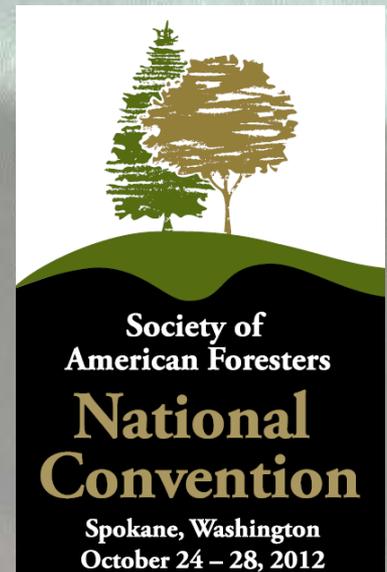


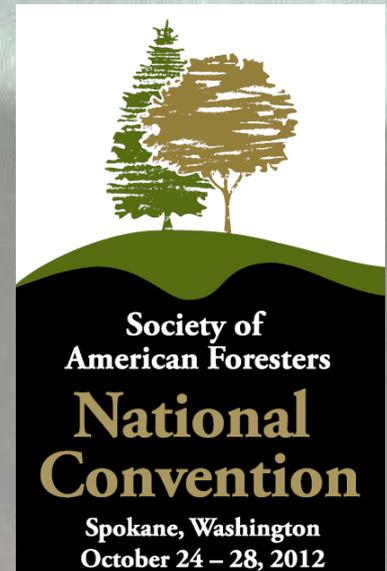
2012 Baseline Outlook to 2030 for Forest Products and Timber Markets

Peter J. Ince, USFS, Forest Products Lab
Prakash Nepal, Louisiana State University
With additions by
E.M. (Ted) Bilek, USFS, Forest Products Lab



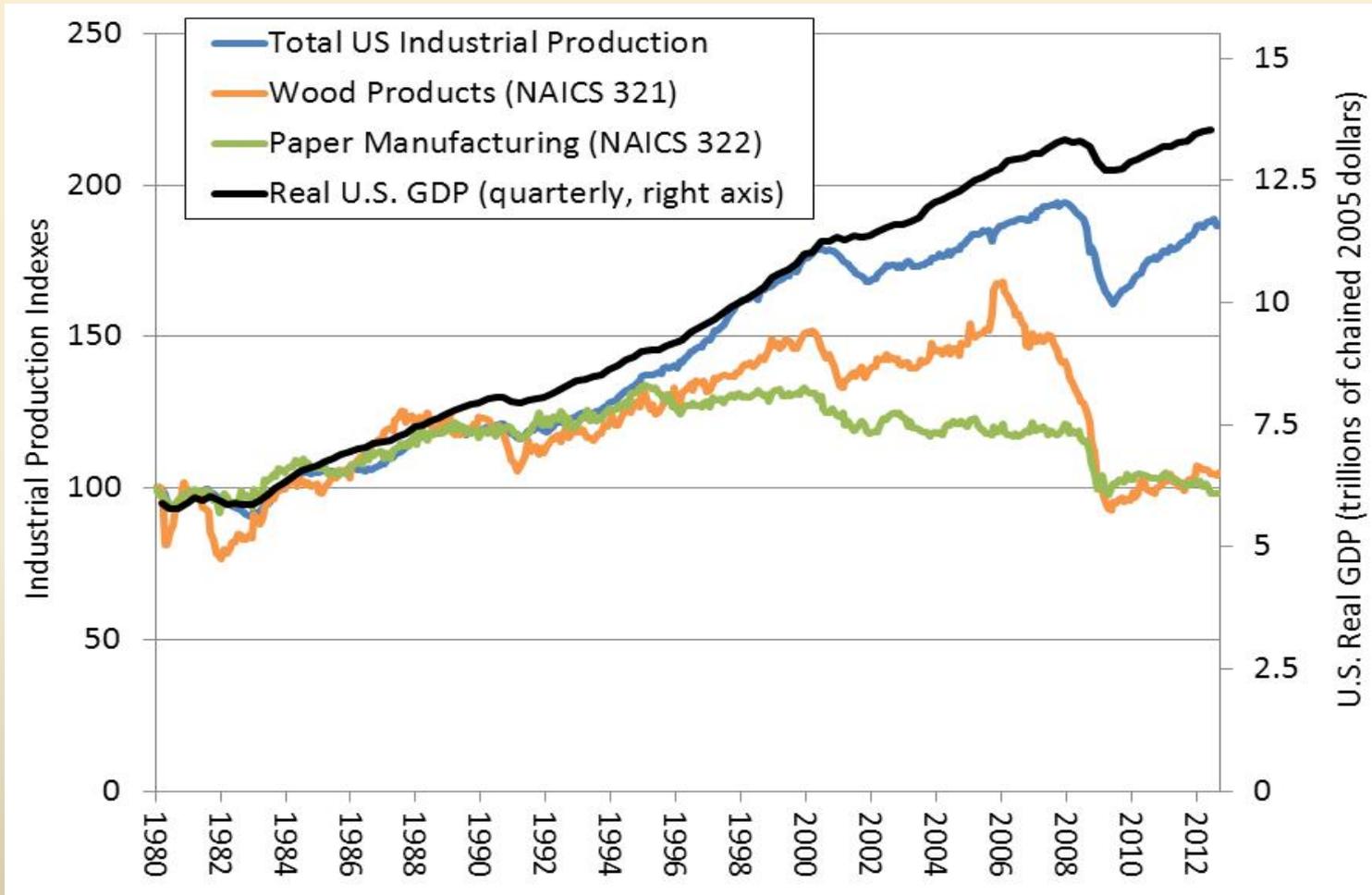
Objective:

To provide new 2012 baseline forest sector market outlook that includes impacts of the recession, collapse in home construction, and shifts in currency exchange rates.



Recent trends

Output of forest products (NAICS 321, 322) has been depressed. . .

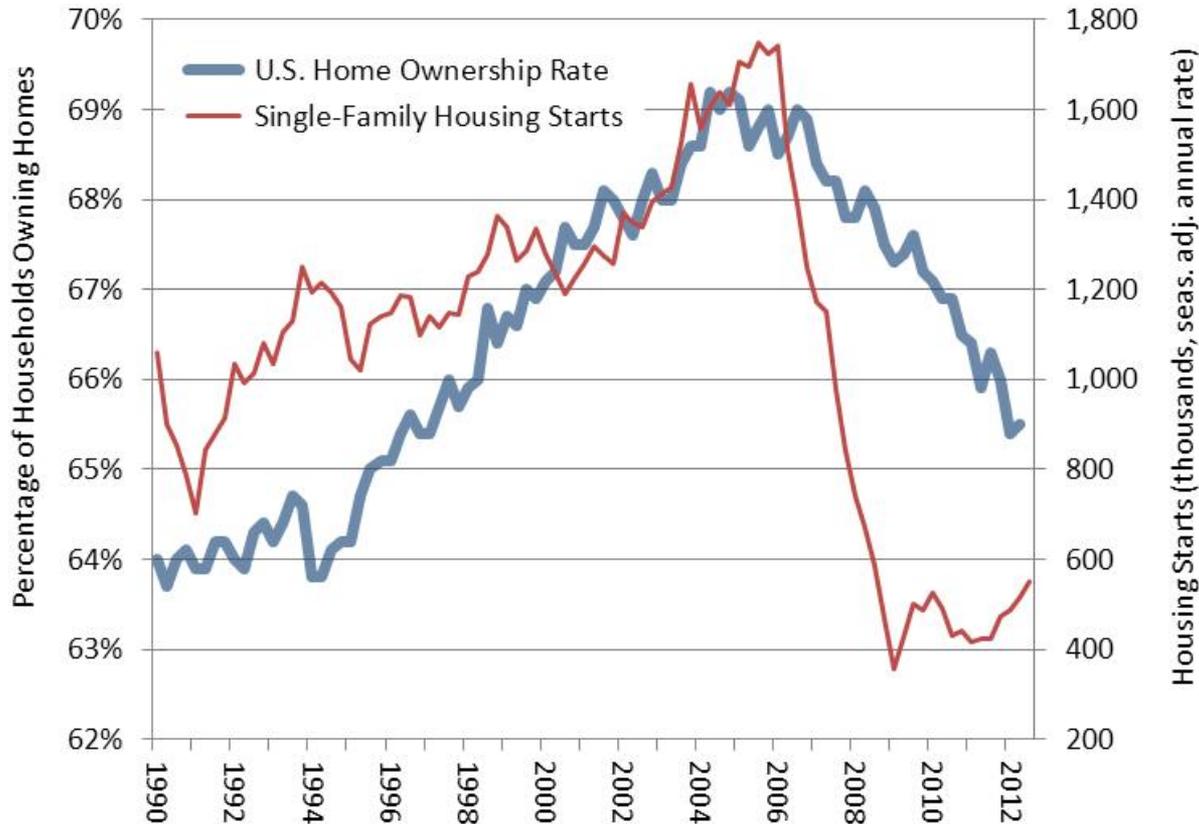


Data updated to September, 2012

Sources: U.S. Bureau of Economic Analysis (GDP) and Federal Reserve (industrial production)

Recent trends

U.S. home construction and ownership rates have collapsed since 2005 . . .



***Our 2012
baseline
includes
housing
impacts on
wood
product
demands***

Source: U.S. Census Bureau, quarterly basis
(Data updated to Sept. 2012)

Recent trends

Revolution in oil and gas technology: hydraulic fracturing and horizontal drilling. . .

