



Pyrolysis and forest residuals

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Overview

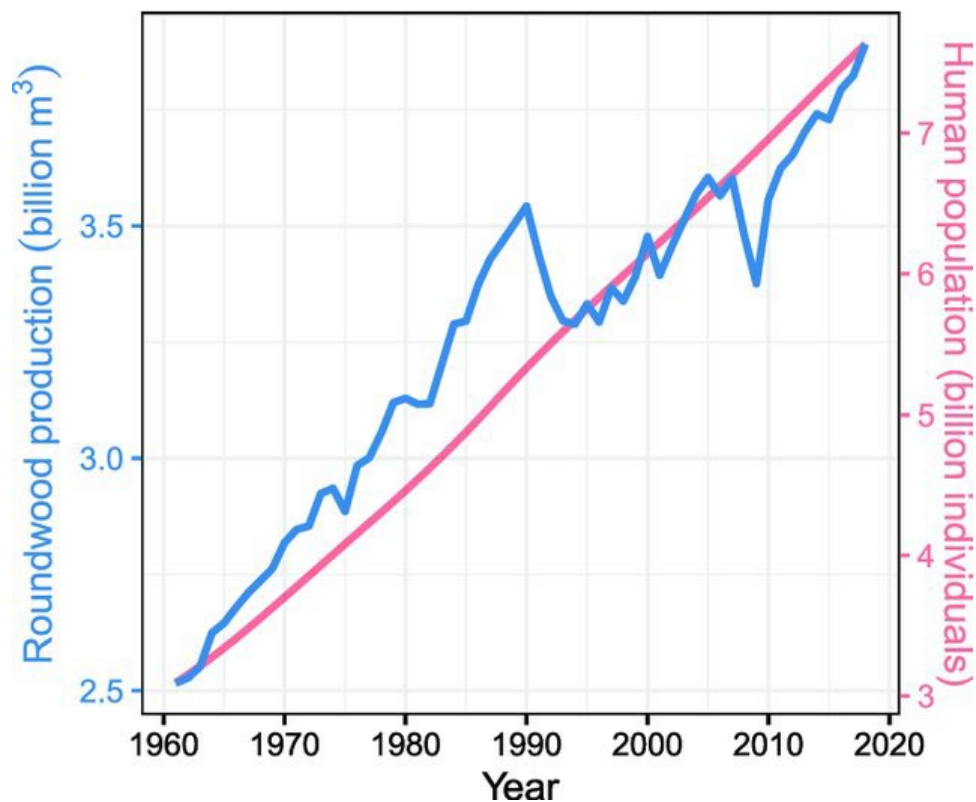
- Wood demand
- US Emissions breakdown
- Oregon Forest Harvests
- Residuals
- Pyrolysis – Proven technology
- Mobile units and the future



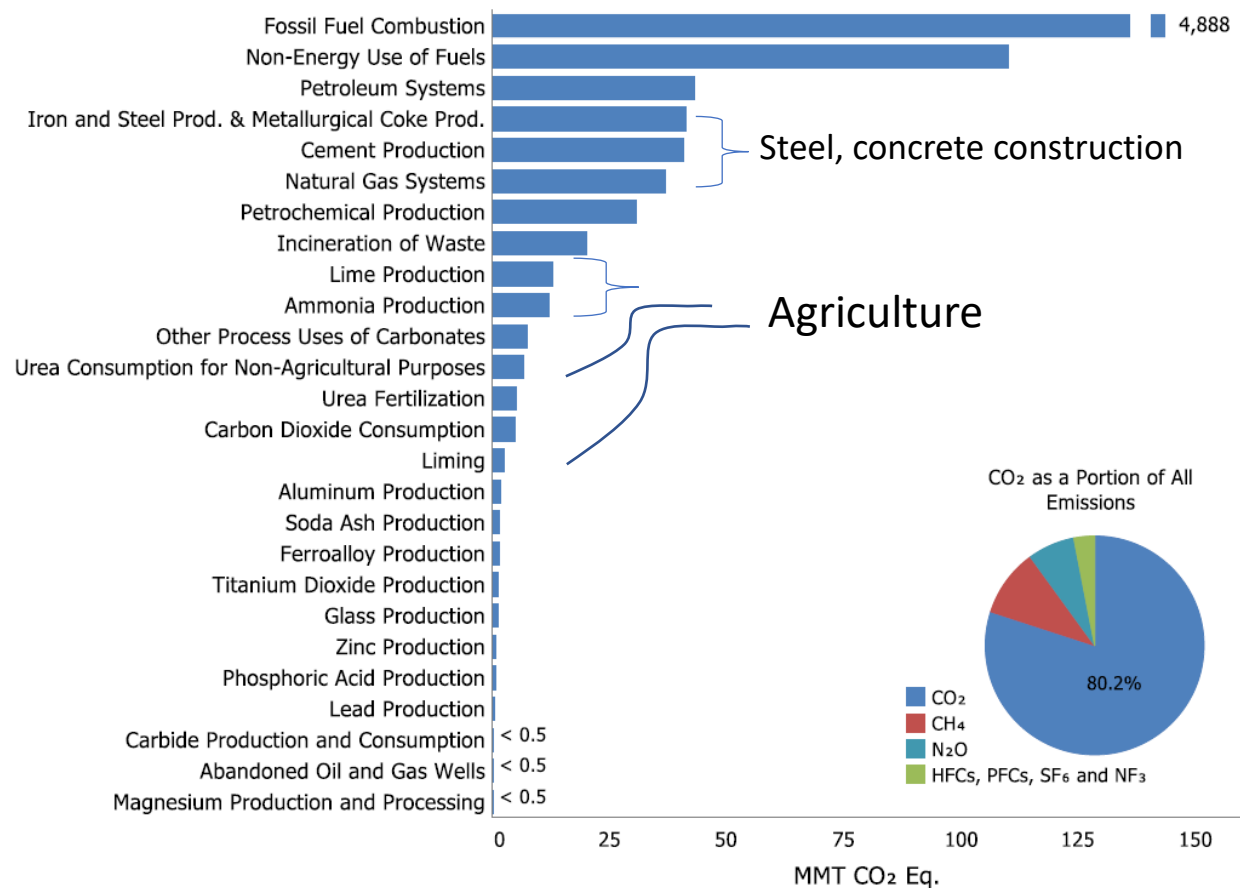
US carbon emissions, forest product demand

