.9%
	#2 Com	+19.0%	-26.1%
Unsel. Hard Maple	FAS	+1.7%	-36.9%
	#1 Com	+15.5%	-28.3%
	#2 Com	+25.0%	-22.4%
Unsel. Cherry	FAS	-16.0%	-47.9%
	#1 Com	-19.6%	-50.1%
	#2 Com	-14.7%	-47.0%

What issues are important in today's export markets?

EUTR

- European Timber Regulation
 - On 3 March 2013, the EUTR came into effect
 - 1. Prohibits illegally harvested timber and derived products in the EU marketplace.
 - 2. EU traders must exercise due diligence.
 - 3. EU traders must keep records of their suppliers and customers.

€ value of EU imports of hardwood products by country of origin and Corruption Perceptions Index



Shows all hardwood trade flows into EU from outside Europe in excess of €50 million in 2012. Includes hardwood logs, sawn, mouldings veneer, plywood, doors and windows. The 22 trade flows shown account for 97% of EU27 import value from outside Europe and 82% of all EU27 import value.

Trade flow value

- Over €400 million
- €300m to €400m
- €200m to €300m
- €100m to €200m
- €50m to €100m
- €10m to €50m

Derived from FII analysis of Eurostat and Transparency International
AHEC Convention Budapest 2013

Lacey Act

- Lacey Act 1900 - prohibits trade in wildlife, fish, and plants that have been illegally taken, transported or sold.
- Lacey Act 2008 - amendment included anti-illegal-logging provisions.

Is U.S. wood legal?

- Legality
 - 2008 Seneca Creek Associates, LLC
 - 2014 AHEC budget
- Ownership

American Hardwoods and the EUTR

1. Prohibits illegally harvested timber and derived products in the EU marketplace.
 2. EU traders must exercise due diligence.
 3. EU traders must keep records of their suppliers and customers.
- How does the EUTR impact trade outside of the EU?
 - Voluntary Partnership Agreements (VPAs)
 - trade agreements with timber exporting countries

Forest Certification

- Certified wood has yet to achieve a critical mass in the marketplace.
- Driven primarily by the paper industry.
- Examples from Wisconsin:
 - Land base
 - State, County, and MFL
 - Value to the solid Industry?

A Hardwood Promotion Strategy

American Hardwood Environmental Profile



Data is provided on the environmental impact to deliver a defined consignment of lumber of a specified U.S. hardwood species to an overseas customer (1). Data is derived from the PE LCA study of U.S. hardwoods (2), the U.S. Forest Service Forest Inventory and Analysis (FIA) program (3), the Seneca Creek Risk Assessment of Legality and Sustainability in U.S. Hardwood Exports (4), and the FSC Risk Register (5). The issuing organisation should identify the consignment and species and enter the quantity and thickness(es) of lumber. The issuing organisation may choose to use standard statements on the legality and sustainability of individual U.S. species prepared by AHEC drawn from the above referenced sources, or amend these to include specific data on their own U.S. hardwood operations. The issuing organisation may also choose to use default U.S. average values for energy consumption of the kiln and for transport distance and mode or may enter values specific to their own hardwood operations or the supply chain to the customer.

Id. number(s) (6)		Cross-refs (7)	
Issued by (8)	American Hardwood Export Council, 3 St Michael's Alley, London EC3V 9DS, UK europe@americanhardwood.org	Issued to (9)	A.N. Other Hardwood Importer GmbH, Messeplatz 1 50679 Cologne, Germany T: + 49 221 821-0
Description of product (10)	Sawn wood of white oak HS 4407.91.00.63	Common name(s) (11)	American white oak
Scientific name (12)	Quercus alba	Country of harvest (13)	USA
Sub-national region of harvest (14)	Eastern United States with concentrations in Arkansas, Kentucky, Missouri, North Carolina, Tennessee, Virginia, and West Virginia (Figures 1 and 2)	Concession of harvest (15)	Multiple private forest owners

List up to 3 thicknesses & quantity in consignment:	Thickness		Quantity	
	1	1 inch	1	3
2	2 inch	1	Unit of quantity	
			cubic meters	

Legal compliance (16)

