

# Rethinking the Building From the Ground Up

$$x = \sqrt{y} * i$$

where:

x = building height

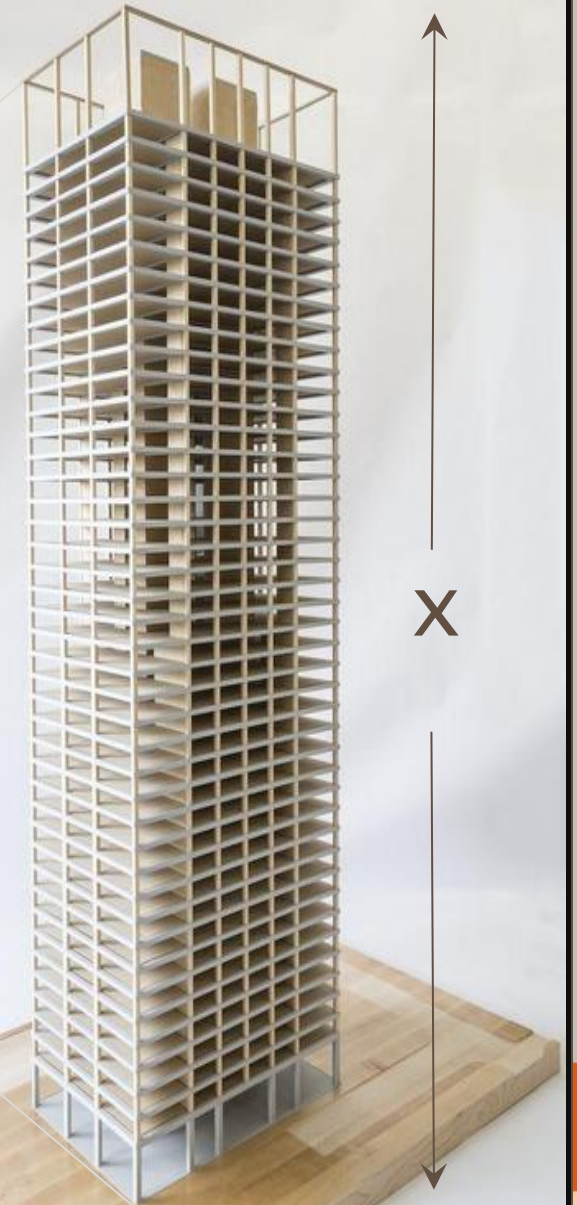
y = tree height

i = imagination

Thomas Maness  
Dean, College of Forestry  