US Carbon emissions: Forest sector a carbon sink

Global roundwood production



Betts et al 2021



US EPA 430-R-21-001: Inventory of US greenhouse gas emissions and sinks (1990 – 2019)

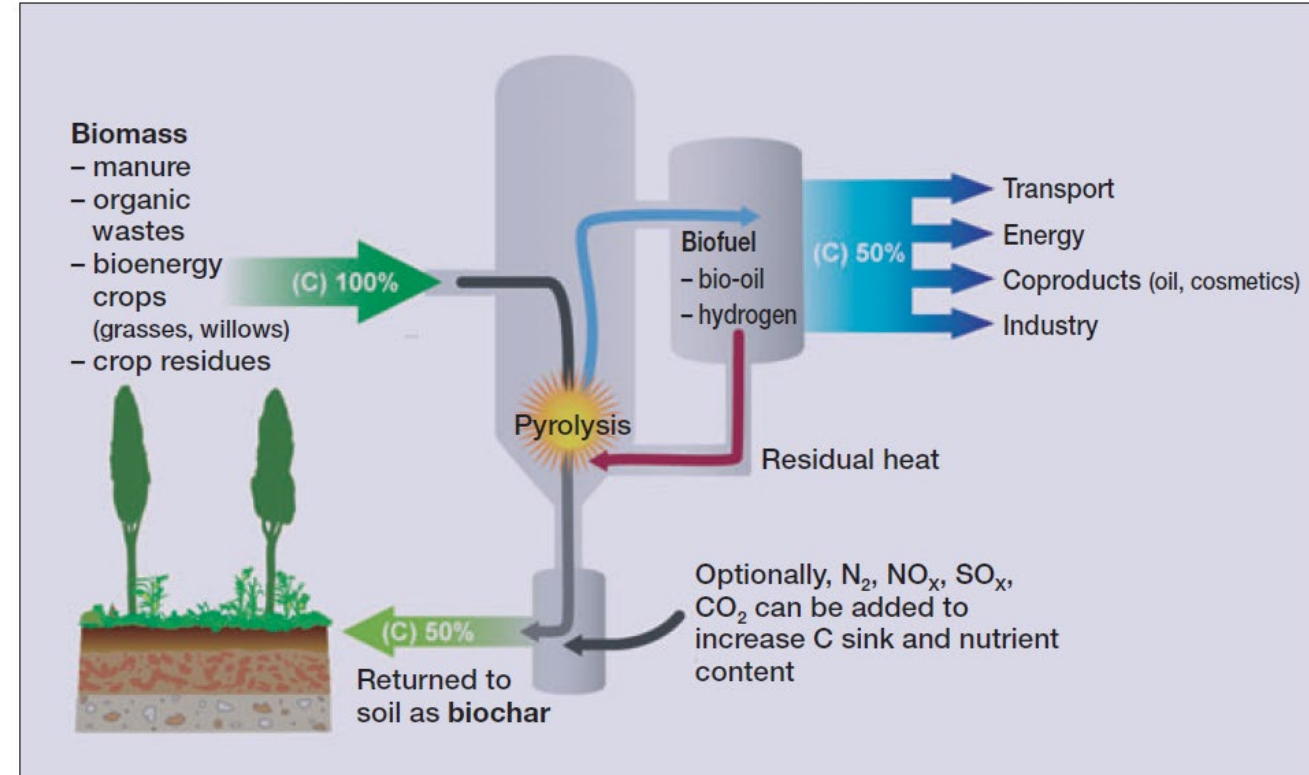
Currently, Oregon private lands generate

- 10 million acres of private forest lands
- Harvest about 3 bbf per year
- ~40% biomass remains as harvest residues
- We burn ~ 1.2 million tons of residues
- Carbon density ~ 50% = 0.6 million tons of C or 2.2 million tons CO₂e
- What if that were energy?