- The Seneca Creek Risk Assessment concludes that: there is negligible risk of any U.S. hardwood containing wood from illegal sources; stolen timber represents much less than 1% of total U.S. hardwood production; and there can be high confidence regarding legal compliance in the U.S. hardwood sector. See <http://www.americanhardwood.org/sustainability/sustainable-forestry/seneca-creek-study/>
- The FSC Global Risk Register concludes that the United States is Low Risk against all 4 FSC Controlled Wood criteria for legality. See <http://www.globalforestryregistry.org/map>.
- U.S. hardwood companies are regulated by the Lacey Act requiring declarations for all U.S. timber imports & imposing sanctions on U.S. companies found in possession of timber sourced contrary to the laws of any country.

Sustainable forestry (17)

- The PE LCA study concludes with respect to land-use change: "in the system under investigation the main material – wood – comes from naturally re-grown forests. The harvested areas had undergone several iterations of harvesting and re-growth. After harvesting, the land is returned to forest so there is no direct land use change to account for in the timeline of a few hundred years".
- On biodiversity impacts, the PE LCA study concludes that: "Conversion of any other commercial land into the hardwood forest would most probably be a positive impact on the land quality including biodiversity and associated ecosystem services".
- FIA data indicates that white oak makes up 14.3% of U.S. hardwood standing volume. The white oak resource is not only renewable, but is expanding. White oak in the U.S. forest is growing at a rate of 39.8 million m³/per year while the harvest is 21.3 million m³ per year. The net volume (after harvest) is increasing by 18.5 million m³ each year. According to FIA data, annual forest growth exceeds harvest in all states with the exception of Ohio (Figure 2). A state-wide strategy is being implemented in Ohio to increase regeneration of oak as forest composition in the state is currently shifting towards maple and tulipwood and oak stands are regarded as having particular wildlife benefits.
- The Seneca Creek Risk Assessment concludes that there is Low Risk of U.S. hardwoods being derived from any of the five categories of controversial forest source identified in the FSC Controlled Wood standard.

Figure 1: Distribution of white oak

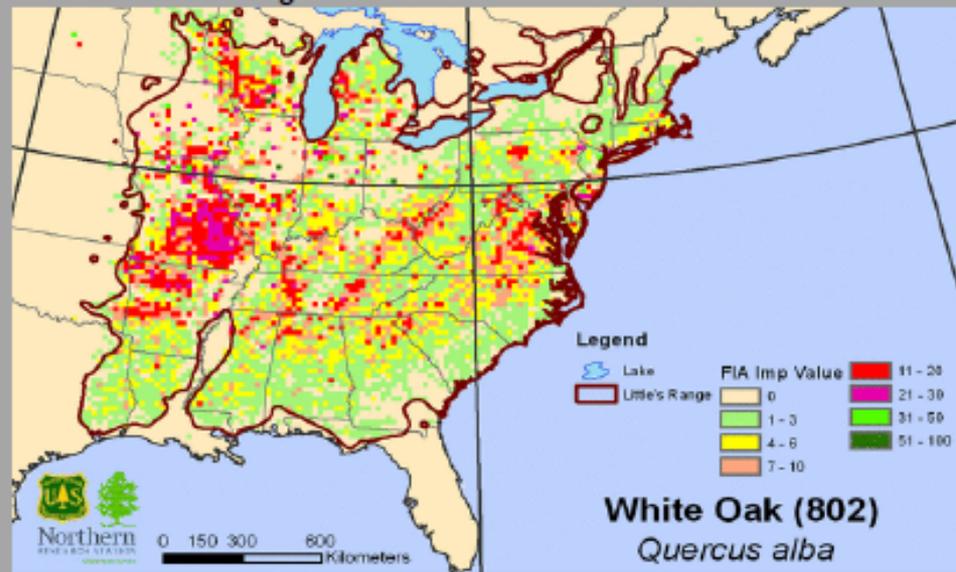
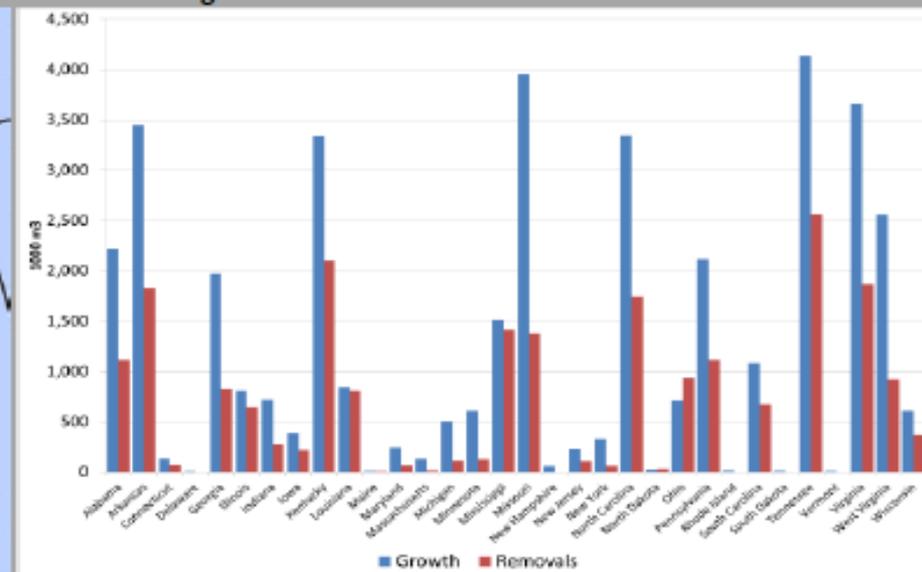


