

Color Me Green: A Global Overview of Sustainable Timber in Architecture



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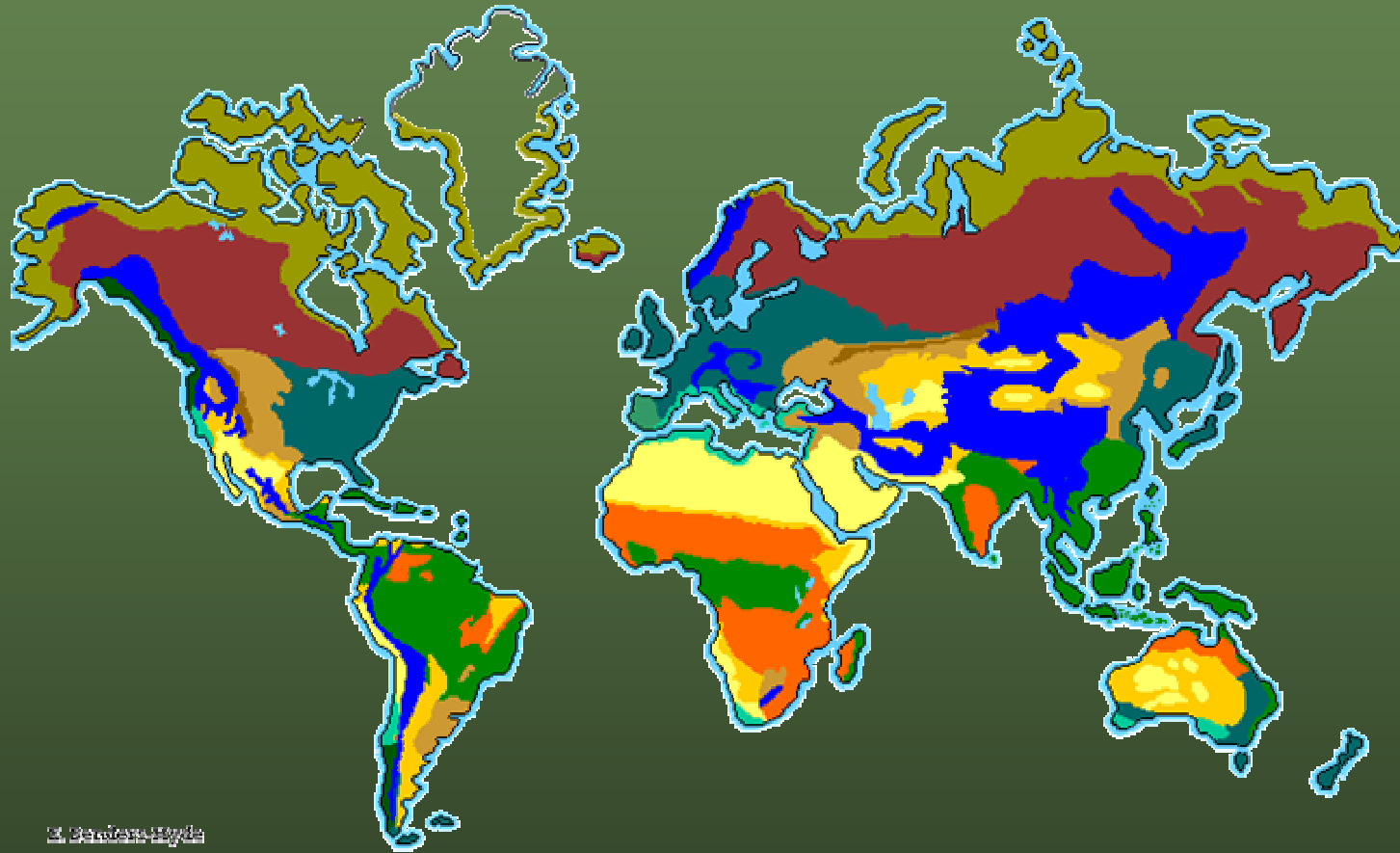
Topics

- The World's Forests – A Primer
- Sustainability
- Wood as a Green Material
- Wood and Green Building
- Some Concluding Remarks