OIL: THE NEXT REVOLUTION

THE UNPRECEDENTED UPSURGE OF OIL PRODUCTION
CAPACITY AND WHAT IT MEANS FOR THE WORLD

LEONARDO MAUGERI



- ***Diminished likelihood of “peak oil”***
- ***With oil and gas supplies increasing, our 2012 baseline outlook assumes modest growth in wood energy to 2030, based on GDP growth***



HARVARD Kennedy School

BELFER CENTER for Science and International Affairs

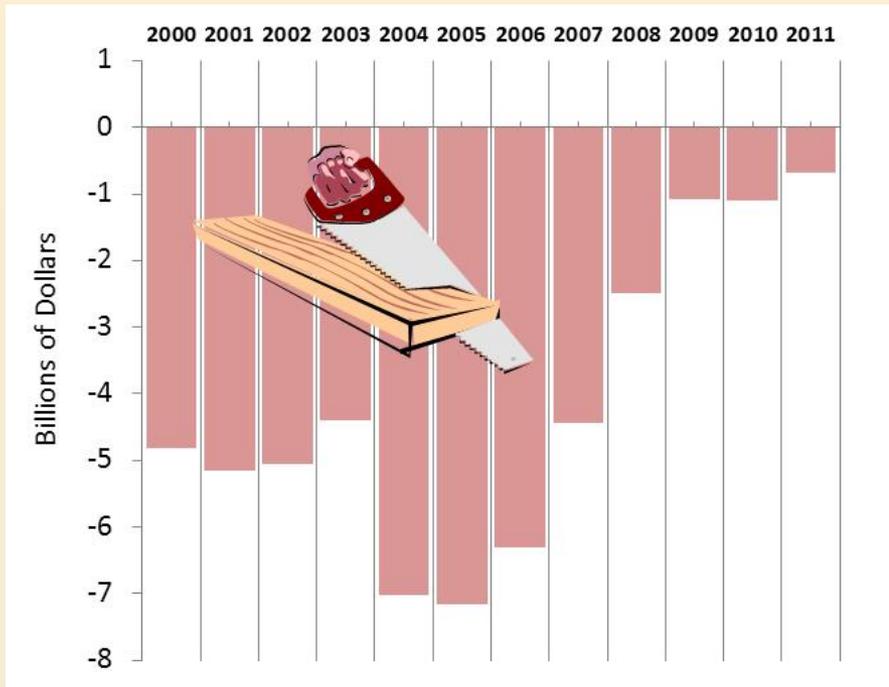
<http://belfercenter.ksg.harvard.edu/files/Oil-%20The%20Next%20Revolution.pdf>

JUNE 2012

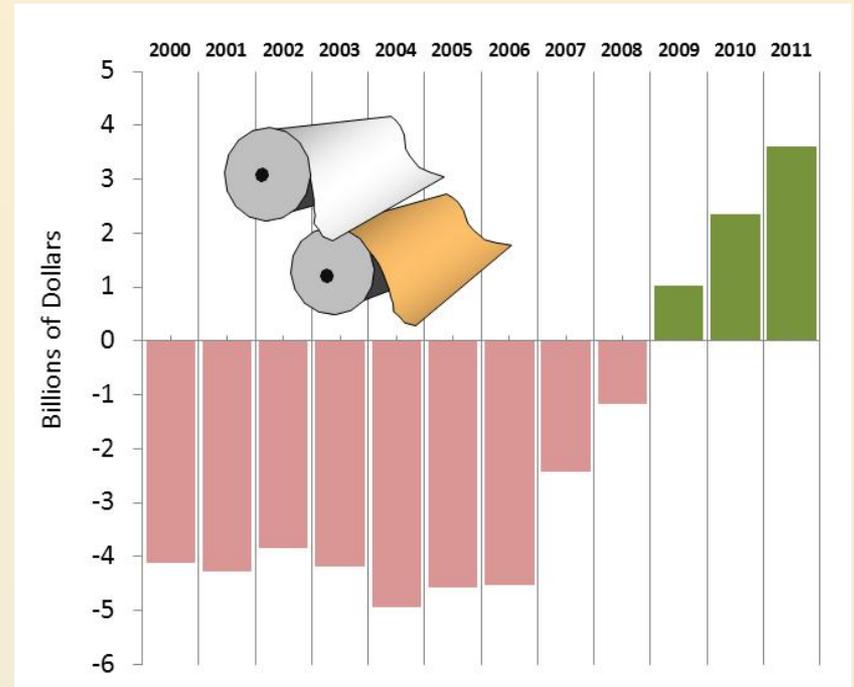
Recent trends

U.S. forest products net trade has improved since 2005, with a weaker U.S. dollar . . .

Net trade (export minus import)



NAICS 3211 (sawmill & wood products)

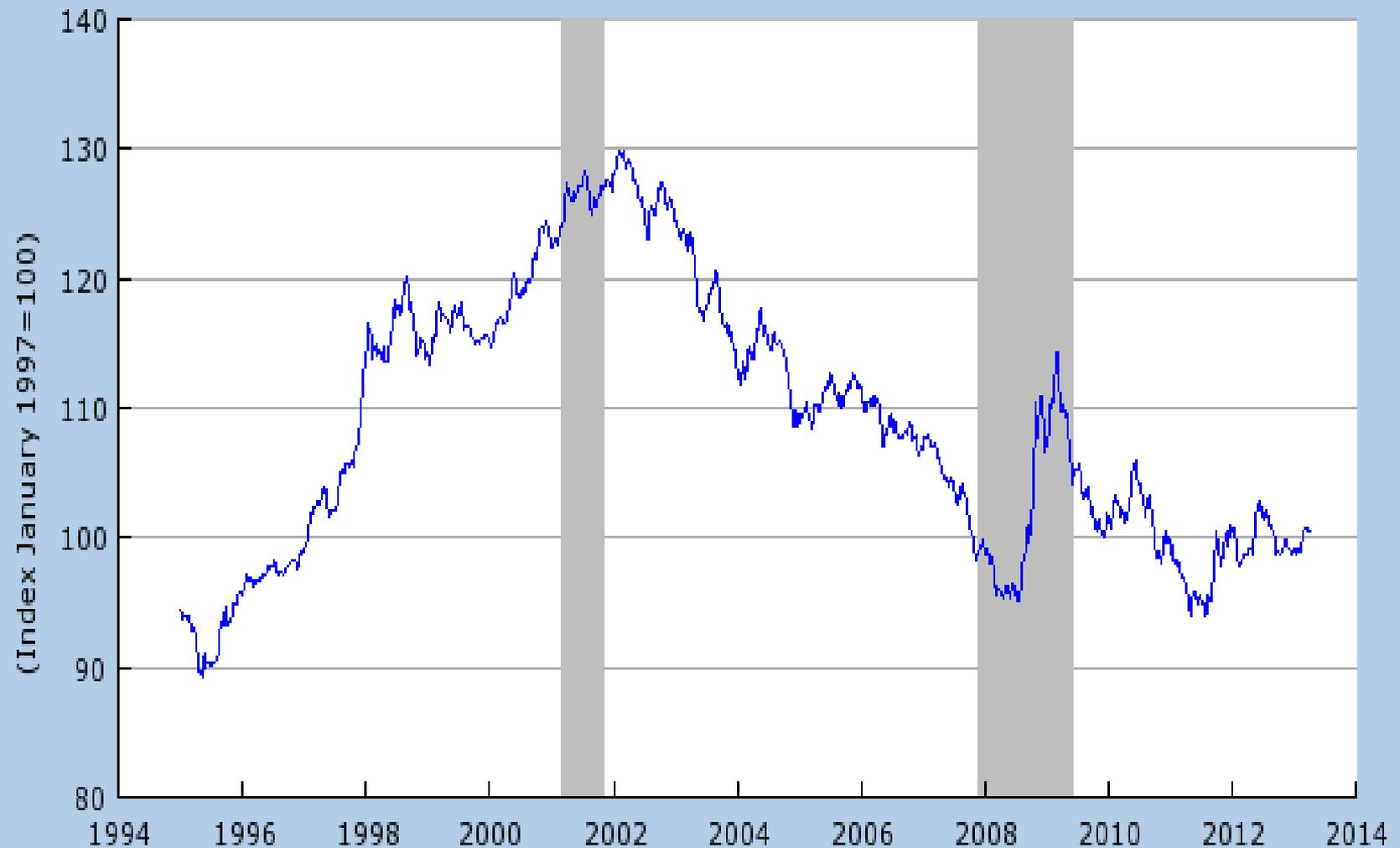


NAICS 3221 (pulp, paper & paperboard mill products)

Source: International Trade Administration, Trade Stats Express

Our 2012 baseline includes impacts of currency exchange rates on trade

Trade Weighted U.S. Dollar Index: Broad (TWEXB)
Source: Board of Governors of the Federal Reserve System



Shaded areas indicate US recessions.