Oregon State University

y

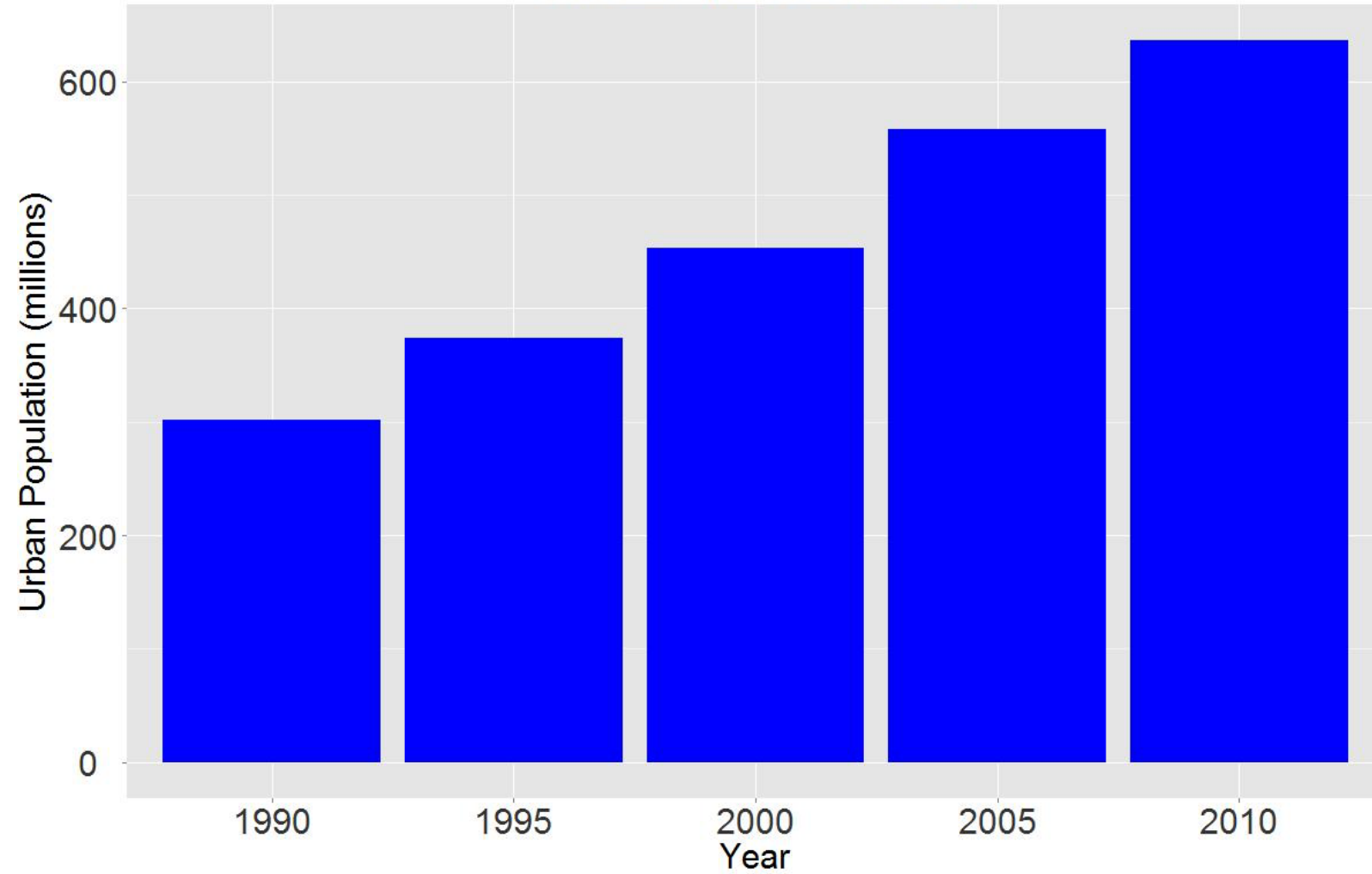
x



# **Five Reasons We Care About Mass Timber Buildings**

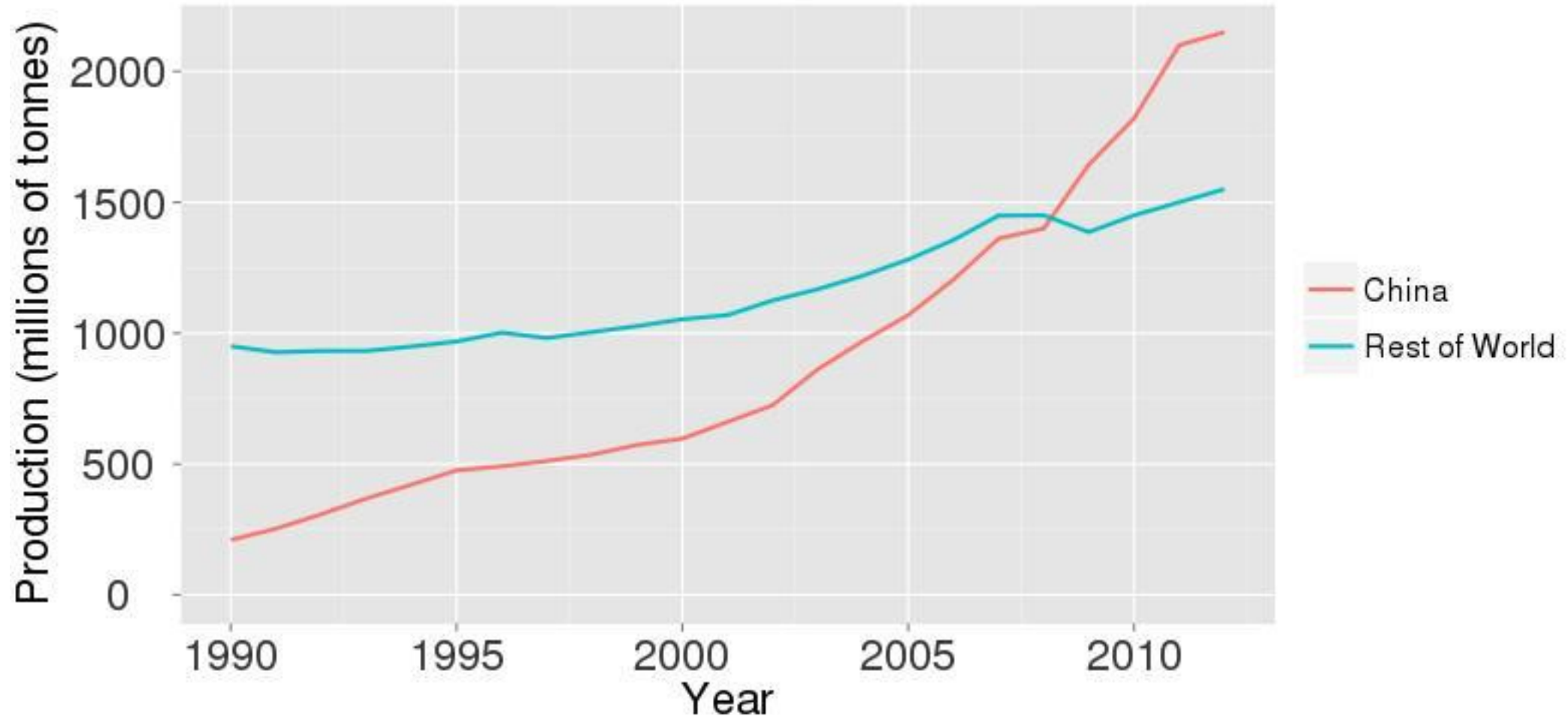
- 1. Reduce global CO2 emissions**
- 2. More globally competitive forest sector**
- 3. Manufacturing jobs in rural communities**
- 4. Use for timber from ecological restoration activities**
- 5. Increase public awareness of benefits of forestry**