*A Primer on the World's
Forests*

World Biomes



©, Encanto/MyLife

 Tundra

 Taiga

 Grasslands

 Deciduous Forest

 Chaparral

 Desert

 Savannah

 Desert Scrub

 Rainforest

 Alpine

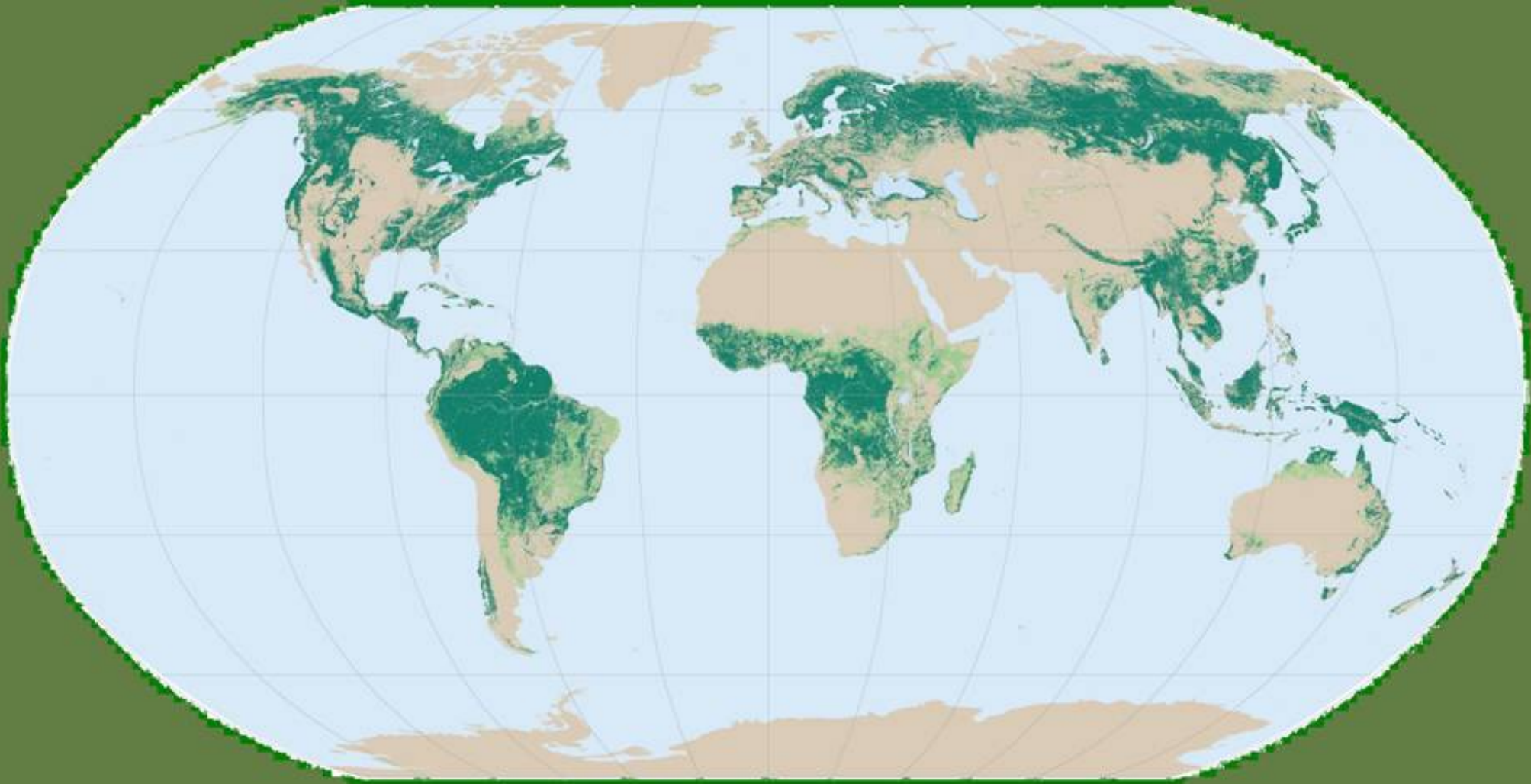
Forest Types – Common Terms

- Evergreen & Deciduous
- Conifer & Non-Conifer
- Softwood & Hardwood
- Tropical (Rainforest) & Temperate
- Managed & Unmanaged
- Planted & Naturally Regenerated
- Protected Forest & Working Forest