2013 research.stlouisfed.org



Methods:

We applied the same global economic model (USFPM/GFPM) that was used in the Forest Service 2010 RPA Assessment, but we revised economic growth, housing starts and wood demands to include recent economic trends

Future of America's Forests and Rangelands

Forest Service
2010 Resources Planning Act Assessment

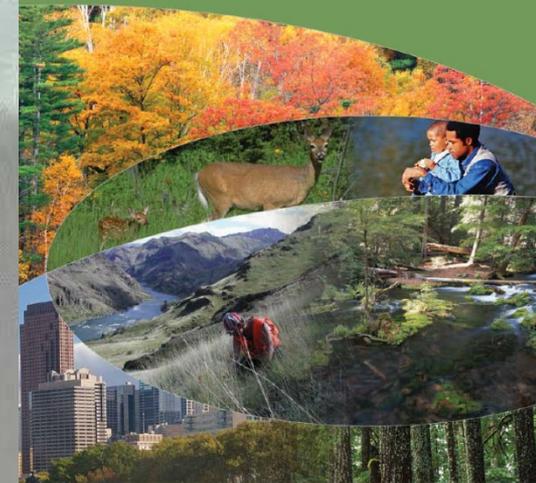


2010 RPA report
GTR-WO-87

U.S. Forest Products Module

A Technical Document Supporting
the Forest Service 2010 RPA Assessment

Peter J. Ince, Andrew D. Kramp, Kenneth E. Skog,
Henry N. Spelter, and David N. Wear



USFPM research report
FPL-RP-662

Basic Assumptions for 2012 Baseline Outlook:

□ 2012 USDA Baseline (Economic Research Service)

- U.S. and global GDP and population: global growth rates exceed U.S. growth rates**
- Global currency exchange rate outlook: weaker dollar continues, favoring U.S. exports**

□ U.S. housing starts rebound to historical trendline

- ~1.1 million single family housing starts by 2020 (double current)**

□ Global wood energy demands follow GDP

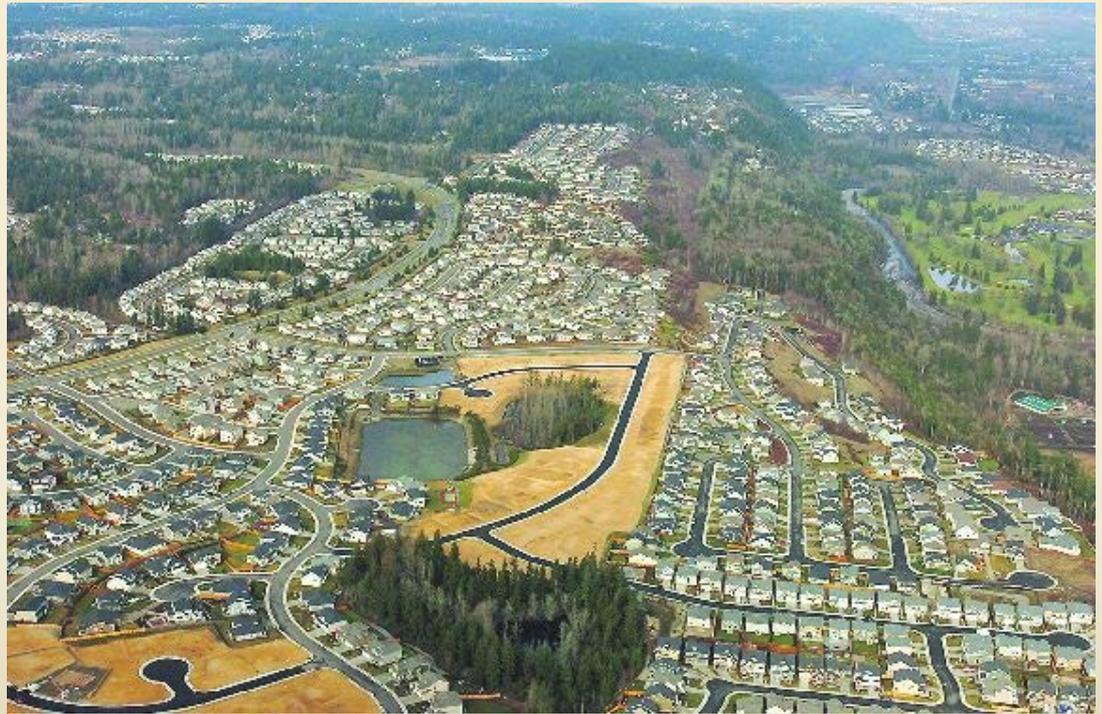
- Big “surge” in biomass due to “peak oil” not anticipated before 2030**

□ Timber

- Growth rates adjust to stocking density, while growing stock inventory adjusts to growth, removals (including harvest) and timberland area changes (with declining timberland area due mainly to urbanization)**

Assumed annual rates of decline in timberland area by U.S. sub-region . . .

- **Continued decline in timberland area mainly due to urbanization**
 - **North: -0.15%/yr.**
 - **South: -0.24%/yr.**
 - **West: -0.12%/yr.**
- **Based on forest land area projections for RPA A1B scenario in GTR-SRS-141 (Wear 2010)**

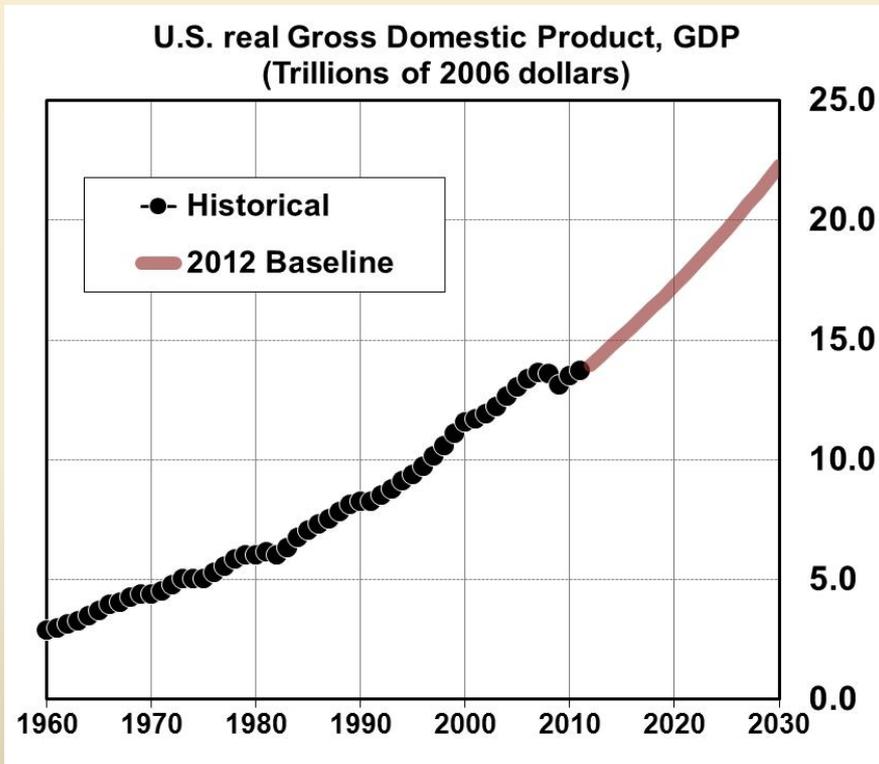


Portions of the 1,500-acre Sunrise development between Puyallup and Orting, Washington, that once belonged to timberland company Pope Resources.

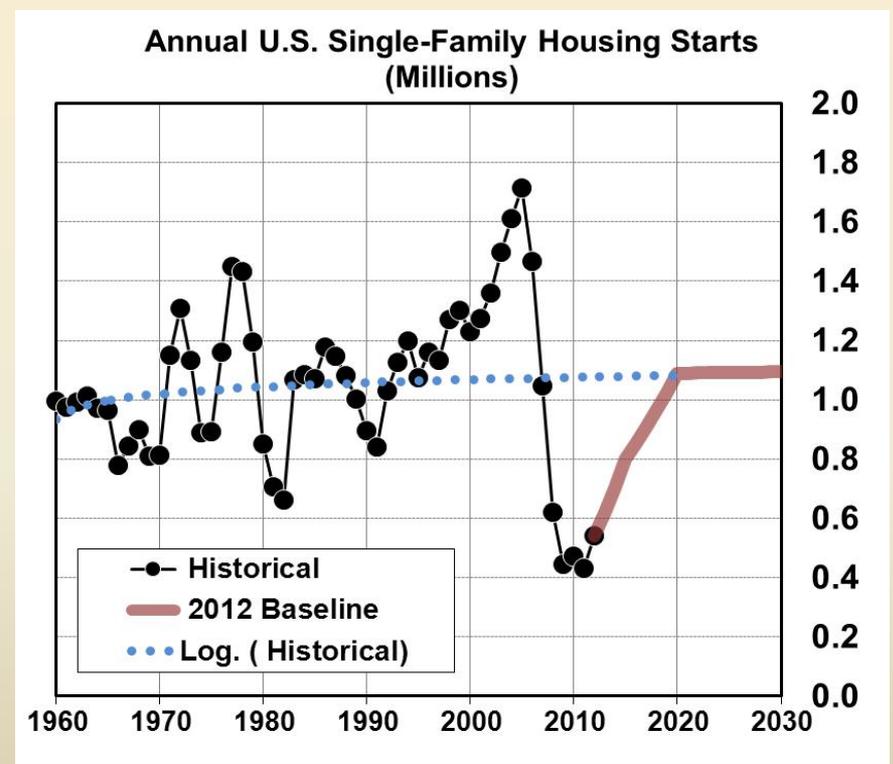
Photo courtesy of Tacoma News – *The News Tribune*

Real GDP and Housing growth

USDA 2012 Baseline outlook for Real U.S. GDP growth



Housing rebounds to lognormal trend by 2020, but stays below historical peaks . .



Sources: Bureau of Economic Analysis (GDP data), USDA Baseline, ERS (GDP projections), Census Bureau (Housing Starts data), Housing projections based on recovery to logarithmic trendline by 2020.