## China's Rapid Urbanisation

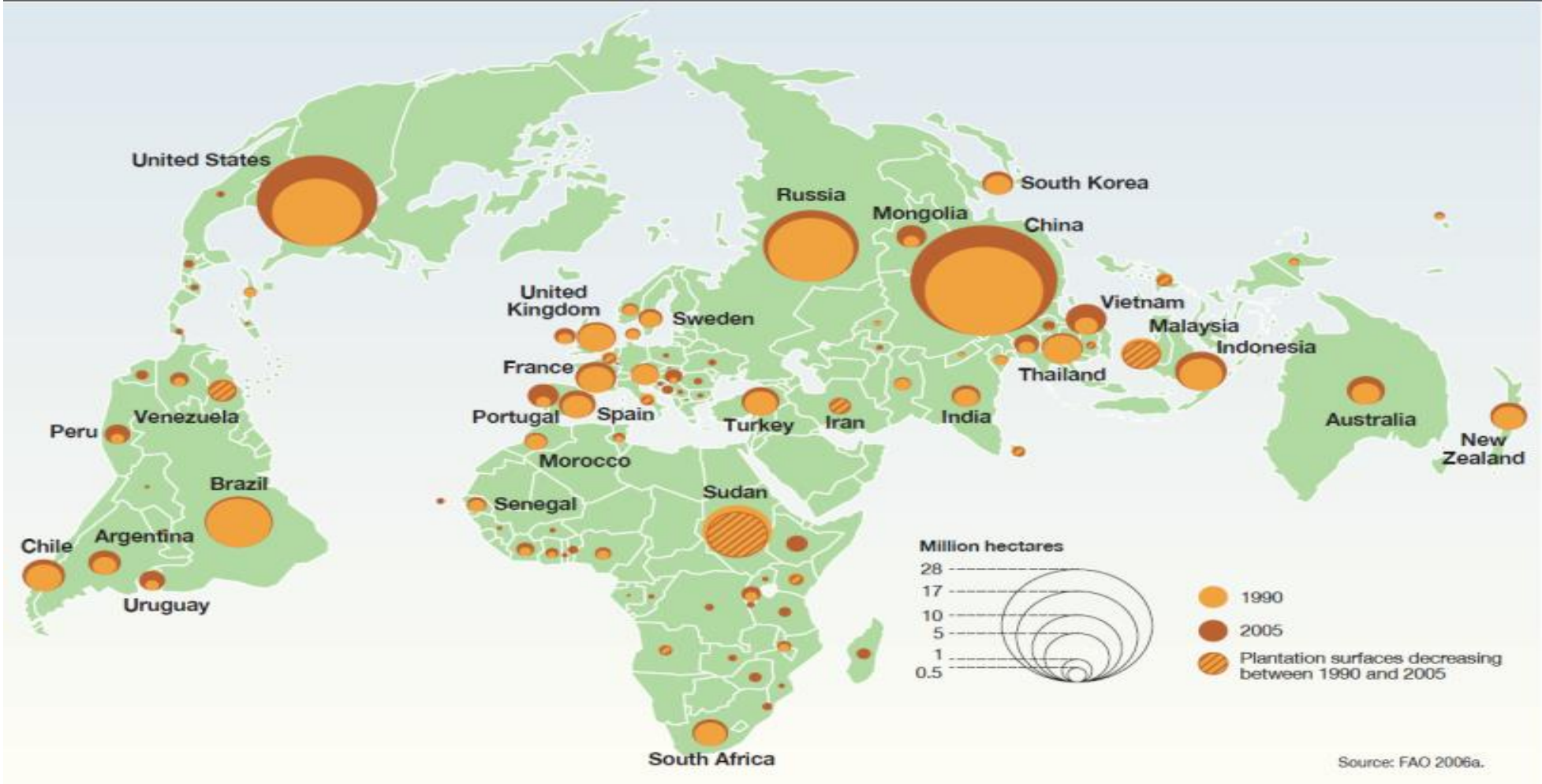


3  
July 27, 2015

## Global cement production



# Plantations Around the World











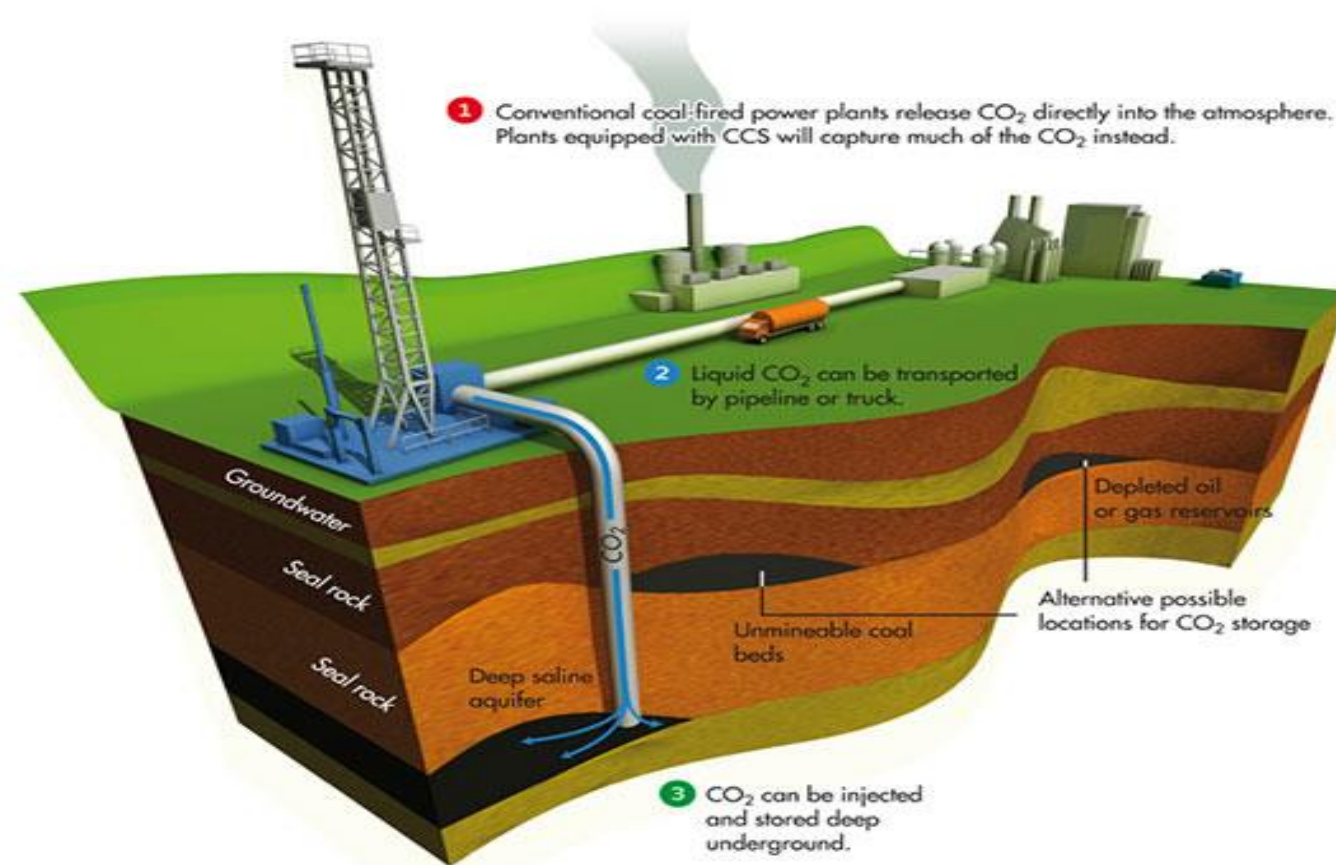


# MASS TIMBER

CHANGES EVERYTHING.

STRUCTURALLY  
SPEED OF CONSTRUCTION | COST  
FIRE SAFETY  
DURABILITY AND LIFESPAN  
HEALTH OF OCCUPANTS  
ENVIRONMENTAL PERFORMANCE

# Carbon Capture and Storage Technology





89.9M  
NOBLE  
FIR



90.7M  
TASMANIAN  