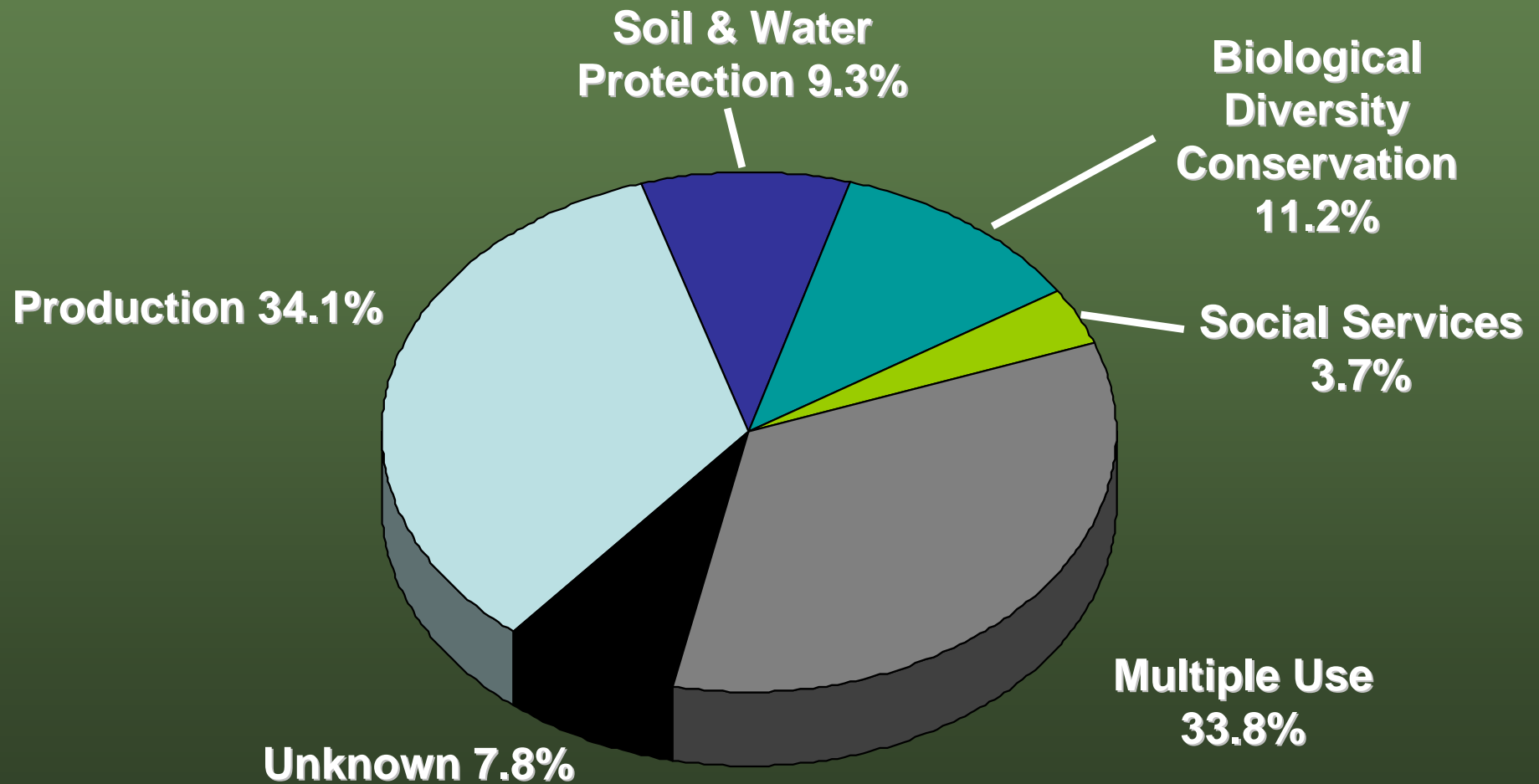
Global Forest Cover

3.9 million hectares



Source: FAO

Functions of Global Forests



Source: FAO

Forest Contributions

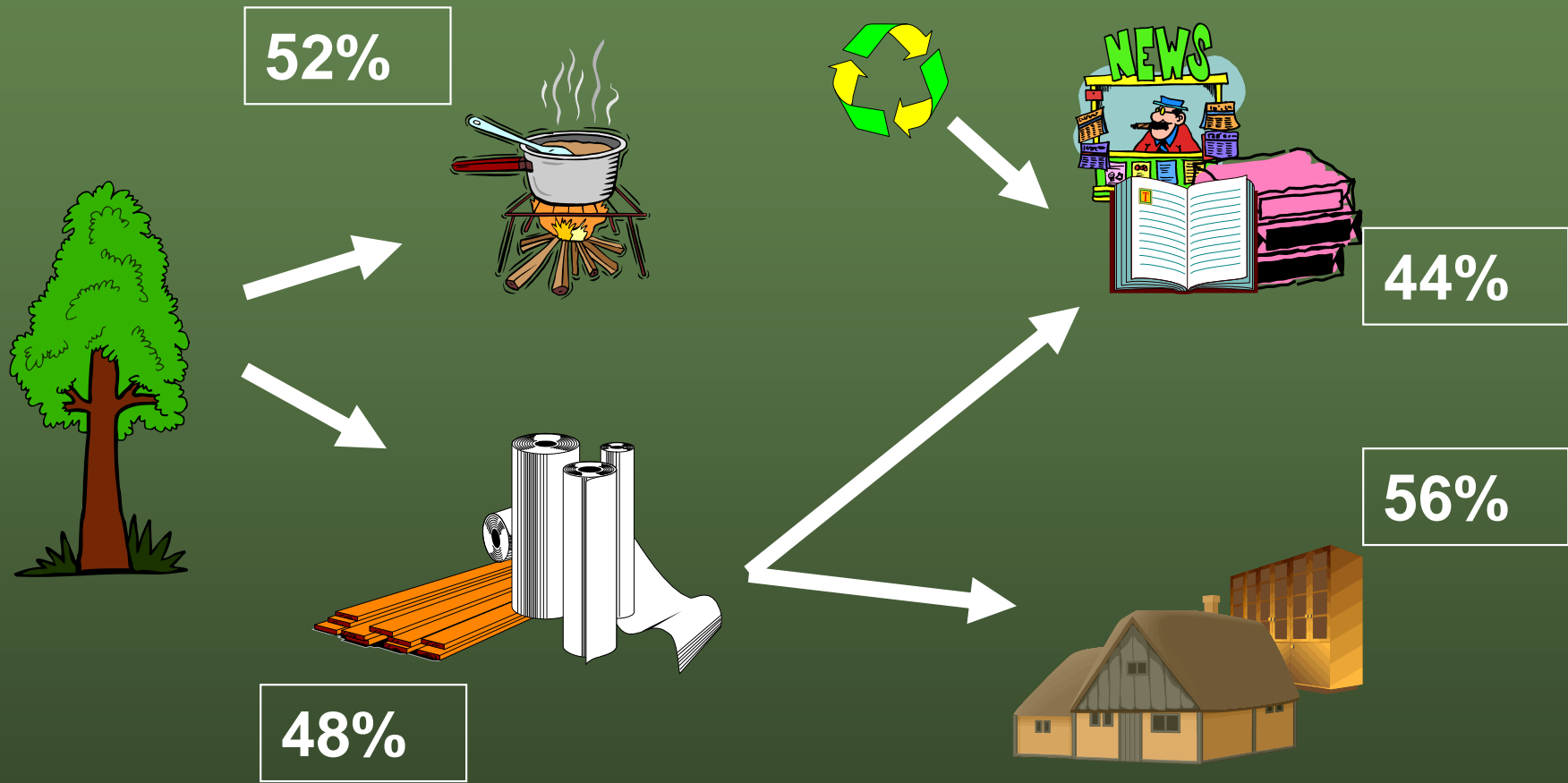
Products

Paper - Communications
Paperboard - Packaging
Building Materials – Homes
Forms
Architectural Woodwork
Furniture
Additives
Chemicals
Industrial Uses