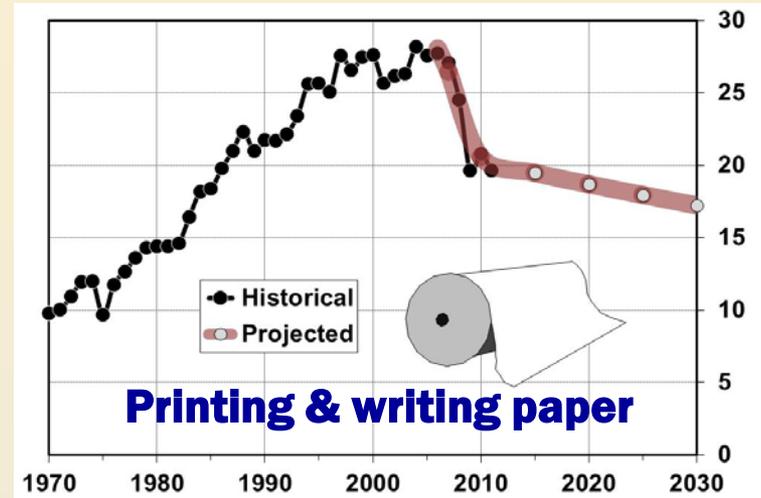
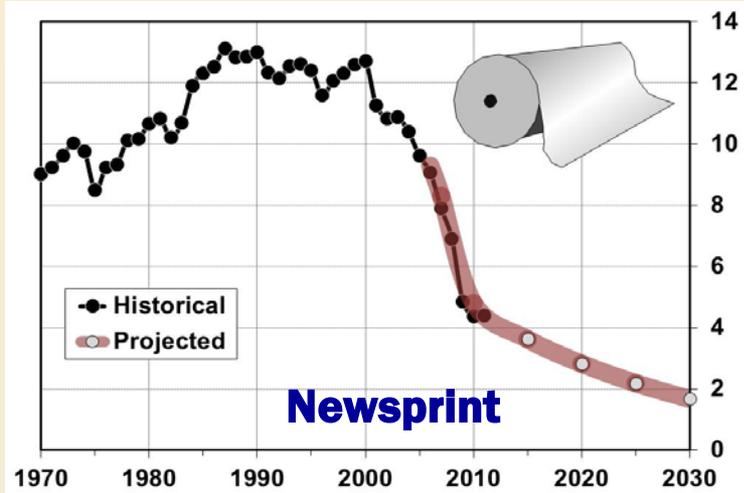
Results of analysis . . .

Charts showing historical data (e.g. forest products data from UN FAOSTAT) and USFPM/GFPM projections . . .



Results:

U.S. Paper & Paperboard Consumption (MM tonnes/yr.)

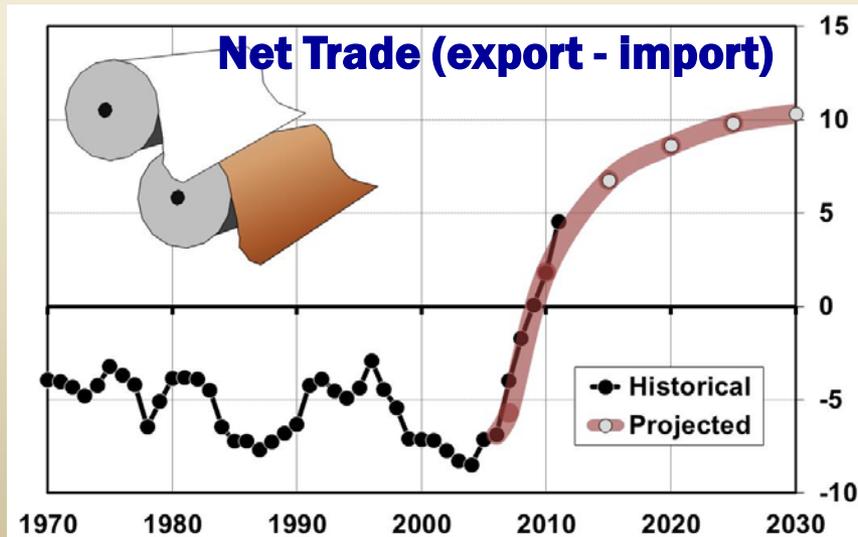
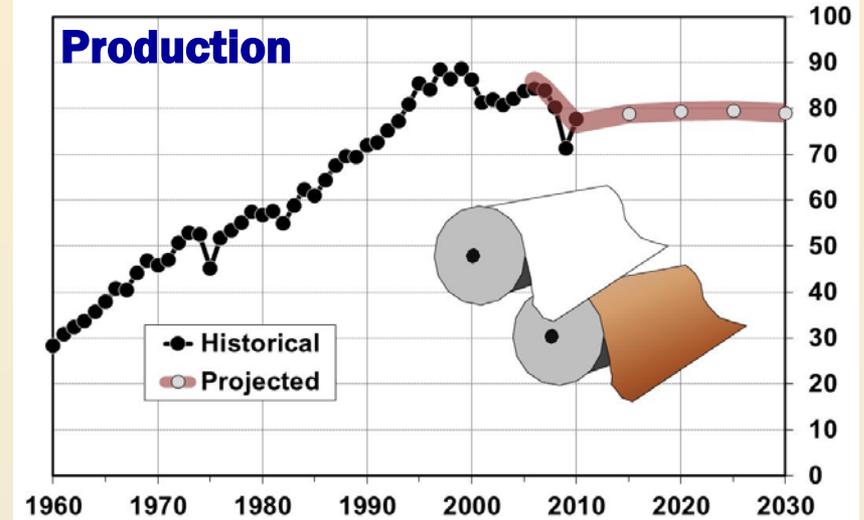
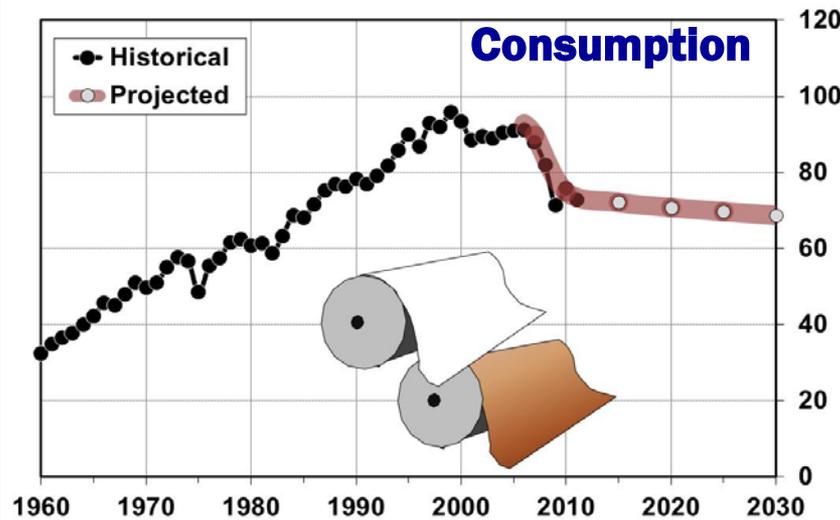


Sources:

1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

Results:

Total Paper & Paperboard Consumption, Production & Net Trade (MM tonnes/yr.)

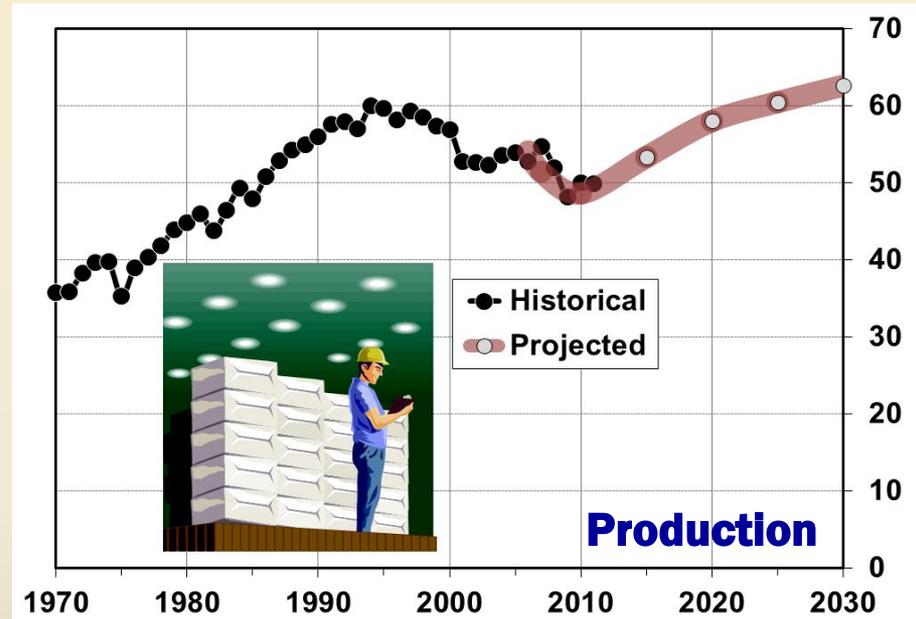
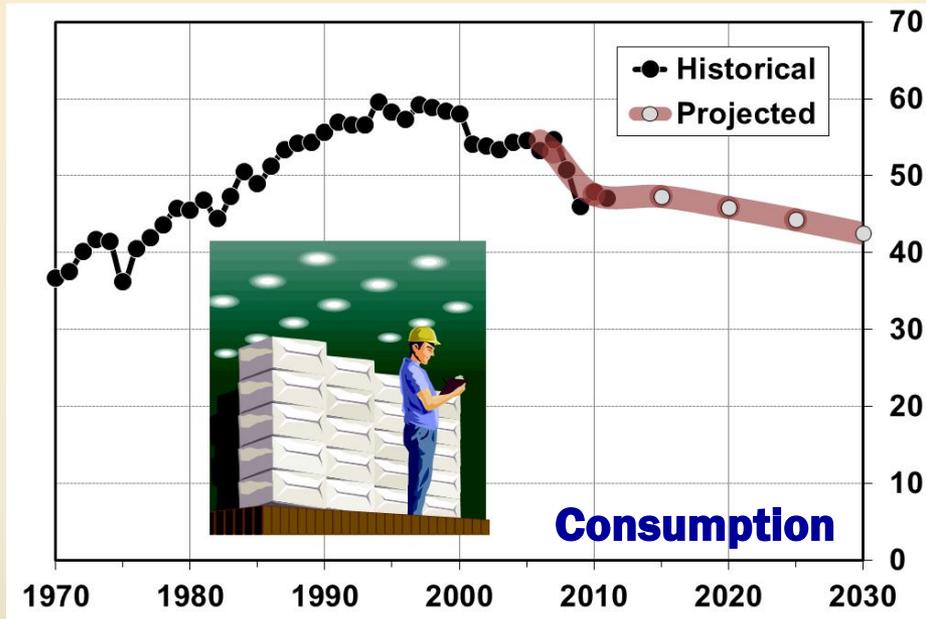


Sources:

1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

Results:

Wood Pulp Consumption & Production (MM tonnes/yr.)

