

# The Policy Imperative

Delivering success on the economy and the environment

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# World

571.2 EJ (exajoules)

Energy consumption up  
by 1.1% per year since 2010

2010-2015:

Coal up 1.0% per year

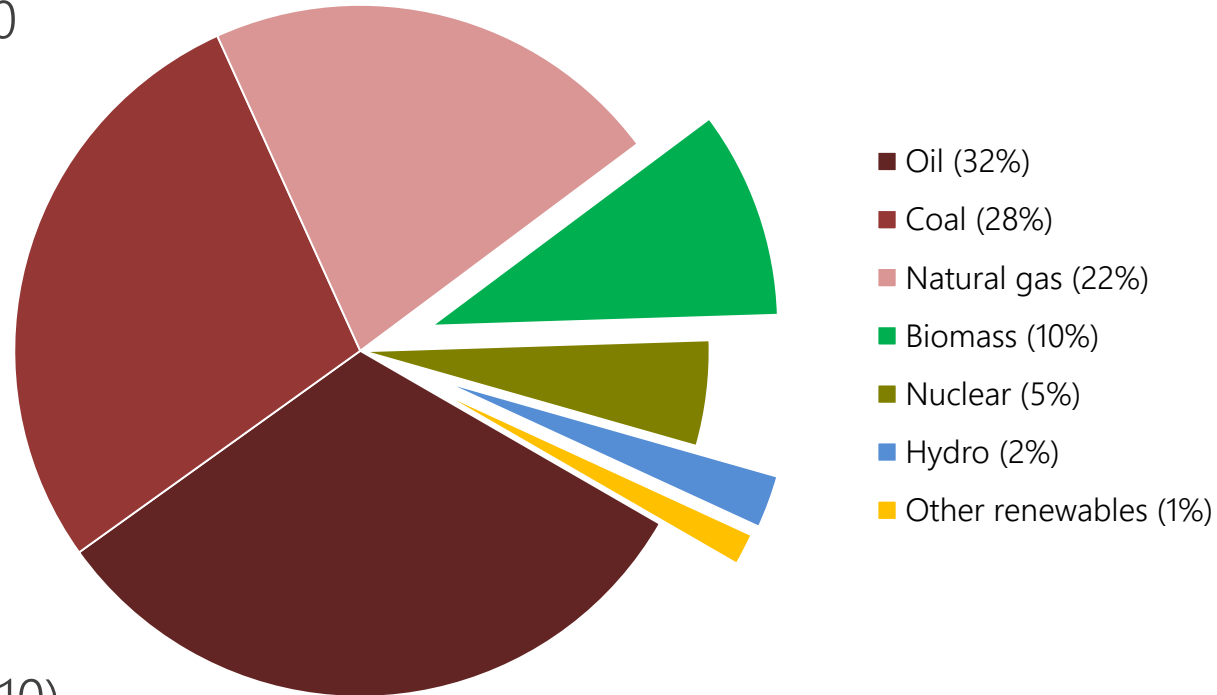
Oil up 0.9%

Natural gas up 1.5%

Nuclear down 1.3%

13.6% renewables

(up 1.9% per year since 2010)



# Canada

11.5 EJ (exajoules)

Energy consumption down  
by 1.6% per year since 2010

2010-2015:

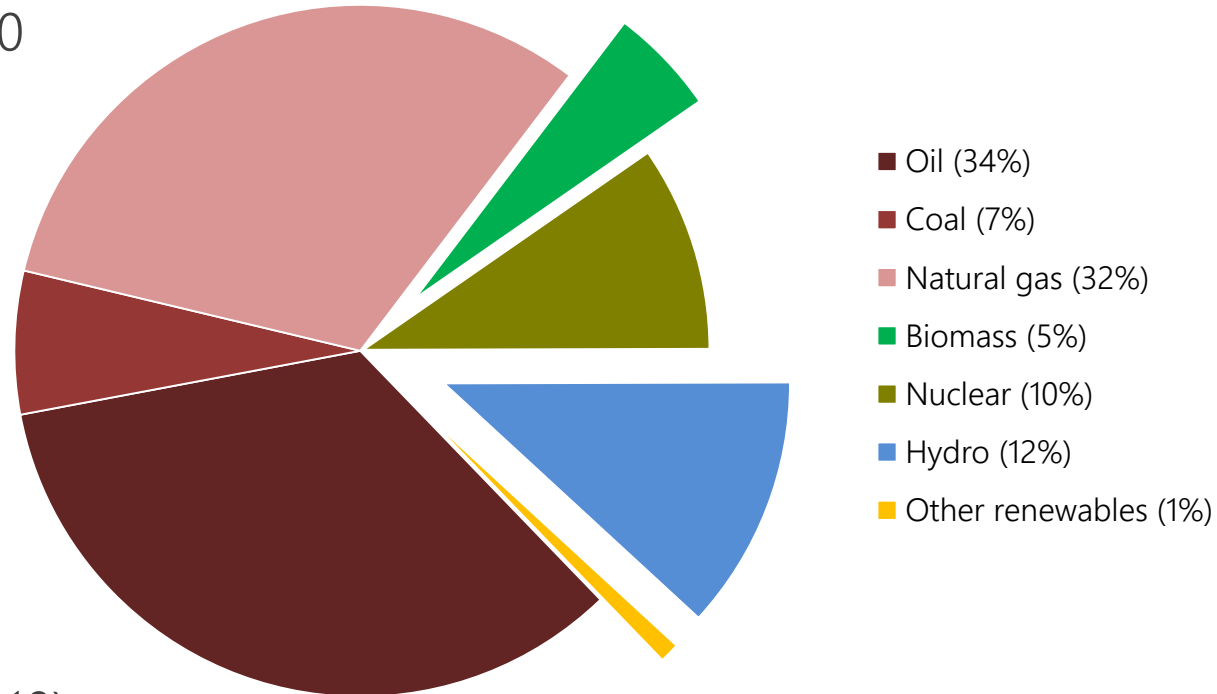
Coal down 4.1% per year

Oil down 0.7%

Natural gas up 2.1%

Nuclear up 2.4%

17.8% renewables  
(up 3.8% per year since 2010)