Amenities

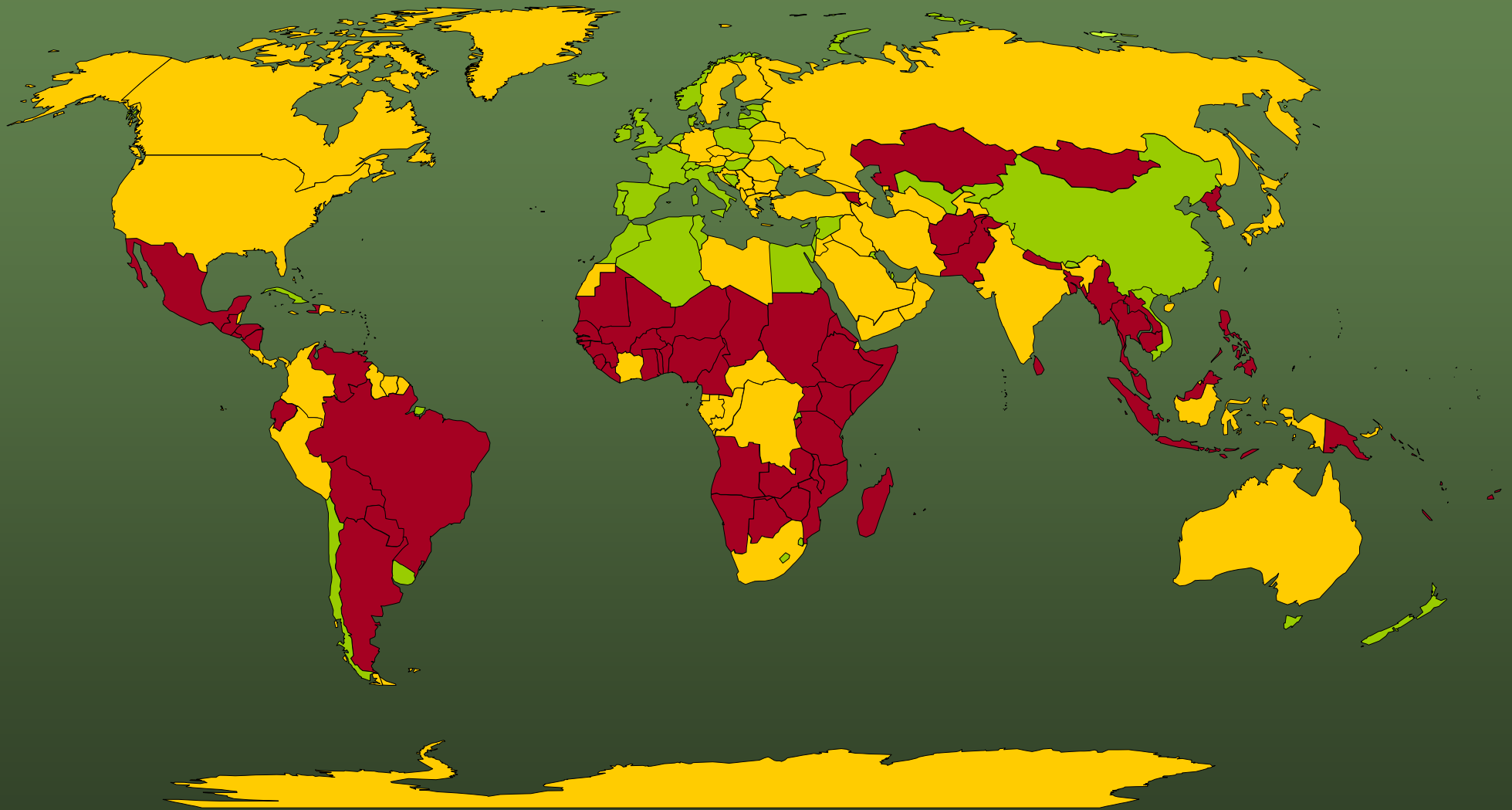
Wilderness - Existence
Recreation - Sport
Wildlife
Biodiversity
Water Quality – Health
Clean Air
Carbon Storage
Spiritual Renewal - Peace

Our Daily Wood



Each person each day utilizes the equivalent of a block of wood weighing 1.8 kg (4 lbs.)

Changes in Forest Area 2000 - 2005



Gain

Stable

Loss

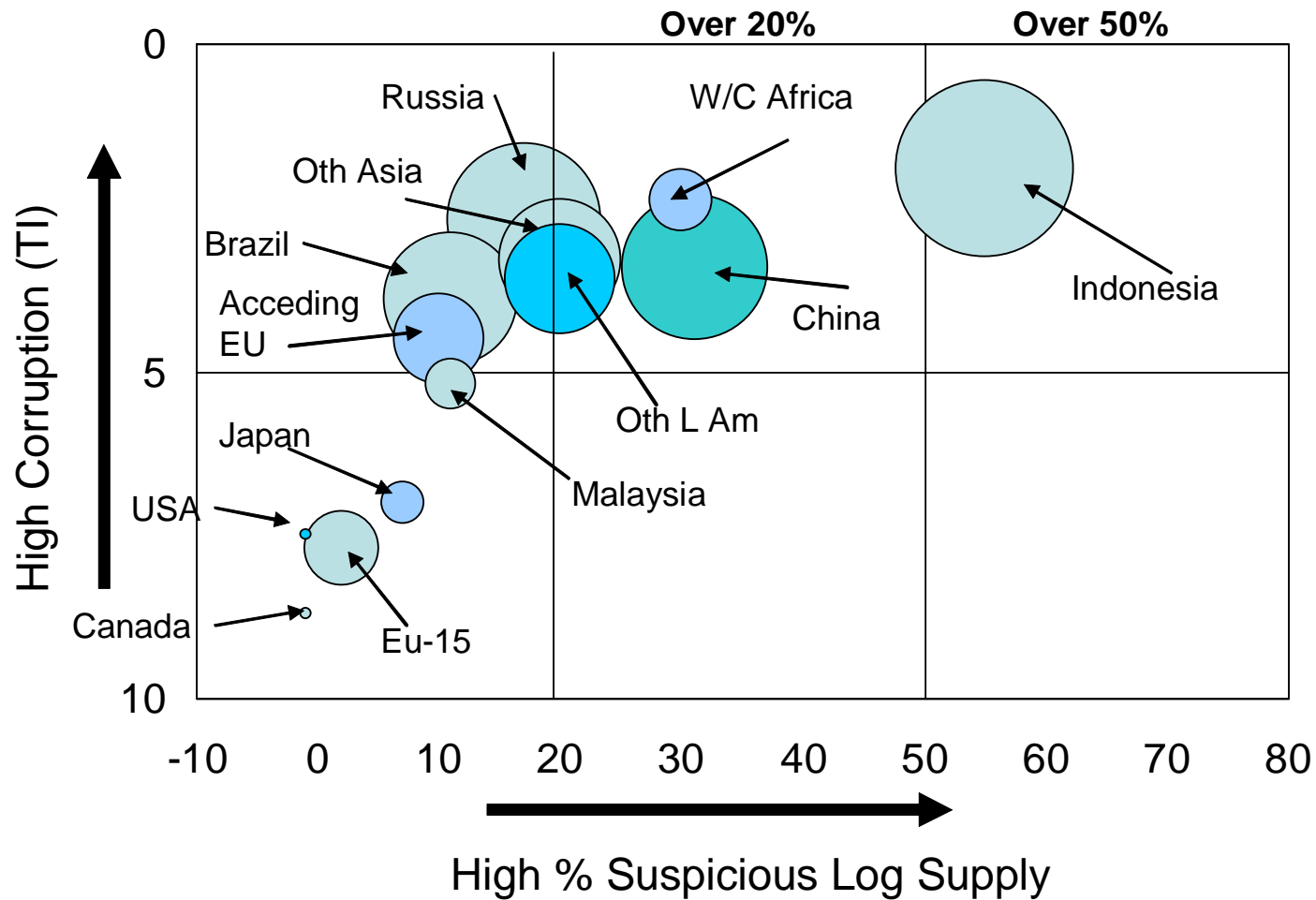
Topical International Issue: *Illegal Logging*

