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From Forest to Frame
A Climate Solution

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Ecotrust
Forests and Ecosystem Services

Our goal is to transform the dominant forest management paradigm in the Pacific Northwest, and around the world, to one that more closely mimics natural forest processes, while providing for our region. In a carbon-constrained world, the transition to climate-smart forestry will only be possible if we better align our policies and markets with our values.

Ecotrust creates the tools, the structures, and the research to support climate-smart forest management, demonstrating that forests can store more carbon, provide high quality habitat for native fish and wildlife, offer recreational and economic development opportunities, and produce clean and abundant water, all while supporting a robust and reliable forest products industry.
Agenda

• Introduction to Climate-smart Forestry in the Pacific Northwest

• Tradeoffs in Timber, Carbon, and Cash Flow

• Forest to Frame: the Built Environment

• Why we need Land Trusts and RCPs
Forests in the Pacific Northwest

- Carbon sequestration
- Water
- Biodiversity habitat
- Food
- Flood protection
- Timber
- Cultural resources
- Recreation
- Jobs
Climate-smart Forestry in the Pacific Northwest

- Longer rotations that grow older, bigger trees
- Larger stream buffers
- Leaving more live trees in the forest
- Conservation areas
- Steep slope protections
- Timber & NTFP production
- Steady, reliable jobs
- Limited and strict chemical use
Climate-smart forestry: how our forests grow and how we choose to manage them
Douglas-fir forests don’t hit peak productivity for an entire human lifetime.

This graph shows average annualized timber growth for even-age harvest rotations of a moderately productive Douglas-fir forest.

In forestry jargon, this is known as Mean Annual Increment (MAI).
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Maximum Sustained Yield occurs if harvests are timed at peak MAI, shown here by the dark gray bar.

- @ 90-year rotation: $90 \times 1,175 \text{ BF/ac/yr} = 105,750 \text{ BF/ac}$
- @ 40-year rotation: $40 \times 650 \text{ BF/ac/yr} = 26,000 \text{ BF/ac}$
But we discount the future and choose lower timber yields in exchange for higher Net Present Value.

Each line in the graph below shows Net Present Value (NPV) per acre for a timber harvest at each rotation age using a different annual discount rate (%).
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Financially optimal timber harvest occurs when NPV peaks at whatever discount rate is being used.
But we discount the future, and choose lower timber yields in exchange for higher Net Present Value

Each line in the graph below shows Net Present Value (NPV) per acre for a timber harvest at each rotation age using a different annual discount rate (%).

With a discount rate of 5% per year, the financially optimal 45-year rotation yields 33% less timber per acre per year than the forest could be producing.

Apart from producing less timber, these shorter rotations also store less carbon.
Modern industrial timber companies usually have a fiduciary obligation to prioritize return on investment (not timber output).

The only forest resource typically valued and monetized is timber (and sometimes development potential).

Our markets tend to ignore nearly every other forest resource value, including carbon storage.
FSC certification offers a simpler and more cost-effective way to identify and reward landowners who manage forests for additional carbon and ecological values.
WHAT RIPARIAN BUFFERS LOOK LIKE
on coastal Oregon timberland
WHAT RIPARIAN BUFFERS LOOK LIKE

under Oregon state law
WHAT RIPARIAN BUFFERS LOOK LIKE under FSC
WHAT GREEN TREE RETENTION LOOKS LIKE

following the first harvest (on 10 acres)

4 trees per acre (FPA Rules)
10% of basal area (FSC Rules)
30% of basal area (FSC Rules)
DOING BETTER THAN BUSINESS-AS-USUAL

for green builders

➢ FSC stores **more carbon** (including the forest + wood products).

➢ FSC-certified wood is very likely to carry an embedded carbon benefit (at least for this region and forest type).

➢ If you were willing to pay a 5-12% (WA) or 3-21% (OR) premium for FSC-certified wood, FSC-style riparian protections and green tree retention would be competitive with business-as-usual wood.

➢ If you use an internal price on carbon, consider how that might translate to direct incentives for FSC producers.
The Opportunity
The house made of wood

Why more buildings should be made of wood

It is better for the planet, and safer than you think
Incentivizing Climate-smart Forestry through the supply chain
Forest Impact

- Landowner
- Primary Processing Manufacturer
- Wood Distributor

Building Impact

- Architects
- Developers
- Engineers
- Builders
- Client (owner)
Building Impact: Life Cycle Assessments
Life Cycle Assessments

TWO TYPES OF LCAs

CONSEQUENTIAL
(less common, more controversial)

➢ Used to quantify impact for “what if” scenarios, such as:
  
  What if I use wood instead of another material in my project?
  
  What if I changed the way I managed my forest?

➢ Requires definition of a reference scenario against which impacts are benchmarked.

ATTRIBUTIONAL
(most common)

➢ Quantifies impacts associated with the energy and materials used in the creation of a product.

➢ In the case of wood products, considers things like fuel, herbicides and fertilizers, and energy in growing, harvesting, transporting, and manufacturing wood products.

➢ Ignores the forest.

➢ Often ignores the carbon stored in the wood itself.
Life Cycle Analysis: Consequential

Source: MAUREEN PUETTMANN
WOODLIFE ENVIRONMENTAL CONSULTANTS
CORRIM, CONSORTIUM FOR RESEARCH ON RENEWABLE INDUSTRIAL MATERIALS
Life Cycle Assessments: Attributional

Fate of Carbon from Harvested Wood

- **Live Tree**: 100%
- **Cut**: 54%
- **Milled**: 32%
- **Delivered**: 17%
- **Transportation**: 15%
- **Logging Residue**: 46%
- **Mill Residue**: 22%
- **Net Carbon Stored**: 15%

STORED CARBON

EMITTED CARBON

Source: Oregon Wild
WHERE DO FORESTS FIT IN YOUR LCA?

- They probably don’t.
- LCA protocols generally exclude “biogenic carbon”, assuming it is inherently “carbon neutral” or “outside the scope.”
- This leaves carbon storage in the forest, and in harvested wood products off the balance sheet.

Life Cycle Assessments
LCA WOOD CARBON MECHANICS

**Scenario 1**
Steel | Wood
---|---
GWP Potential (kg CO2eq)
Life Cycle Stages: Net
Savings
Recycling (burden offset)

**Scenario 2**
Steel | Wood
---|---
GWP Potential (kg CO2eq)
Life Cycle Stages: Net
Savings
Recycling (burden offset)
Sequestered during growth
End of life (decay)

**Scenario 3**
Steel | Wood
---|---
GWP Potential (kg CO2eq)
Life Cycle Stages: Net
Savings
Recycling (burden offset)
FSC vs. Non FSC (in OR) or 40 vs. 80 year Rotation
Forestry Practices

ZGF
Climate-smart Wood Group
Create a demand-pull through the supply chain.
- PDX Airport
- Google
- WeWork
- Carbon Leadership Forum

Environmental Product Declaration
Quantify impacts of wood sourcing decisions
Forest Impact:
Role of Land Trusts and RCPs
Put into practice and convey the importance of climate-smart management

- Know where and how your wood was grown
- Encourage climate-smart management with partners and other forest owners
- Manage forests for a climate benefit
Thank you

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Ecotrust
Forest to Frame

Landowner
Primary Processing Manufacturer
Wood Distributor
Architects Developers Engineers Builders
Client (owner)

Forest Impact