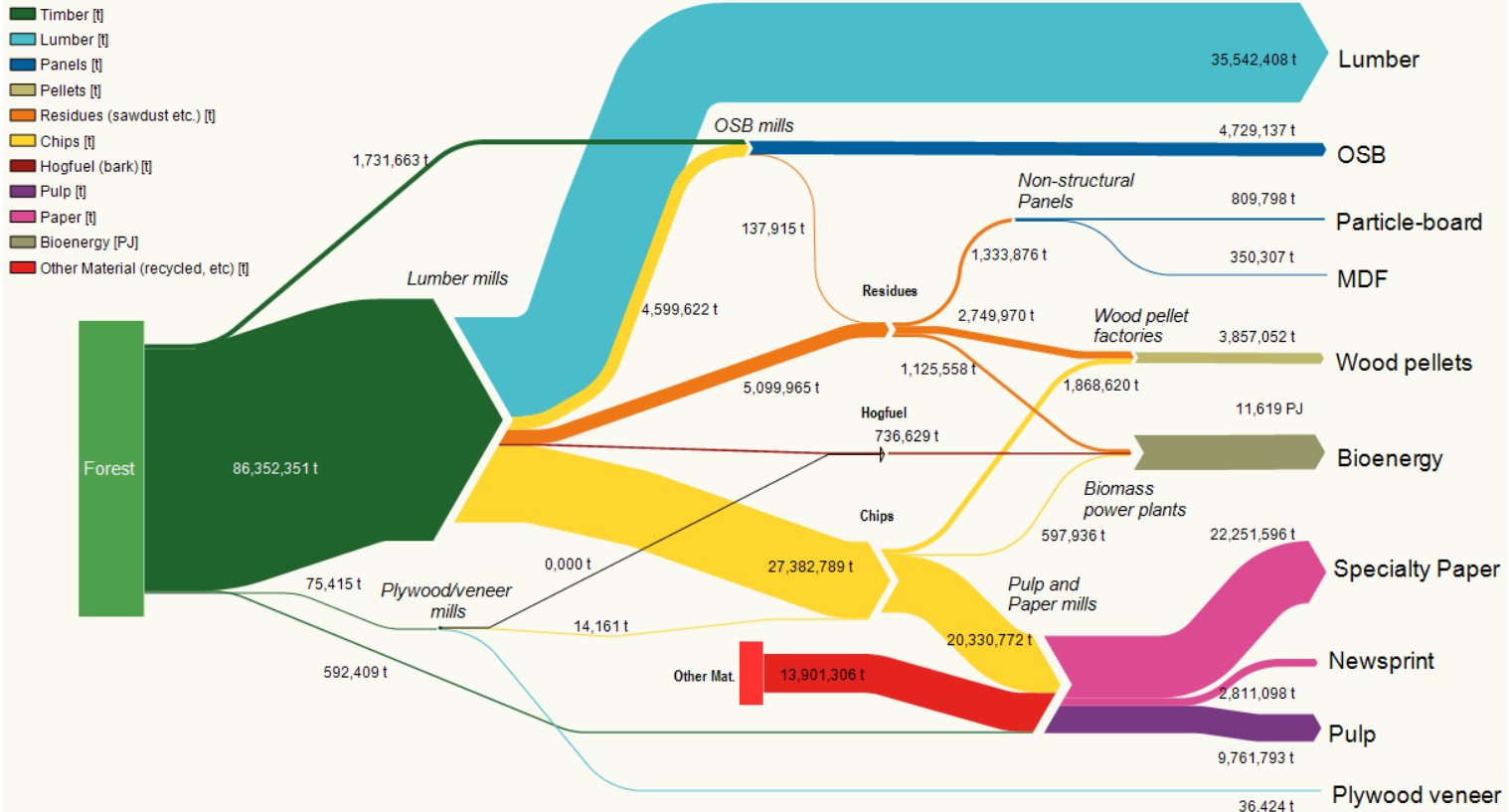


# Takeaway

- Our bioeconomy strategy has largely focused on energy outputs; we'd like to match or exceed the global average

# Current forest products cascade

Basecase\_CcLog\_2010

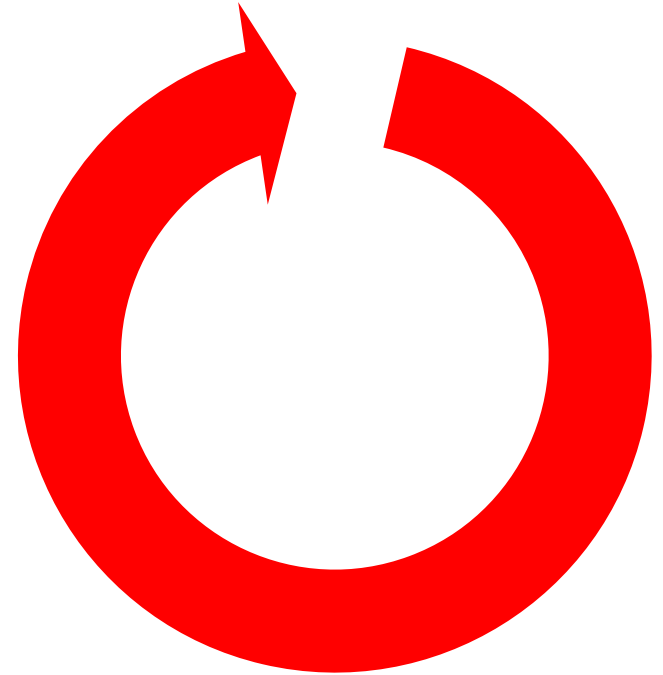


# Circular economies

Takes **recycling** to the nth degree

Primarily being explored in resource-constrained communities – most commonly in China (according to the literature)

By minimizing material inputs and multiplying the number of labour inputs that every material unit receives, this approach shifts the emphasis from **goods** to **labour**