Illegal Logging is major agenda item in international forestry

Examples of illegal activities:

- Harvesting in protected areas
- Felling without legal concession, license or permit
- Converting forestland without authorization
- Violating forest laws and regulations
- Importing/Exporting unsanctioned raw material or products
- Misclassifying species to avoid tariffs or environmental regulations

Corruption & Illegal Logging



Source: Transparency International; WRI/SCA estimates

*Sustainability in a Forest
Context*

What is sustainability?

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Brundtland Report – “Our Common Future”

World Commission on Environment and Development (1987)

Sustainability in a Forestry Context

To meet the needs of the present without compromising the ability of future generations to meet their needs.

“...by practicing a land stewardship ethic that integrates *reforestation* and the managing, growing, nurturing, and harvesting of trees for useful products with the *conservation* of soil, air and water quality, *biological diversity*, *wildlife* and *aquatic habitat*, recreation, and aesthetics.”

Sustainable Forest Initiative[®] (SFI) Standard 2005 – 2009

Key Elements

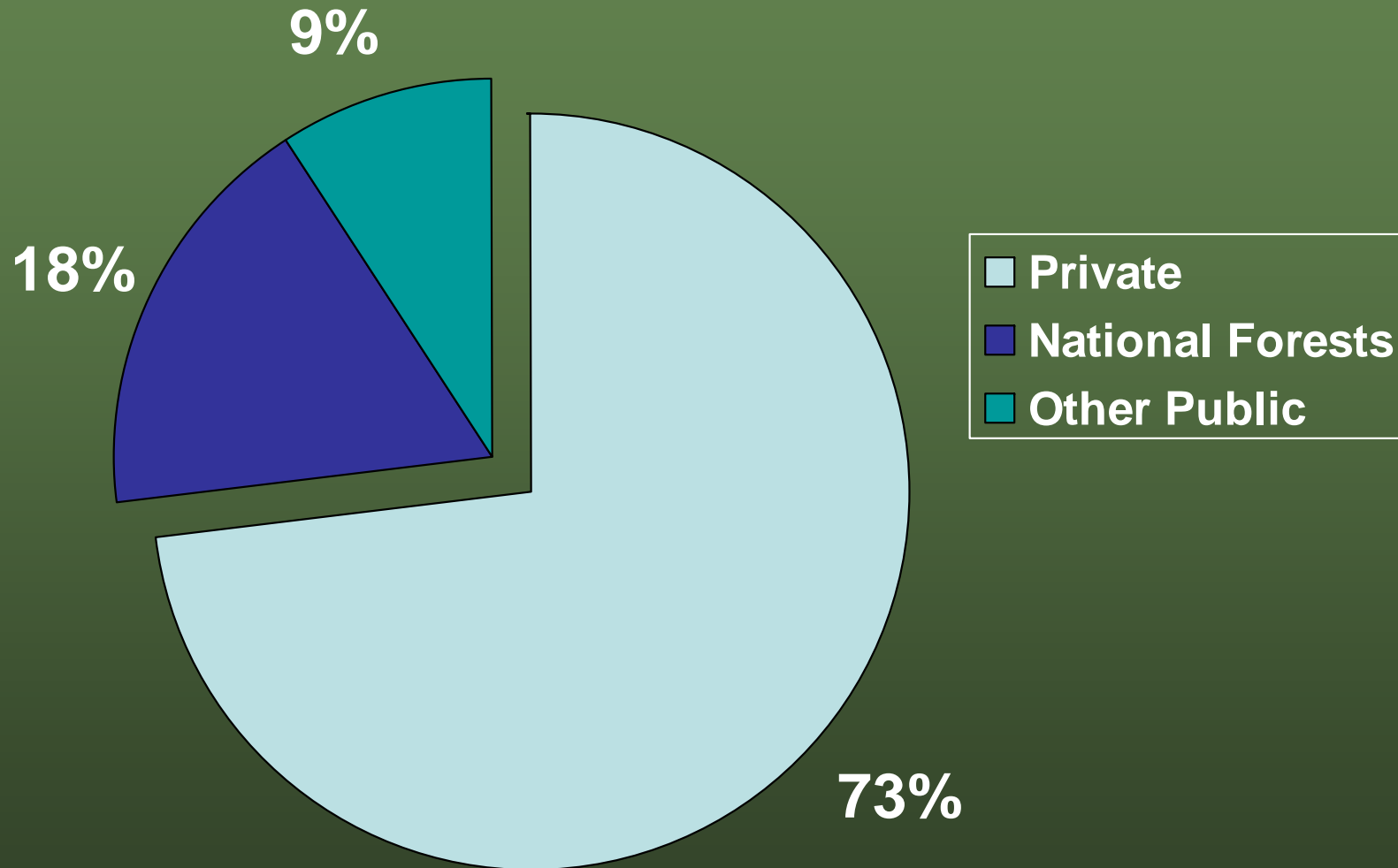
- Reforestation
- Conservation of Biological Diversity
- Protection of Water Quality
- Forest Health & Productivity
- Economic Sustenance
- **Continuous Improvement in Forest Practices**

More Than Just Trees

- Conserve wildlife habitats
- Protect threatened & endangered species
- Protect streams
- Protect special sites
- Promote efficient use of forest resources
- Invest in research