BLUE GUM

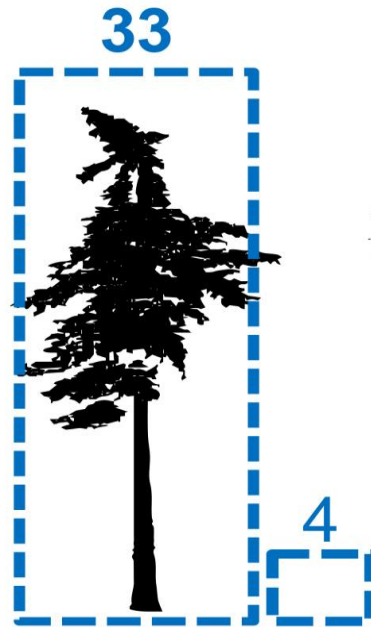


94.9M  
GIANT  
SEQUOIA

96.9M  
PHILLIPINE  
ROSEWOOD



96.9M  
SITKA  
SPRUCE



99.4M  
COAST  
DOUGLAS  
FIR



99.6M  
MOUNTAIN  
ASH



115.6M  
COAST  
REDWOOD



## Bridport House, London England:

- Summer 2011
- 10 weeks construction time
- CLT Produced by Storo Enso in Austria

### Advantages:

- Speed of Construction
- Lightweight
- Carbon sequestration
- Natural materials, healthy house









