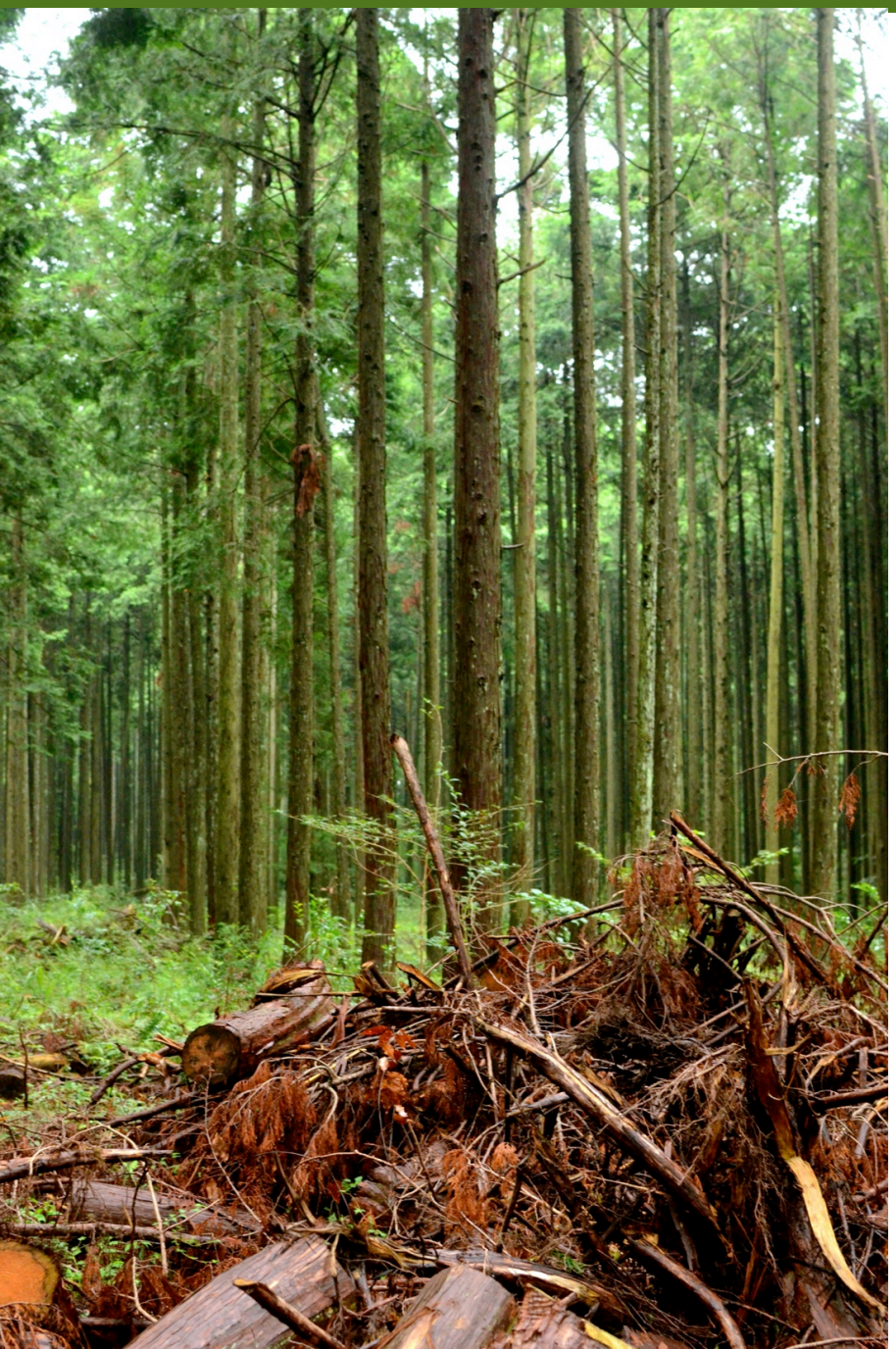


Branching Out: Cellulosic Biofuels in the Pacific Rim

Session Organizers

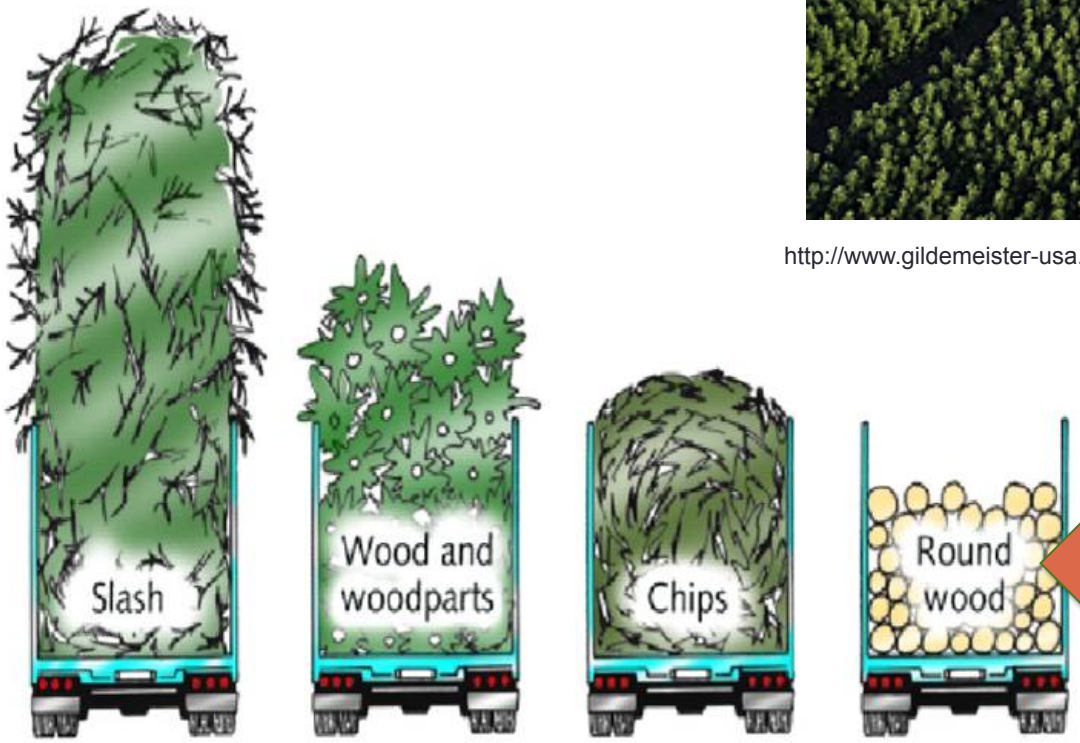
Sophia Horigan, Kara Scherer

Panelists

Steve Strauss, Meagan Nuss, Kara Batdorff

Hybrid Poplar plantations provide a source for woody biomass.

http://www.gildemeister-usa.com/home%20image%20html%20pages/GreenWood%20Poplar.html



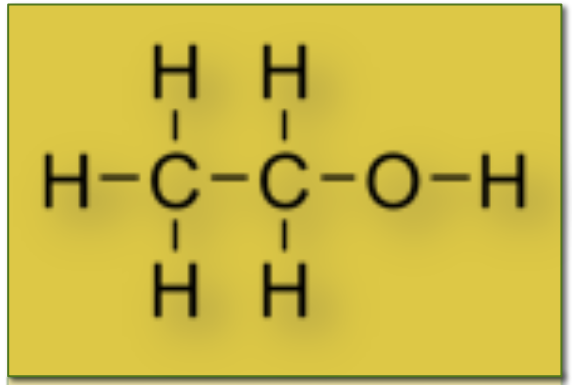
Many forms of woody biomass can be used for fuel production.