Figure 2: Growth and removals of white oak



Life cycle assessment (cradle to gate plus transport) (18)

The following charts show the environmental impact of delivering this consignment to the overseas customer. The data is derived from the ISO-conformant LCA model prepared by PE. The Parameters table summarises all values entered by the issuing organisation. All other parameters required to calculate the environmental profile are derived and fixed in the model by PE. Results are categorised according to process steps (forestry, sawmill, kiln drying, transport forest to kiln, transport kiln to customer, and carbon uptake).

Impact category:	Global Warming Potential	Primary Energy Demand from Resources	Primary Energy Demand from Renewables	Acidification Potential	Eutrophication Potential	Photochemical Ozone Creation Potential	Abiotic Depletion Potential (Elements)	Abiotic Depletion Potential (Fossil)
Unit	kg CO2-equiv.	MJ	MJ	kg SO2-equiv.	kg PO42-equiv	kg Ethene-equiv.	kg Sb-equiv.	MJ
1" lumber - 1 cubic meter								
Total	E: 474 CU: -1162	6860	9900	5.25	0.48	0.38	0.0000295	6090
Data by process steps								
2" lumber - 1 cubic meter								
Total	E: 831 CU: -1162	12300	15100	8.03	0.68	0.56	0.0000576	10300
Data by process steps								
3" lumber - 1 cubic meter								
Total	E: 1272 CU: -1162	19100	21500	11.50	0.92	0.78	0.0000923	15500
Data by process steps								
Key	 Carbon uptake Forestry Kiln drying Sawmill Transport forest-kiln Transport kiln-customer							

Description of impact categories	
Global Warming Potential	Often termed "carbon footprint". Expressed in kg of carbon dioxide equivalent. The sum of the warming potential of all gases emitted (including carbon dioxide, methane and water vapour) which influence the energy balance of the atmosphere leading to increased average temperatures. Data is reported separately for all greenhouse gas emissions (E) from processes to extract, process and deliver the timber and for carbon uptake (CU) during tree growth (which is a negative number in GWP terms).
Primary energy demand (resources)	Use of fossil fuels in mega-joules. The impact category has limited application on its own because it does not differentiate between energy sources (e.g. oil or coal). Nor does it represent "embodied energy". However it is an important driver of other environmental impacts including global warming, acidification, eutrophication, and resource depletion.
Primary energy demand (renewables)	Use of energy derived from renewable raw materials in mega-joules.
Acidification Potential	Potential for acidification of soil and damage to plant health resulting from emissions to air, water and land of acidifying compounds such as sulphur dioxide (SO ₂) and nitrogen oxides (NO _x). Expressed in kg of sulphur dioxide equivalent.
Eutrophication Potential	Nutrient enrichment of waters by release of phosphorous or nitrogen compounds (such as fertilisers) and organic matter (e.g. in effluents). This causes excess growth of plant matter and depletion of oxygen levels in the water. Expressed in kg of phosphate equivalent.
Photochemical Ozone creation Potential	Often referred to as "photochemical smog". Increased levels of ozone at ground level arise through the reaction of volatile organic compounds, for example ethene, with oxygen compounds or oxides of nitrogen in air and under the influence of sunlight. The problem afflicts modern cities and impacts human health and reduces vegetative production. Expressed in kg of ethene equivalent.
Abiotic depletion potential (Elements)	Measures depletion of non-renewable mineral resources. Compiled from the ratios of annual production to size of remaining reserves for all minerals consumed. Expressed in relation to the ratio for the mineral Antimony (SB).
Abiotic Depletion Potential (Fossil)	Measures depletion of non-renewable fossil resources in mega-joules.