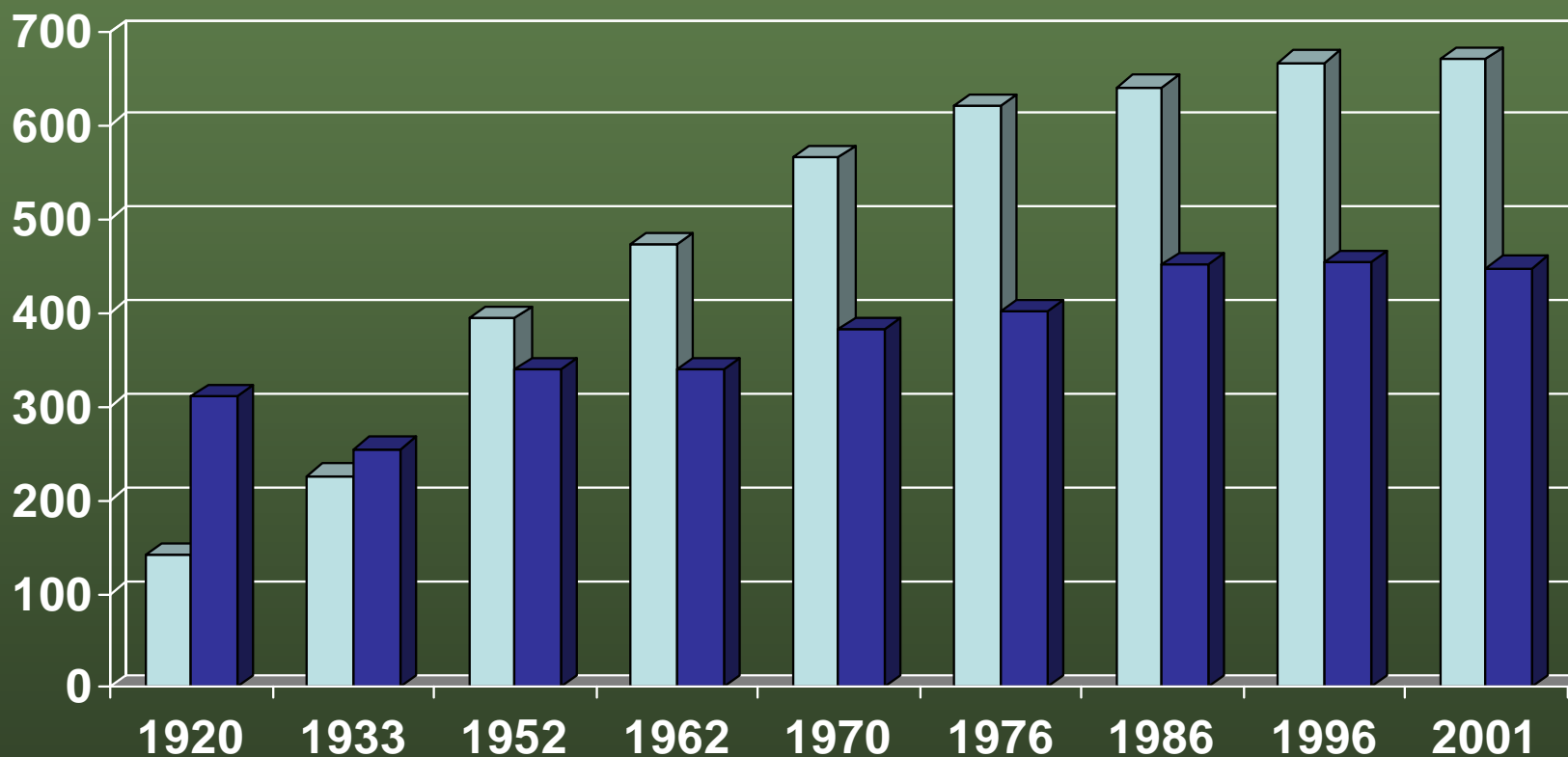
US Timberland Ownership



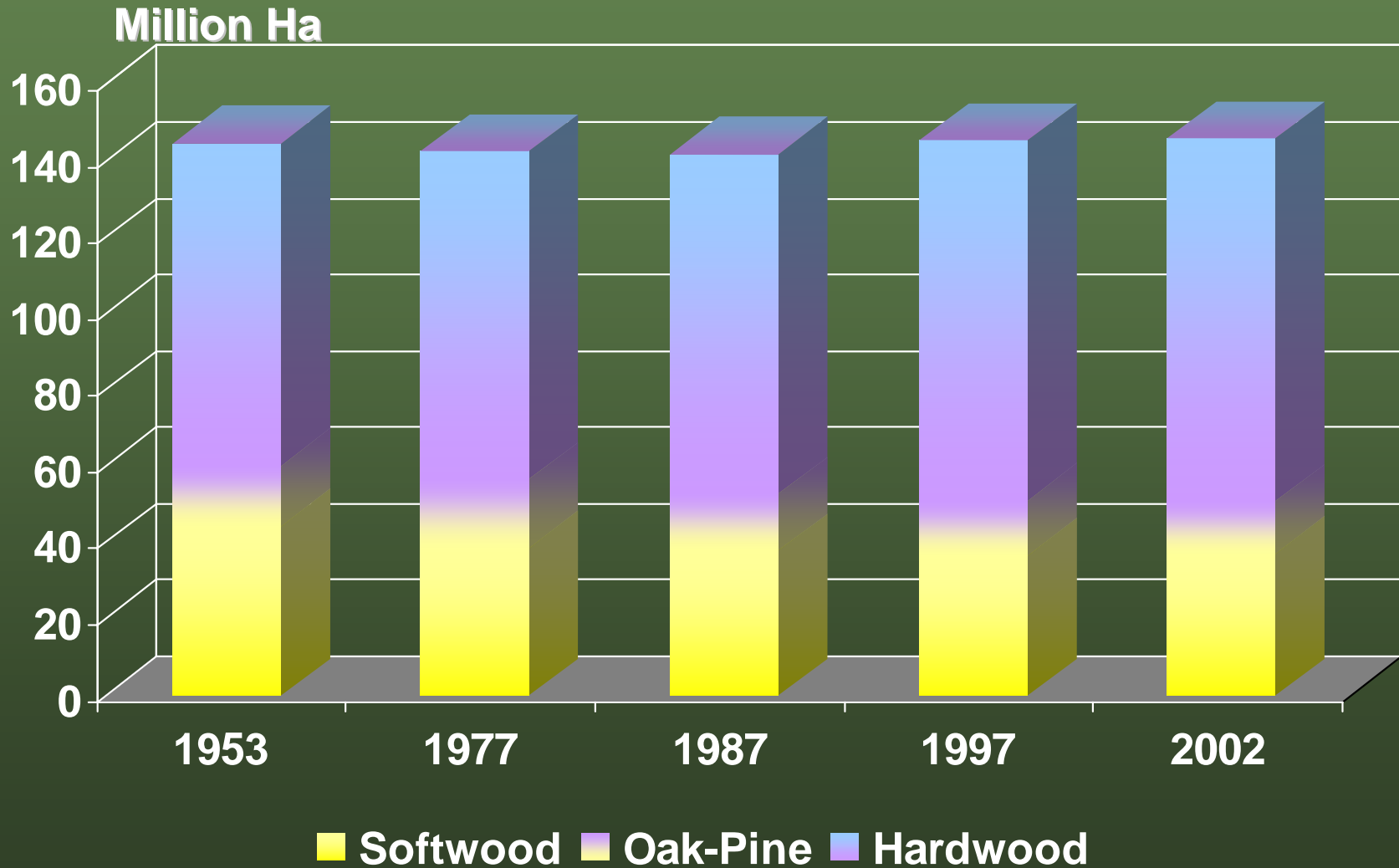
Total Area = 503,540,000 acres