http://learn.forestbioenergy.net/learning-modules/module-3/unit-1/lesson-1

Woody Biomass

Size Reduction

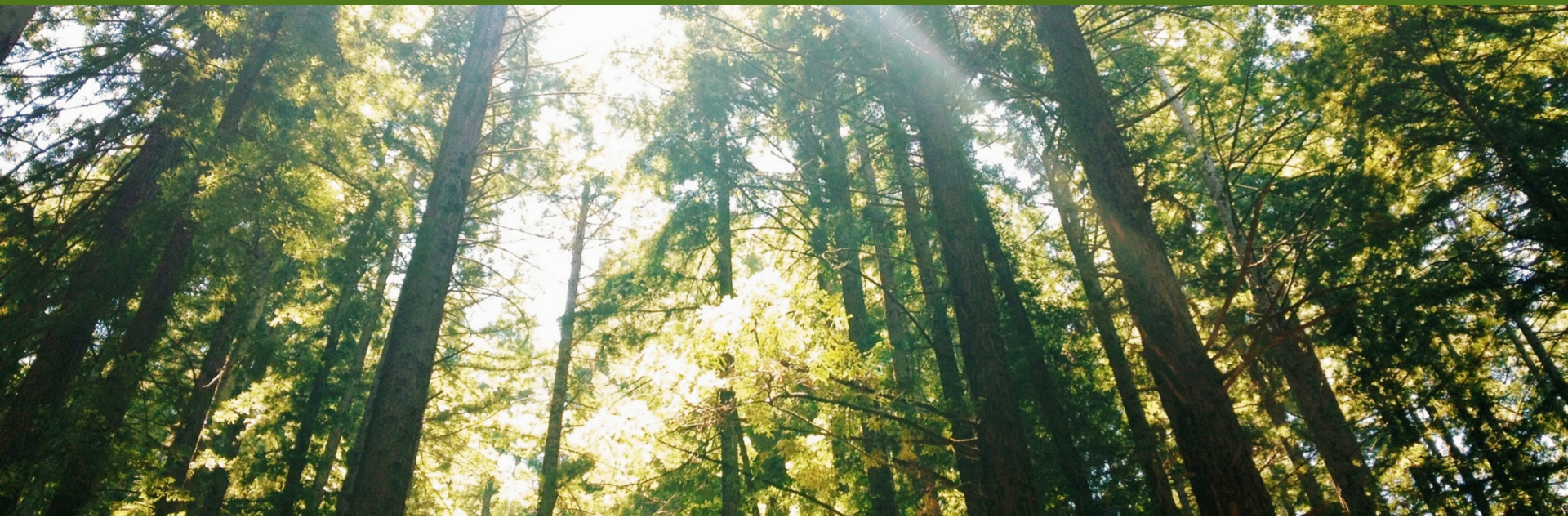
Pre-treatment



Hydrolysis

Fermentation

Ethanol



Benefits

- carbon uptake → global warming
- job opportunities
- renewable
- ecosystem welfare
- method can be improved

Drawbacks

- costly
- positive net production?
- much land required
- ecosystem welfare

Studies predict increased used of biomass for fuel in the future.