# *Interior Woodscapes*



UBC FOREST SCIENCES CENTRE ATRIUM SPACE

# A Healthier Work Environment



YALE SCHOOL OF FORESTRY



- Elementary School
- Supported green roof
- CLT covered by wood cladding
- > 65K sqft



Paul Chevallier School, Lyon, France  
Architect: Techtoniques

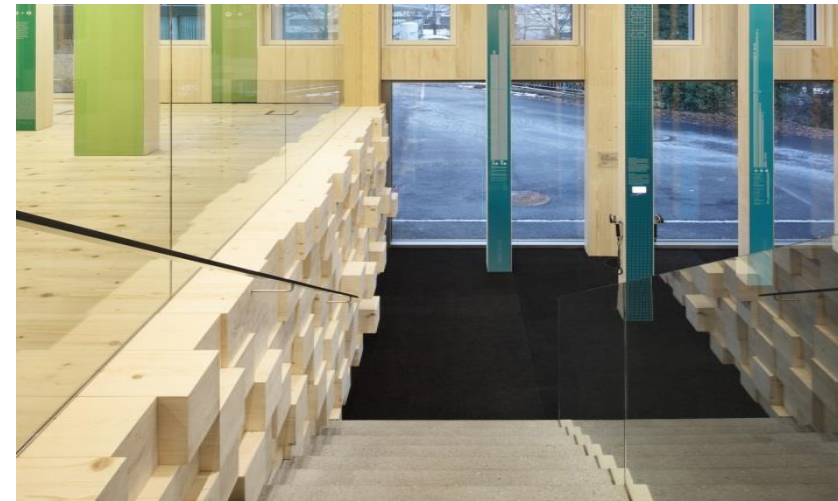


NORTH VANCOUVER CITY HALL BC



- Completed in 2012
- 10 stories
- ~ 105 ft. tall, > 18.6 K sqft.
- 3 million in R&D
- Poor soils required a much lighter building

Forte', Victoria Harbor, Melbourne, Australia  
Architect: Lend Lease



## LCT ONE

Architekten Hermann Kaufmann

**Dornbirm, Austria**

Completed 2012



## MURRAY GROVE

Waugh Thistleton Architects

London, England

Completed 2009





## STRANDPARKEN

Windgardh Arkitekthontor

Sundbyberg, Sweden

Completed 2014







WENLOCK ROAD

Hawkins Brown Architects  
London, England  
Completed 2014



## TREET

Artec Architekten

Bergen, Norway

To be completed this year



## RUNDESKOGEN

Helen & Hard, dRMM

Sandnes, Norway

Completed 2014



## HO HO PROJECT

Rüdiger Lainer and Partner

Vienna, Austria

To be Completed 2016





HSB 2023

C.F.Møller

Stockholm, Sweden

To be Completed 2023

**Oregon State**  
UNIVERSITY

# Building Codes for Tall Wood

## Prescriptive Code

- Use prescribed by code
- The code clearly spells out the use of material
- Mature Building Technology
- Easy and inexpensive to meet

## Performance Code

- Not prescribed in code
- Research & testing to demonstrate performance
- Innovative Building Technology
- Expensive and time consuming

# Action Items

## Building Codes

- 1. Encourage state code to recognize performance standards**
- 2. Funding support for early adopters**
- 3. Support research in code issues, particularly fire safety**
- 4. Provide technical support and information to builders**

# **Action Items**

## **Market Penetration**

- 1. Get demonstration projects built**
- 2. Research on life cycle benefits**
- 3. Align around a green building standard**
- 4. Design of new building materials & connections**
- 5. Design of new fire safe elements and structures**
- 6. Produce reliable product information**



# Action Items

## Manufacturing

- 1. Workforce development**
- 2. Product standardization along the supply chain**
- 3. Data standardization between design, construction and manufacturing**
- 4. Increase throughput in manufacturing**

# Action Items

## Forestry Issues

- 1. Increase plantation productivity and grow the right product**
- 2. Rationalize public timber policies aligned with ecosystem restoration goals**
- 3. Focus on sustainability and certification**

# Discussion