U.S. Growth & Removals

■ Net Growth ■ Removals



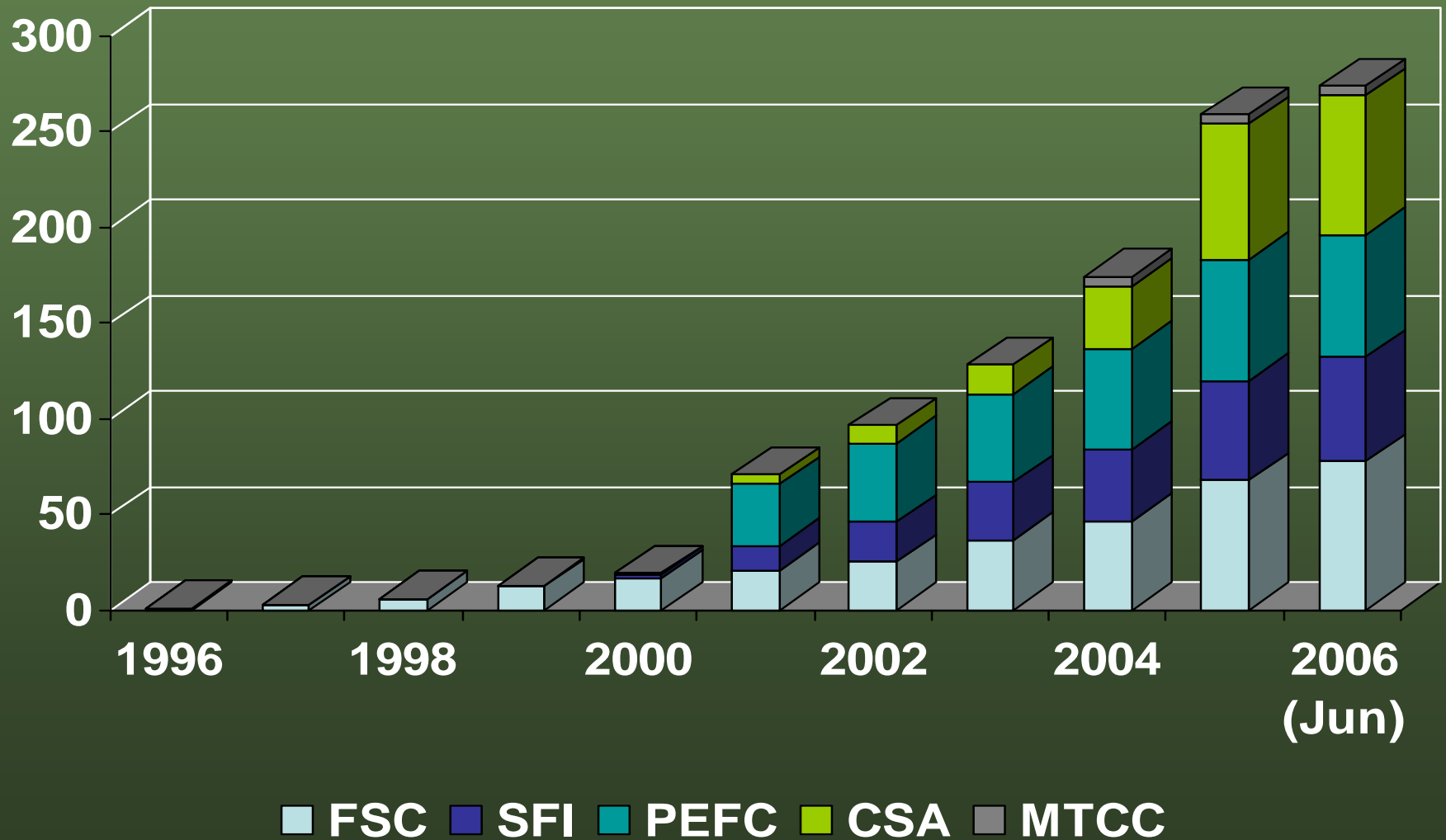
Forest Type in the Eastern U.S.