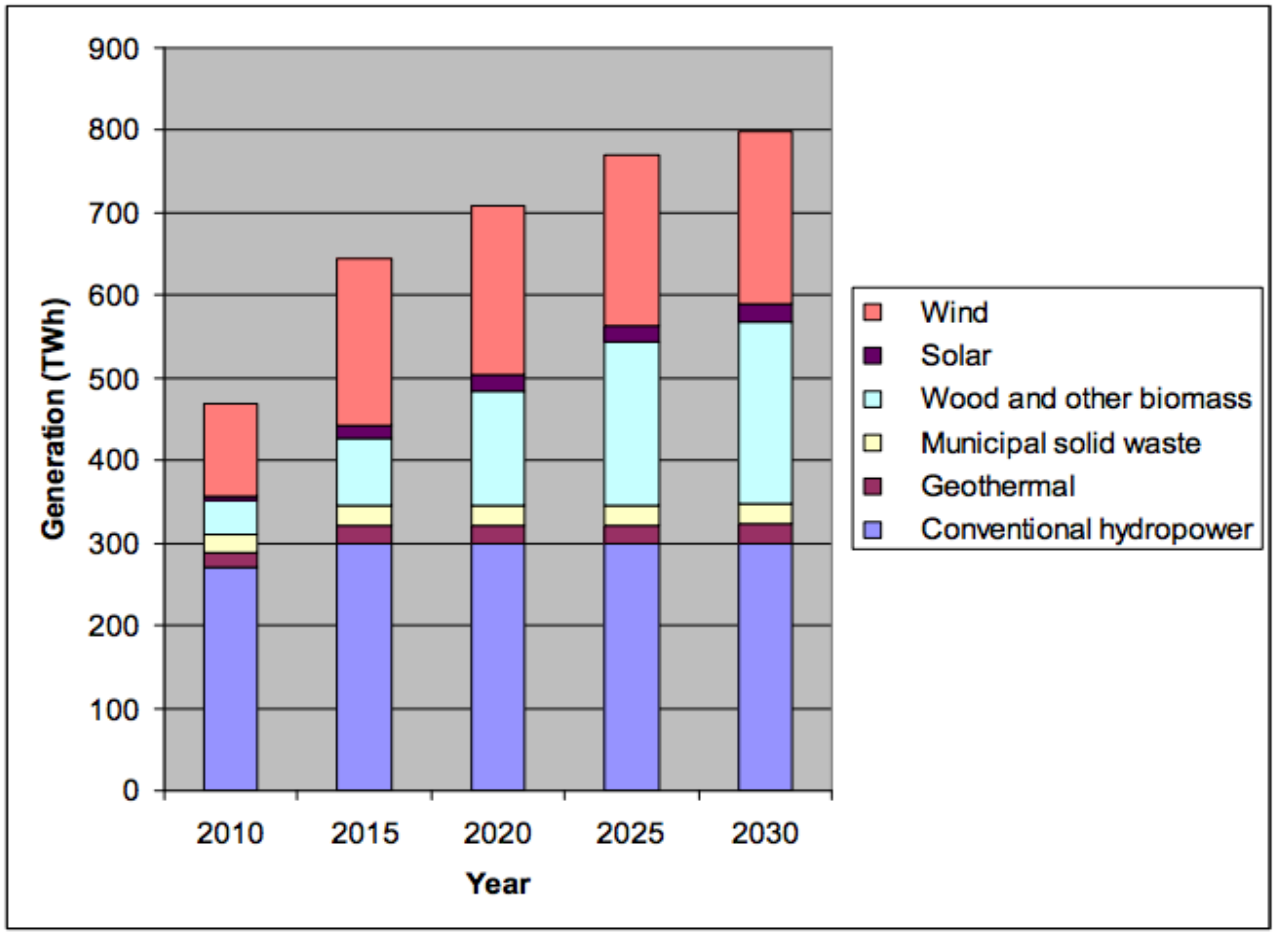