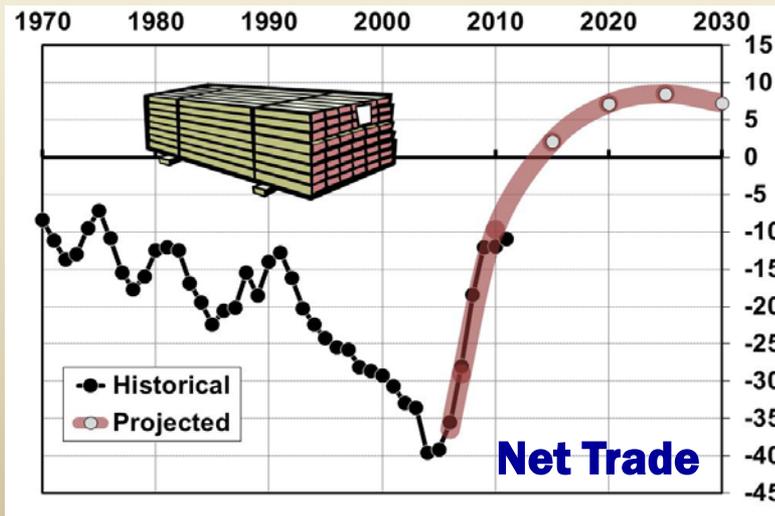
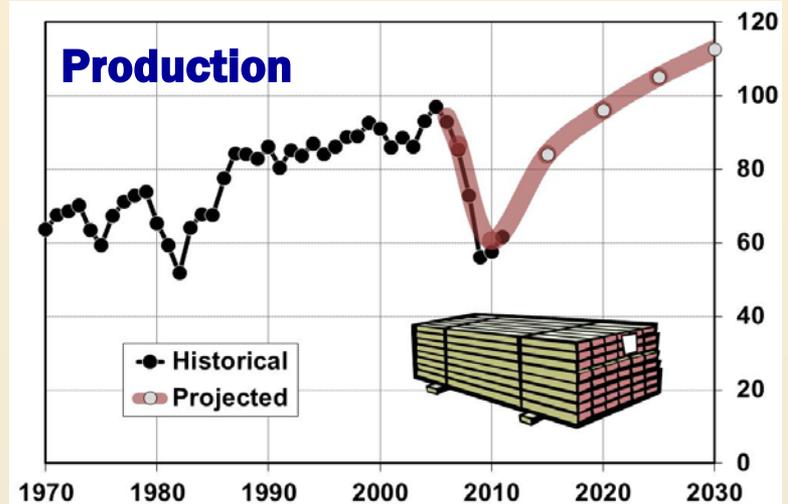
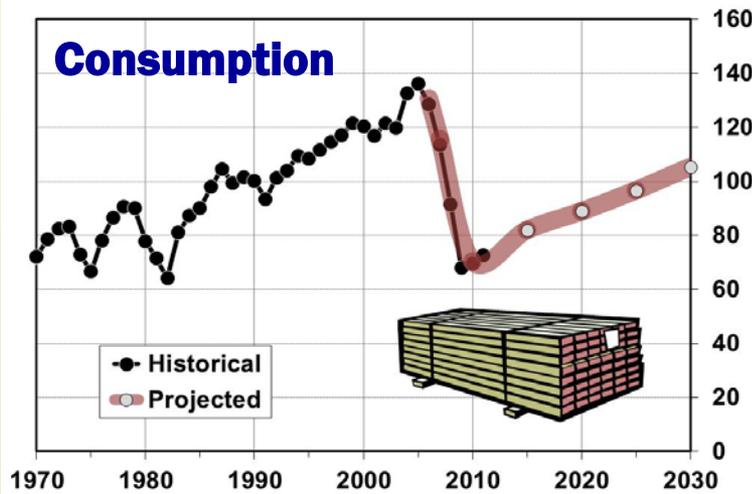


Sources:

1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

Results:

Lumber Consumption, Production & Net Trade (MM cu. m./yr.)

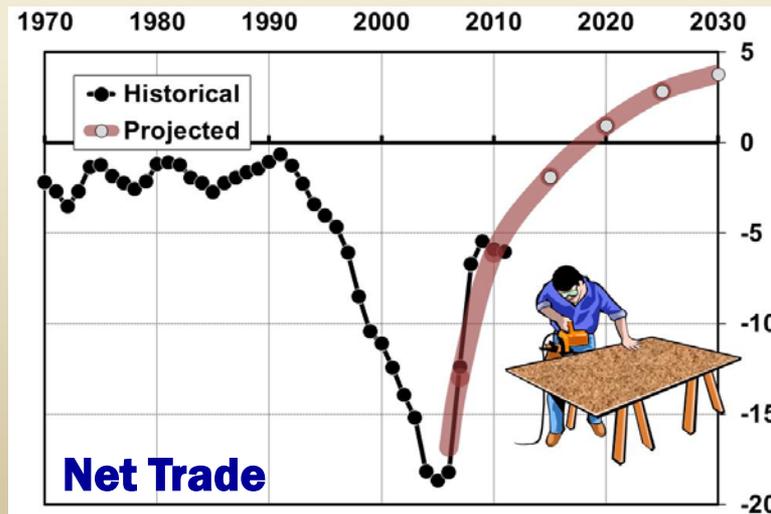
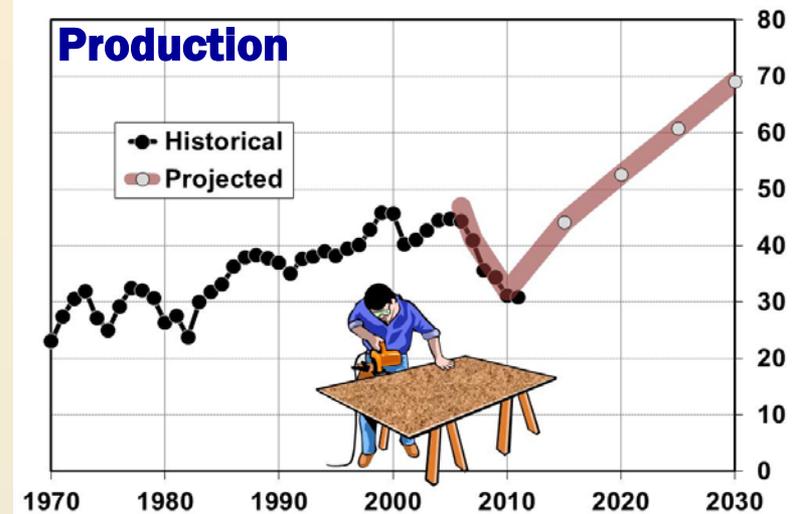
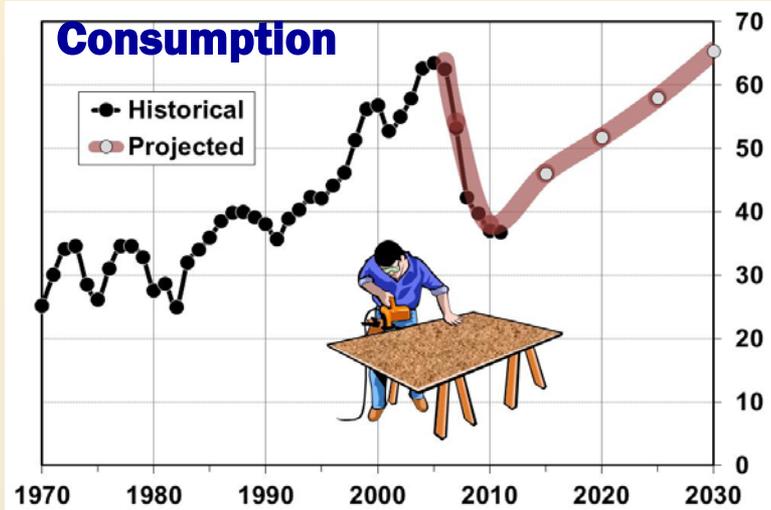


Sources:

1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

Results:

Wood Panel & Veneer Products Consumption, Production & Net Trade (MM cu. m./yr.)