Forest Certification

- Becoming increasingly significant
- But primarily in North America and Europe
- Major Schemes:
 - FSC – Forest Stewardship Council
 - SFI – Sustainable Forestry Initiative
 - PEFC – Programme for the Endorsement of Forest Certification Schemes
 - CSA – Canadian Standards Association
 - MTCC – Malaysian Timber Certification Council
- Most suited to large ownerships
- US has 10 million landowners

Forest Certification



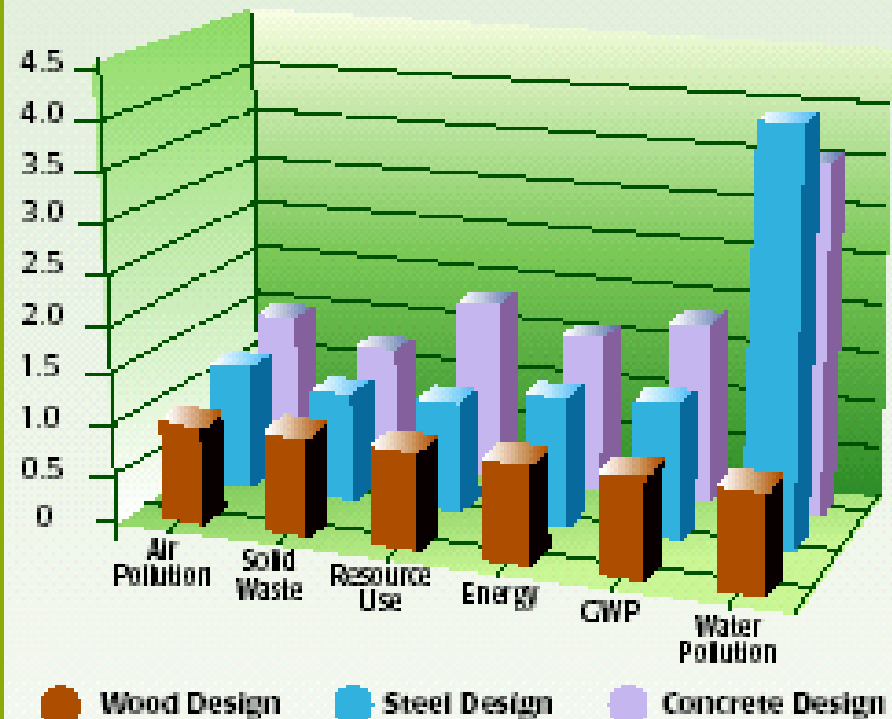
A Green Material

A Green Material

Wood outperforms other products:

- Releases less effluents during manufacture
- Requires less energy
- Better insulator
- Stores carbon

Environmental Impacts of Homes Designed in Wood, Steel and Concrete



A study by the Canadian Wood Council compares the life cycle impacts of three 2,400 square foot homes designed primarily in wood, steel and concrete, over the first 20 years of their lifespans. Relative to the wood design, the steel and concrete designs:

- Release 24% and 47% more air pollution
- Produce 8% and 23% more solid wastes
- Use 11% and 81% more resources from a weighted resource use perspective
- Require 26% and 57% more energy
- Emit 34% and 81% more greenhouse gases
- Discharge 4 and 3.5 times more water pollution

“Encouraging the use of wood products can act as a greener alternative to more fossil-fuel intensive materials.

Substituting a cubic metre of wood for other construction materials (concrete, blocks, or bricks) results in the significant average of 0.75 to 1.0 tonnes CO₂ savings.”

*International Institute for Environment and Development,
Using Wood Products to Mitigate Climate Change, 2004*

Interiors



Wood & Green Building

Green Building Rating Systems

- UK's Building Research Establishment (BRE)
- HK's Building Environment Assessment Method (BEAM)
- Japan's Comprehensive Assessment System for Building Environmental Efficiency (CASBEE)
- US Green Building Council Leadership in Energy and Environmental Design (LEED)TM
- US Green Building Institute Green GlobesTM
- NAHB's Residential Green Homebuilding Guidelines

Major Components of Rating Systems

- Energy Use
- Water Use
- Pollution (emissions, solid waste, effluents)
- Material/Product Inputs
- Indoor Air Quality & Occupant Comfort
- Site Ecology
- Other Sustainable Systems & Processes

Some Concerns with LEED™

- Recyclability given more credit than renewability
 - Definition of renewable too confining
 - “Rapidly Renewable” = less than 10 year rotation (i.e. bamboo, straw, agri-fiber)
 - Fails to recognize all credible forest certification systems
 - FSC only
 - Arbitrary selection of product standards
 - Okay for carpet and rugs, not for wood panels
- © **Easier to chase points by using other, less environmentally friendly materials**
- © **Discriminates against the use of wood products**

What a rating system should do with respect to materials

- Recognize products manufactured from renewable materials as well as recycled materials
- Recognize wood and wood based materials from all credible third party certified sources
- Recognize resource-efficient materials
- Use of life cycle assessment (LCA) in evaluating materials:
 - Lowest life cycle environmental burden
 - Lowest embodied energy
- Recognize accepted product standards rather than create new ones independent of other processes

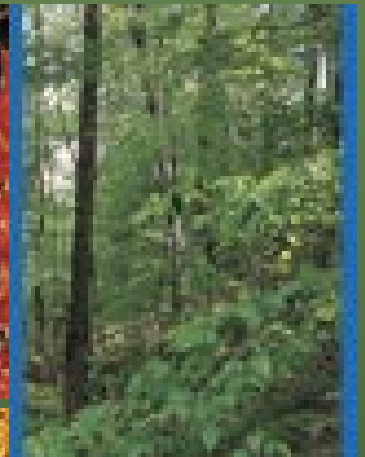
A Few Concluding Remarks

Key Messages

- Wood is an environmentally friendly choice of materials
- US is a low risk supplier in terms of sustainability
- Wood can play key role in Green Building, but not always given its due
- Timber can be produced in a sustainable manner, but not always is
- US is low or no risk in that regard
- US has increasing inventories of desirable species with secure & predictable supplies and infrastructure

Using more wood can be good for the environment!

American Hardwood Export Council
Southeast Asia & Greater China



www.ahec-china.org