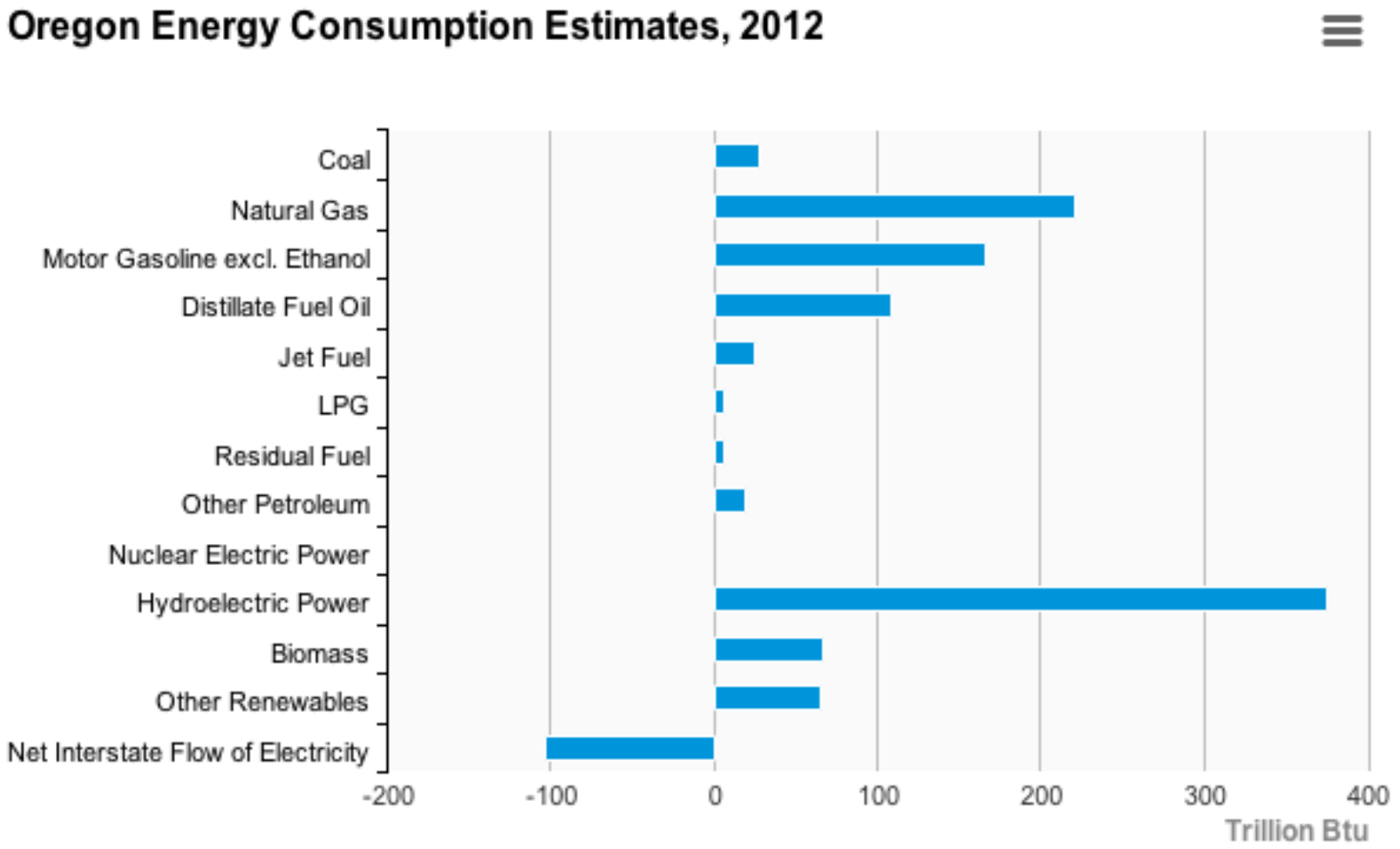