Pyrolysis is proven technology

- Conversion of biomass into bio oil, hydrogen, and biochar
- Biochar is a valuable soil amendment
- Increases soil carbon storage and improves soil physical properties



Lehmann 2007. Frontiers in Ecol. Env.

Mobile kilns

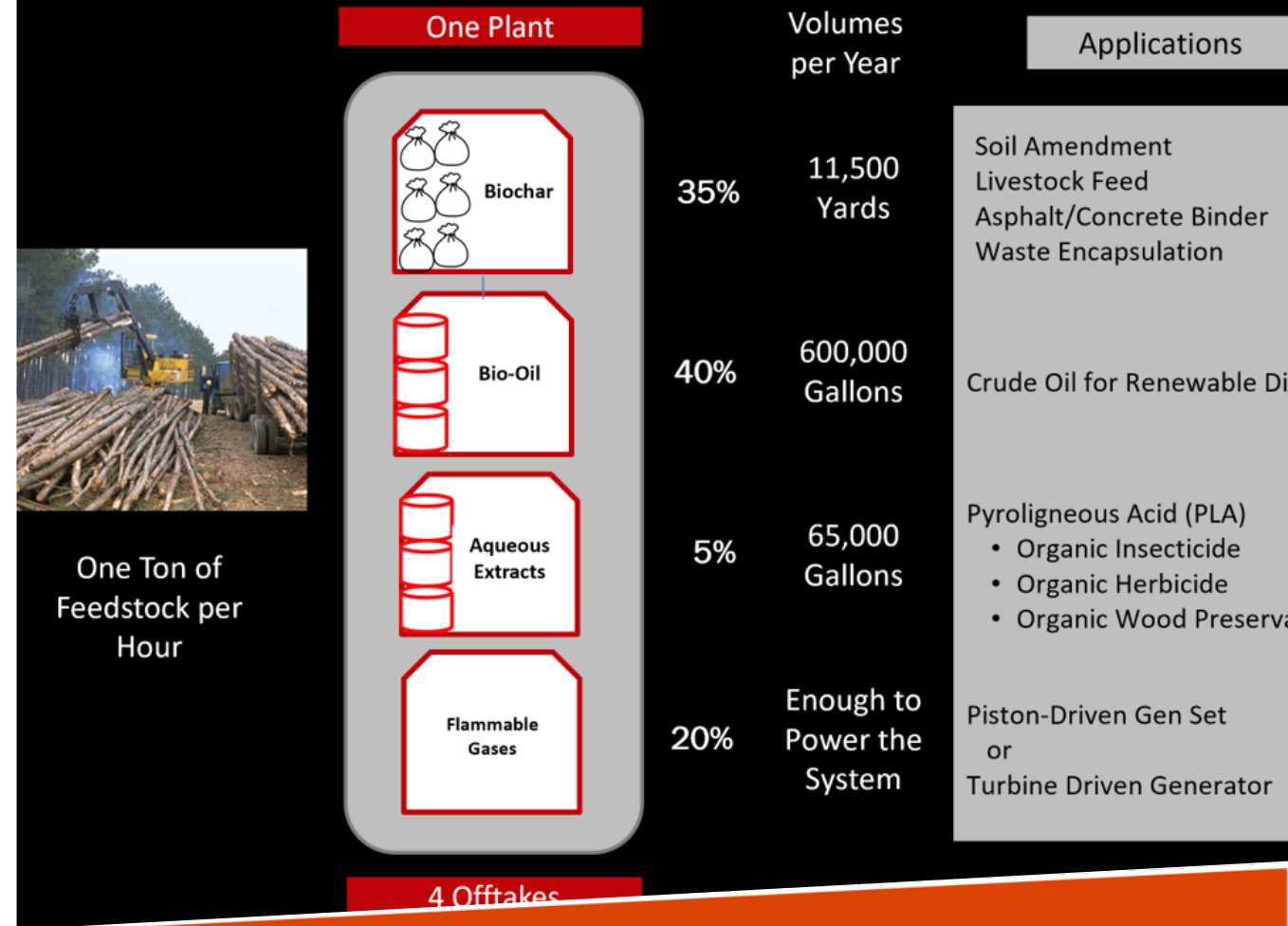
Distributed production

Past projects with centralized pyrolysis have failed

Biomass is bulky and expensive to transport

Mobile ComKilns provide new opportunity to get it right

Catalyst: ComKiln as an Anchor Tenant



Summary

1. PNW forestry produces with native species, environmentally sound, but could do better
2. Forest residues as a resource
3. Displacing fossil fuels with biomass = direct impact on C cycle



Thank You!

Any Questions?



Oregon State
University