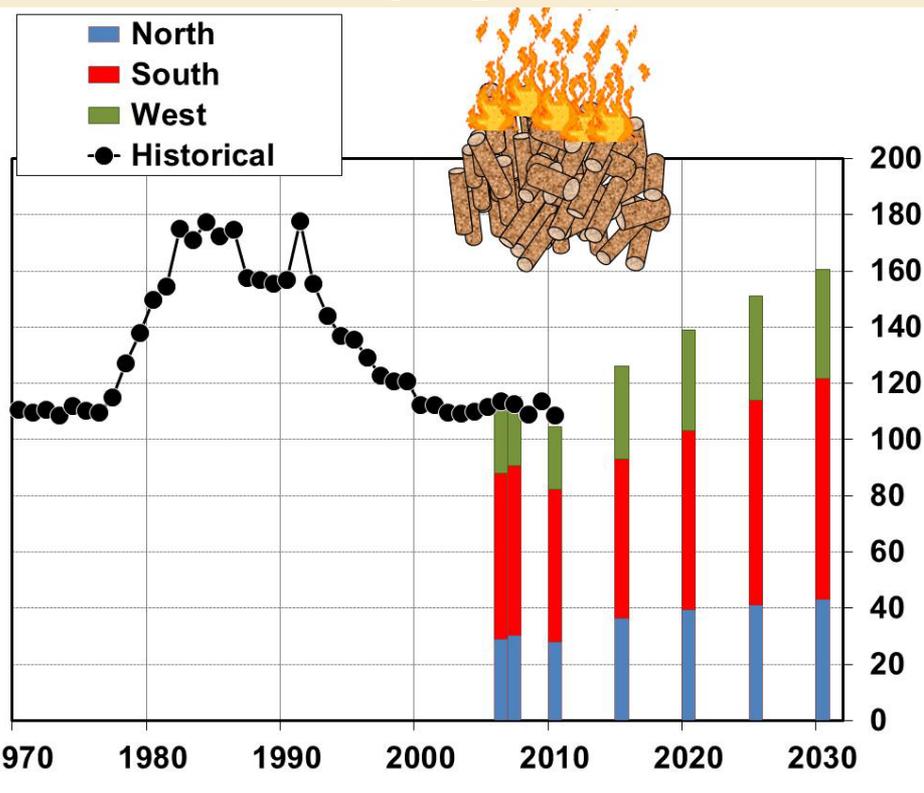
Sources:

1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

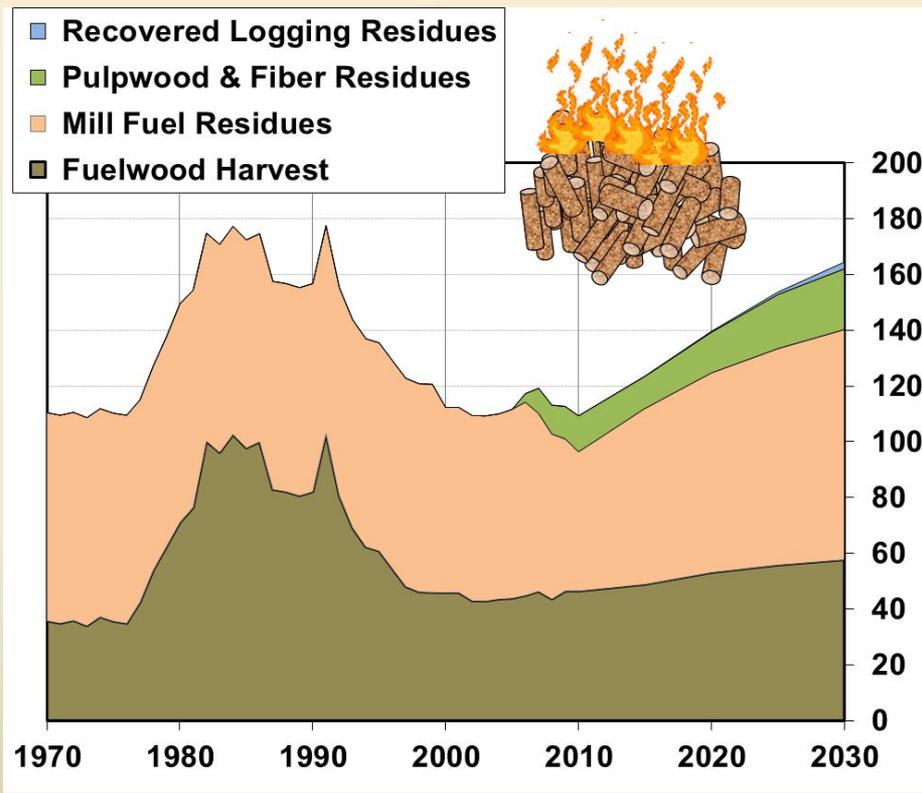
Results:

Wood Fuel Feedstock Production by Region and by Source (MM cu. m./yr.)

Production by region



Production by Source

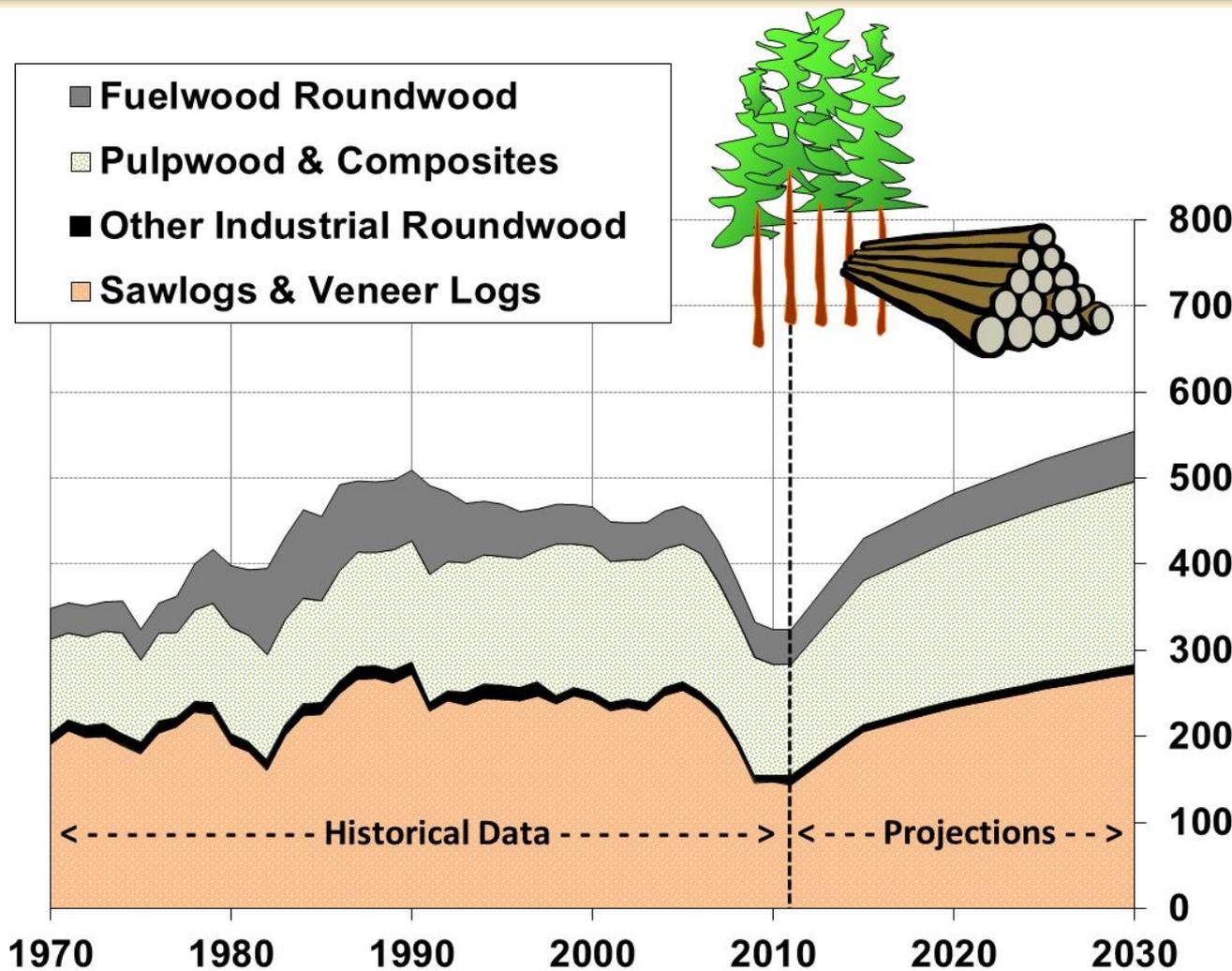


Sources:

1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

Results:

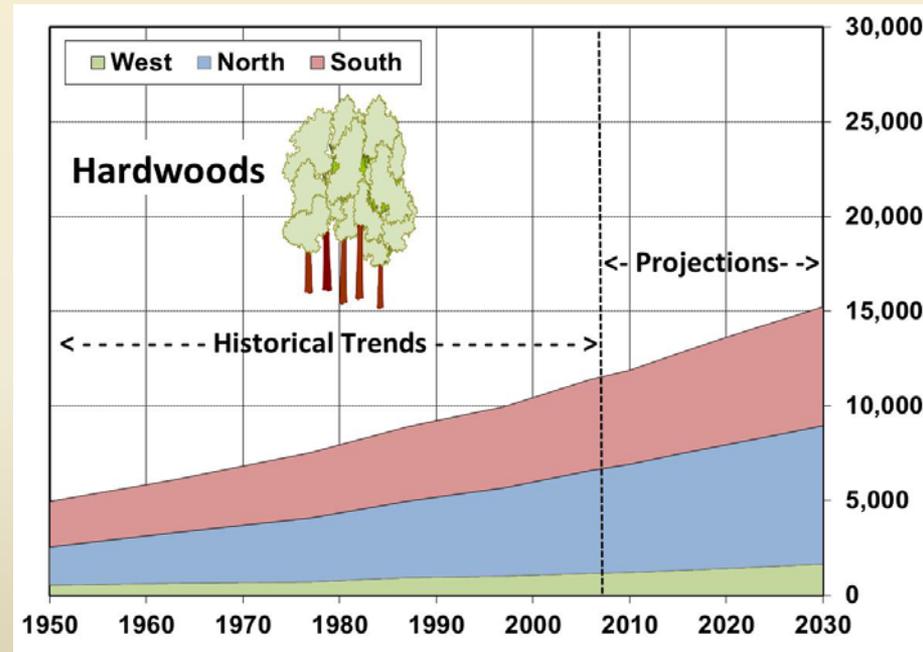
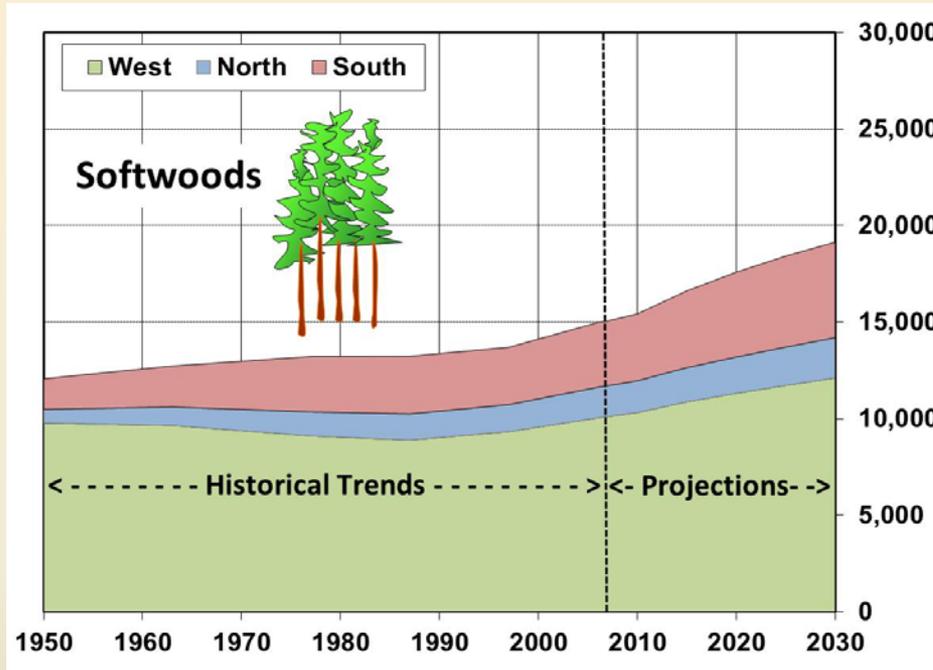
Annual U.S. Timber Harvest Volumes (MM cu. m./yr.)



Sources:
1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

Results:

U.S. Timber Growing Stock Inventory Volumes on Timberland (MM cu. m.)

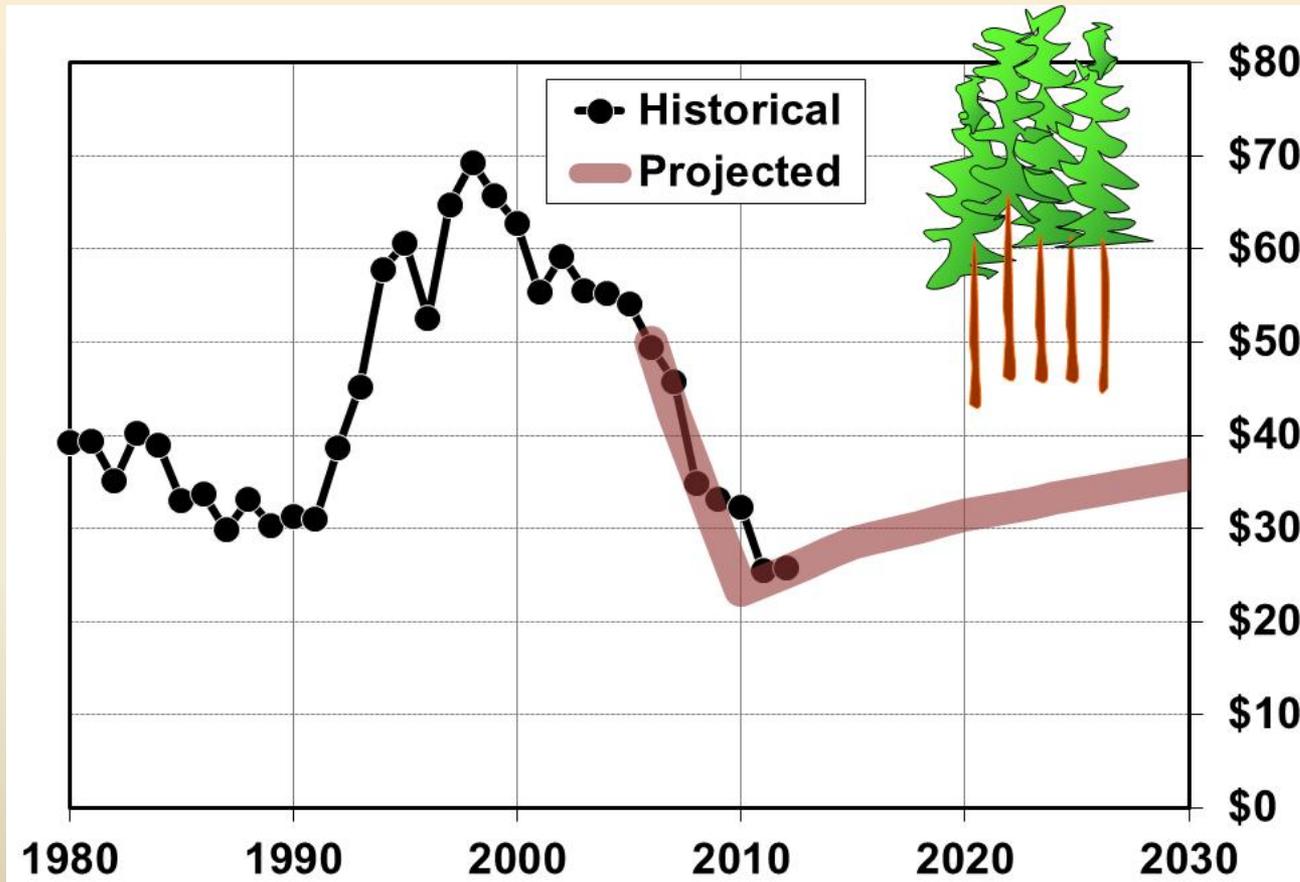


Sources:

1. FAOSTAT(Historical),
2. USFPM/GFPM (Projections)

Results:

Southern Pine Real Sawtimber Stumpage Price (2006 \$/cu. m.)



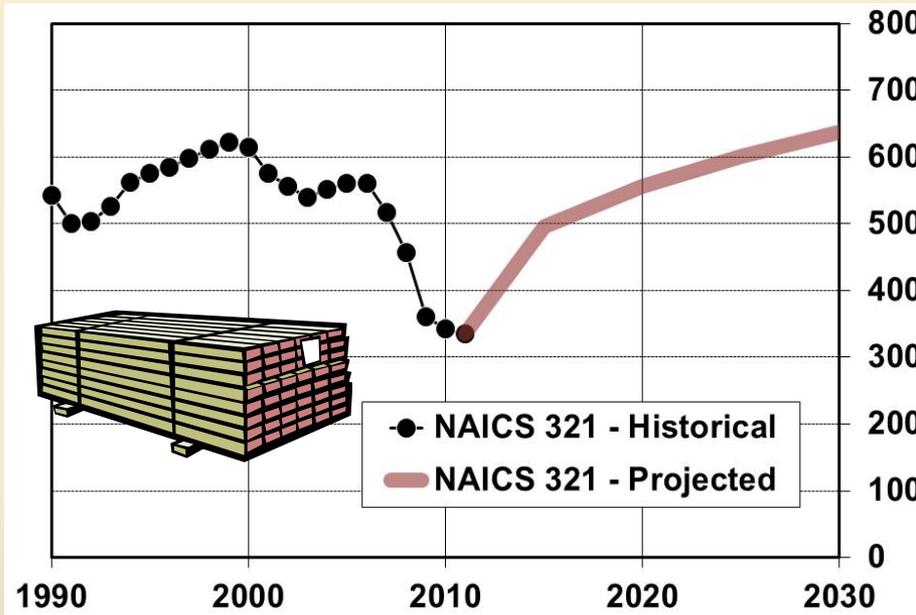
Sources:

1. Timber Mart-South, adjusted by PPI (Historical),
2. USFPM/GFPM (Projections)

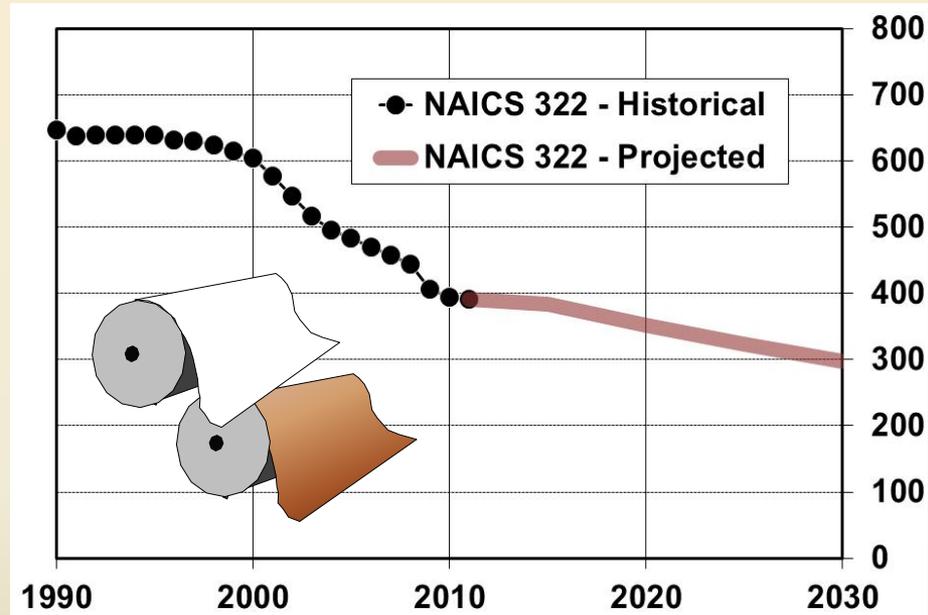
Results:

U.S. Employment Trends in Leading Forest Sector Industries (thousands of employees)

Wood Products – NAICS 321



Paper Manufacturing – NAICS 322



Sources:

1. Bureau of Labor Statistics (Historical),
2. USFPM/GFPM (Projections)

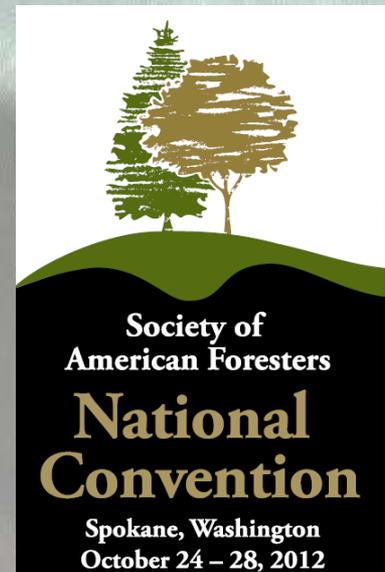
Summary & Conclusions

- ❑ **Our 2012 baseline forest sector market outlook includes impacts of the recession, collapse in home construction, and currency exchange rates.**
- ❑ **A projected rebound in home building and gains in net exports lead to rebound in product output.**
- ❑ **However, despite the rebound, U.S. timber harvest has “cratered” in the 2005-2015 time period.**
- ❑ **Stumpage prices and forest sector employment will likely increase with the rebound in product output, but only modestly because of expanding timber inventories and labor productivity gains.**



Implications for U.S. forest sector

- **Timber harvest & revenues to rebound modestly (assuming housing rebound & weak dollar)**
- **Timber inventories & forest carbon stocks to continue expanding, at least to 2030**



Other products briefly:

- Pellets – a global commodity**
- Residential repairs and improvement products**
- Cross-laminated timber (CLT)**
- Nanocellulose**
- A non-wood forest product**

□ Pellets – a global commodity

- **The largest renewable fuel used in Europe is wood**
- **Large subsidies encourage co-firing and coal conversions**
- **Torrefied pellets**
- **Pellet imports will continue to rise 10m-12m tonnes/year unless...**



Photo credit: <http://primopellets.com/home/wood-pellets/>

❑ Residential repairs and improvement products

- ~1 in 200 homes will be foreclosed



Photo credit: ameadowsconstruction.com

□ Cross-laminated timber

- “Plywood on steroids”
- **CLT Handbook:**
<http://www.masstimber.com/products/cross-laminated-timber-clt/handbook>

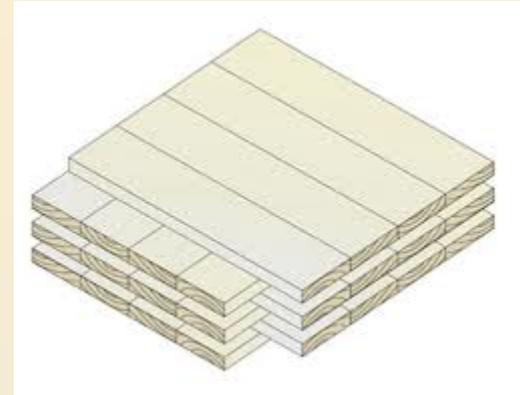


Image credit: web.utk.edu

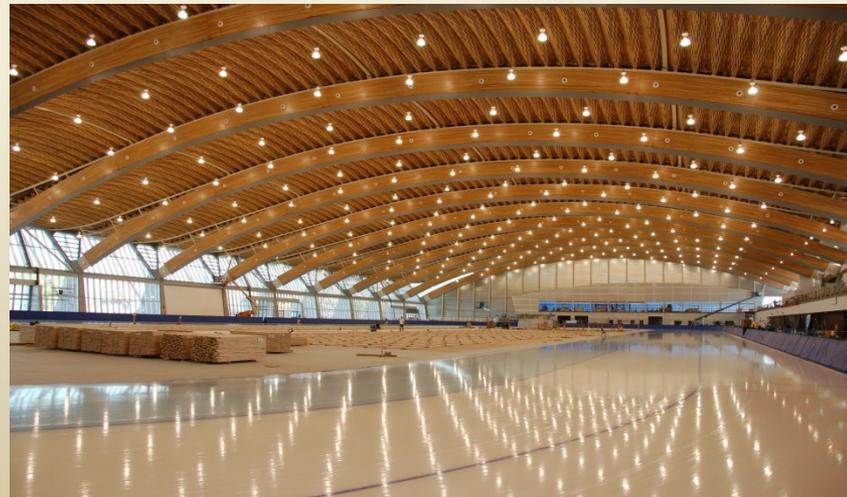
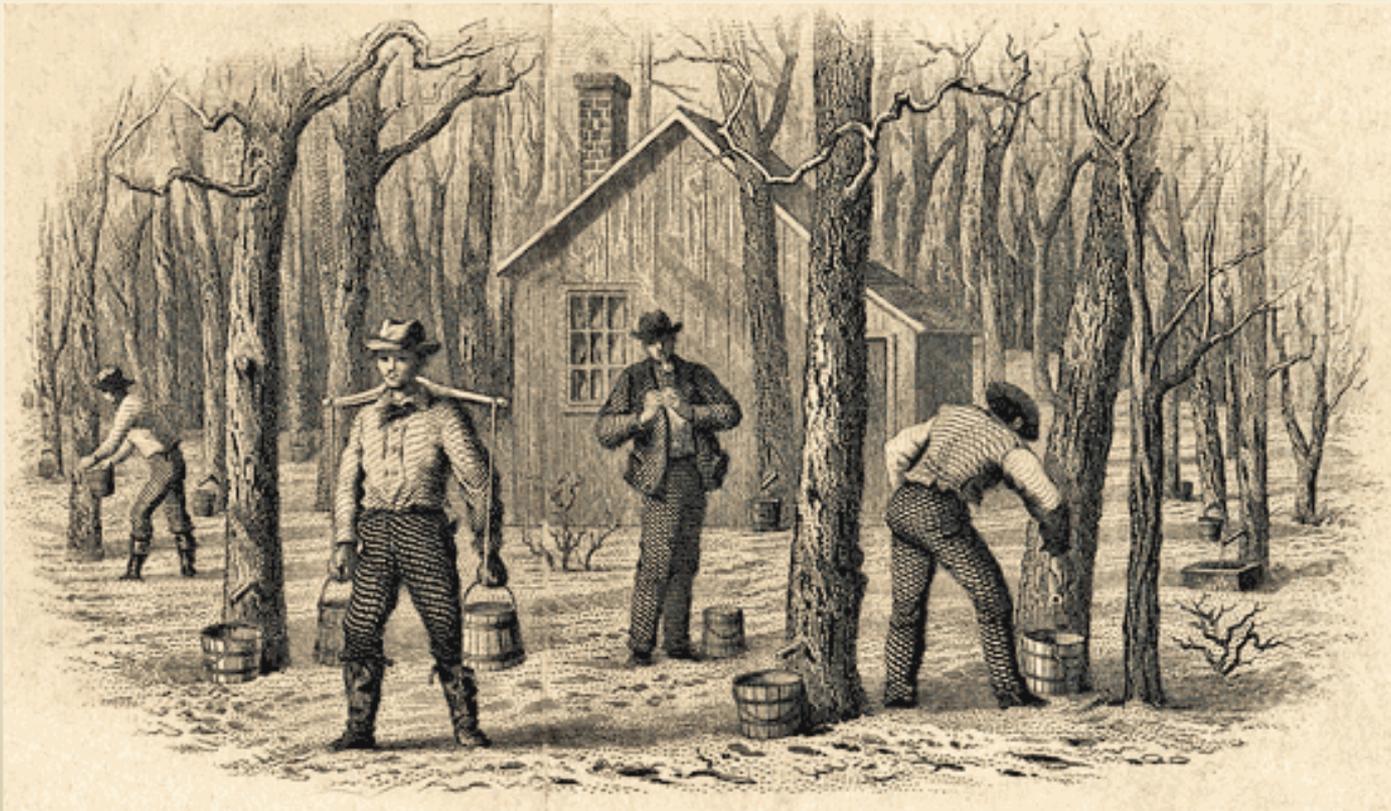


Photo credit: eco-dam.com

□ Nanocellulose

□ A non-wood forest product – maple water



This image of maple sap collecting is on a license for sugar production issued by the federal government in 1893.

Questions?