Fig 2—Projected baseline electricity generation from renewable fuel sources, 2010 to 2030. Data source: U.S. Department of Energy 2009f.

http://www.fsl.orst.edu/lulcd/Publicationsalpha_files/White_Biomass_bioenergy_Briefing.pdf

Breakdown of Oregon energy consumption 2012.



eia Source: Energy Information Administration, State Energy Data System

Oregon Statistics

- hybrid poplar trees: 34,000 acres
- may produce 28300-51000 bone dry tons of woody biomass per year
- Renewable Energy Portfolio
- ethanol could replace 20-24.6% of Oregon gas and diesel

http://media-cache-ak0.pinimg.com/736x/e1/13/c2/e113c275446e61c0352c92c91e9d4fac.jpg

http://www.clipartbest.com/cliparts/MTL/L5q/MTLL5qMac.png

10 Year Energy Plan: Oregon

"Supporting a **clean fuel industry** will help develop new **biofuel manufacturing** capabilities in Oregon, such as the new **ZeaChem** facility in Boardman, and help **commercialize new technologies** that create **advanced fuel from woody biomass**…"

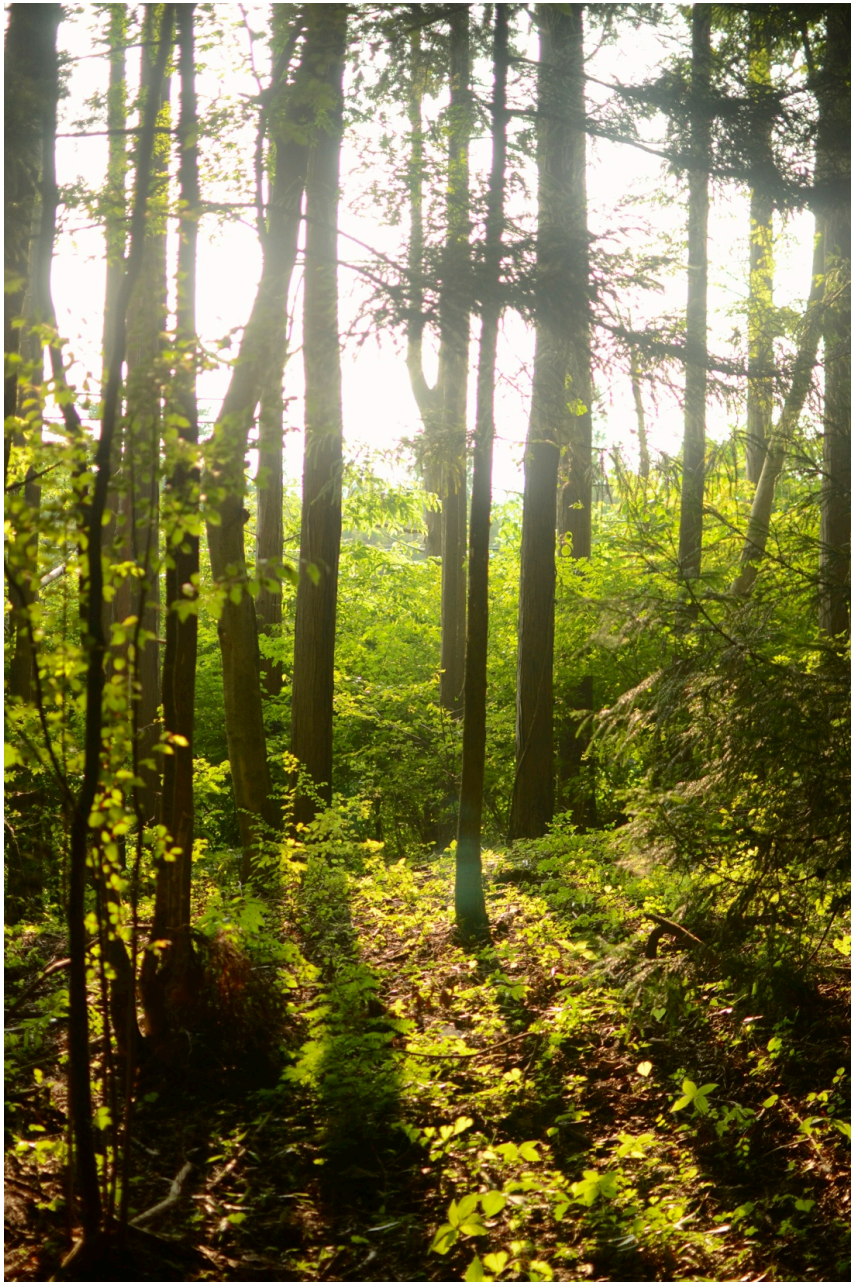
Oregon is rich in energy resources, including, but not limited to wind, solar, geothermal, wave, and biomass. Oregon will, to the extent possible, capitalize on harvesting these energy resources to meet Oregon's demand for power.

http://upload.wikimedia.org/wikipedia/commons/e/ed/Mt_Hood_Natl_Forest.jpg

A Situated Focus: Japan

Brief History of Japanese Forests

- Forests used in WWII
- Replanted
  - 67% forest cover, 41% of which is plantation
- Japan began importing timber in 1961
- Forest maintenance declines
- Great Japanese Earthquake of 2011



Implementation – Iriai Lands

- Japanese common lands meant for utilizing natural resources
- Evolving uses for the Iriai lands
- Plans to produce wood pellets from thinned forests
  - Recently built processing facility
  - Reduces CO_2 emissions
- Revenue from wood pellets used to manage neglected forests

Photo Credit: Daphne Yuen

Ecosystem Effects

- A forest dense with undergrowth and small trees is more likely to slide down a steep slope
- When roots are too tightly packed they compete for resources
- Lower branches die off due to lack of sunlight and trees become top heavy
- No grasses on ground lead to increased erosion

Forest Thinning in Japan

Un-thinned Forest

Thinned Forest

MOE Interview

Barriers

- Building roads
- Terrain (steep mountain slopes)
- Cost

Going Forward

- 20 million tons of organic debris from 2011 earthquake
  - Fukushima prefecture power plant
- Plans to build forest roads with government subsidies

Questions to consider: In an age where humans seem to influence everything we touch, how far is too far? Should we continue to fervently pursue methods of manipulations to solve the problems we have created, or are our interventions simply furthering those problems?