Parameters and assumptions										
Kilning	Kiln Efficiency (%) (19)	53	Kiln Thermal Energy (kwh/day,MBF,inch) (20)		25	Kiln Power (kwh/day,MBF,inch)		17	Kilning assumptions	Default US hardwood industry average calculated by PE drawing on data from AHEC members
	Kiln fuel for thermal energy (%) (22)		Biomass	Heavy fuel oil	Light fuel oil	Natural gas				
		90	0	0	10					
Transport		Truck	Rail	Ship	Transport assumptions					
	Forest to sawmill (km)	116			Default US hardwood industry average for US hardwood drawn from AHEC-PE LCA study					
	Sawmill to kiln (km)	103			Default US hardwood industry average for US hardwood drawn from AHEC-PE LCA study					
	Kiln to port (km)	1173			Central point of US white oak harvest region to Norfolk, the leading US East Coast port for white oak					
	Port to port (km)			6818	Sea distance from Norfolk Terminal to Bremerhaven Terminal					
	Port to customer (km)	350			Road distance from port of Bremerhaven to Cologne					

Market Outlook

Global Economic Improvement

- Europe coming out of recession
 - Benefits direct lumber sales to EU mfrs
 - Benefits lumber sales to Chinese mfrs.
- Asian domestic demand slower
 - But much untapped potential
- U.S. economic recovery driving mfg. boom in Mexico and some U.S. repatriation
 - Both markets more loyal to NA hardwoods

Sustainability/Green Movement

- U.S. hardwoods among greenest building materials available worldwide
 - Without or without 3rd-party certification
- EUTR, Lacey Act favor U.S. hardwoods
- AHEC promotion
 - LCA favors increased utilization in green building programs

U.S. Production

- Last year's price increases resulted mostly from industry inability/unwillingness to increase production
- External constraints will restrain production for another year
 - Capital, lending, timber prices, logger issues

Short-Term (this year)

- Domestic lumber demand will seasonally taper towards winter
 - Flooring plants starting to fill up
 - Home construction will wind down
- Industrial products and exports to Asia will more than offset domestic grade lumber slowing through mid-November
- Production increases will lag demand
 - Prices generally firming through year-end

Long-Term (five years)

- Demand outlook very positive
 - Global markets improving
 - U.S. hardwoods capturing large % of global green markets
- Industry will have first opportunities in a decade to upgrade and modernize
- Measured production response will determine whether “real” price increases are sustainable

Does this apply to WI?

- WI Hardwoods
 - Freight disadvantage for export
 - Central advantage for domestic use
 - Color, grain, uniformity, etc.
- WI Pulp and Paper
 - Older and smaller equipment
 - Specialty products
 - Close to markets
 - Secondary paper manufacturing hub

Why are WI Wood Products the Right Choice?

- When compared to other non-wood substitute materials:
 - WI Wood Products are abundant
 - WI Wood Products are renewable
 - WI Wood Products are natural
 - WI Wood Products use less energy to manufacture
 - WI Wood Products create less pollution during manufacturing
 - WI Wood Products are carbon neutral
 - WI Wood Products are beautiful!

Contact Information

Scott Bowe, PhD

Professor & Wood Products Specialist
Department of Forest and Wildlife Ecology
College of Agricultural and Life Sciences
University of Wisconsin
226 Russell Laboratories
1630 Linden Drive
Madison, WI 53706-1598, USA
Phone: 608-265-5849
Email: sbowe@wisc.edu