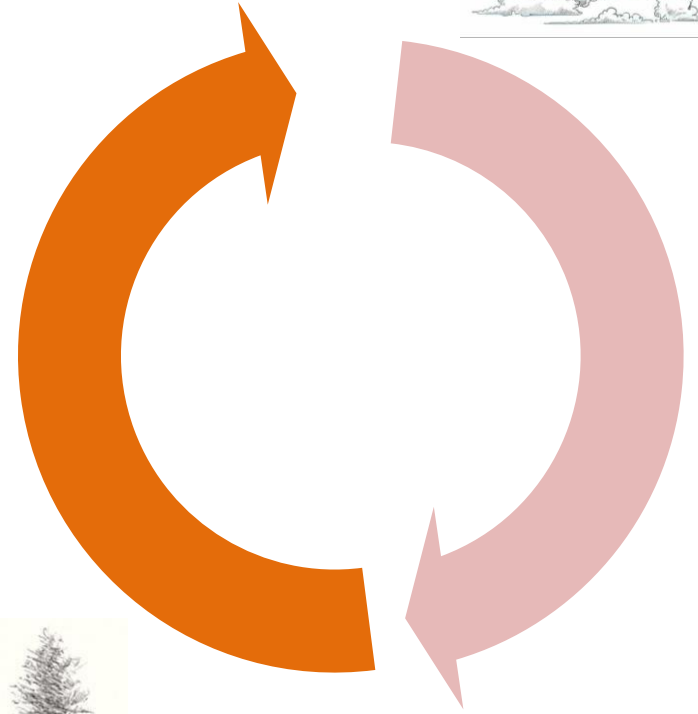


# Circular bioeconomies

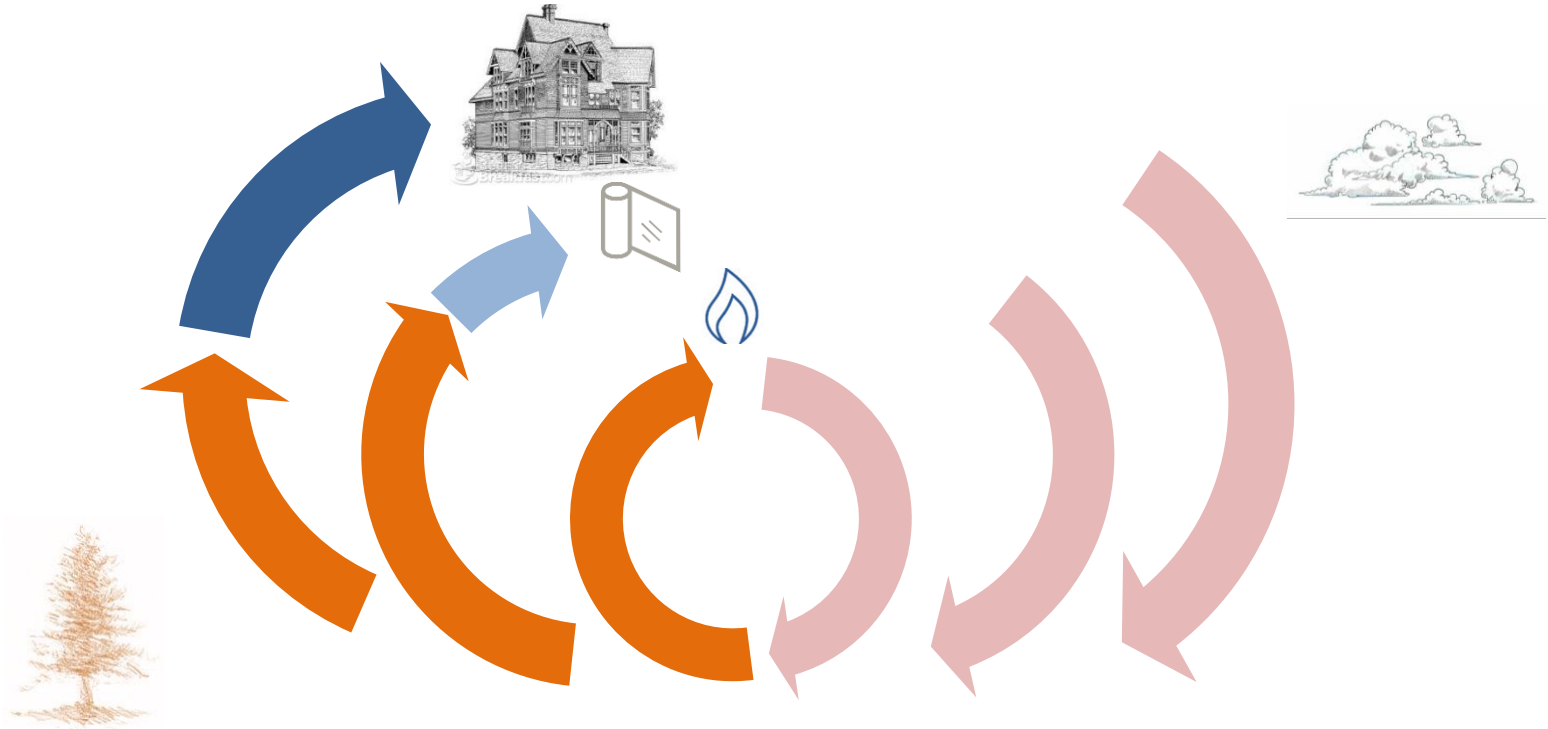
The bioeconomy is usually a circular economy as it naturally recycles CO<sub>2</sub>

The industry has not yet found ways to capture the full value of the circular bioeconomy

The circular approach could dramatically increase the amount of biomass available for construction and consumer goods, as well as for energy



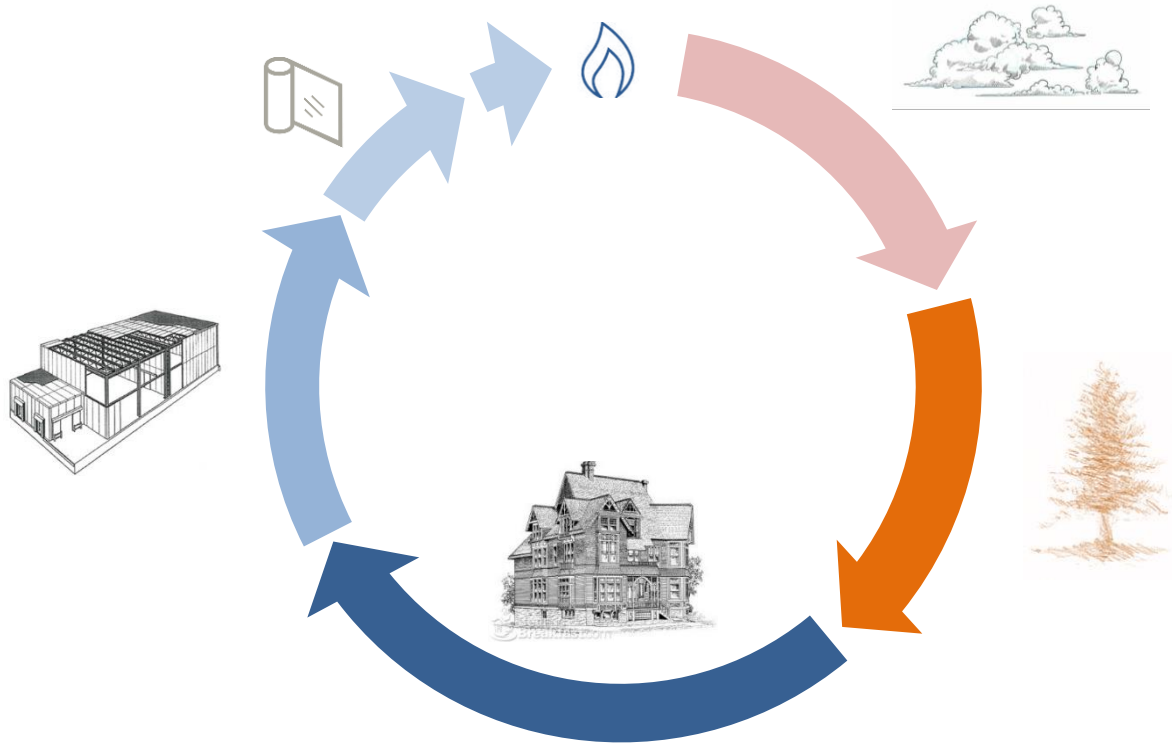
# Nested bioeconomies



Carbon sequestration in parallel product streams



# Sequential bioeconomies



Multiple uses extends fibre life and CO<sub>2</sub> sequestration

# Takeaway

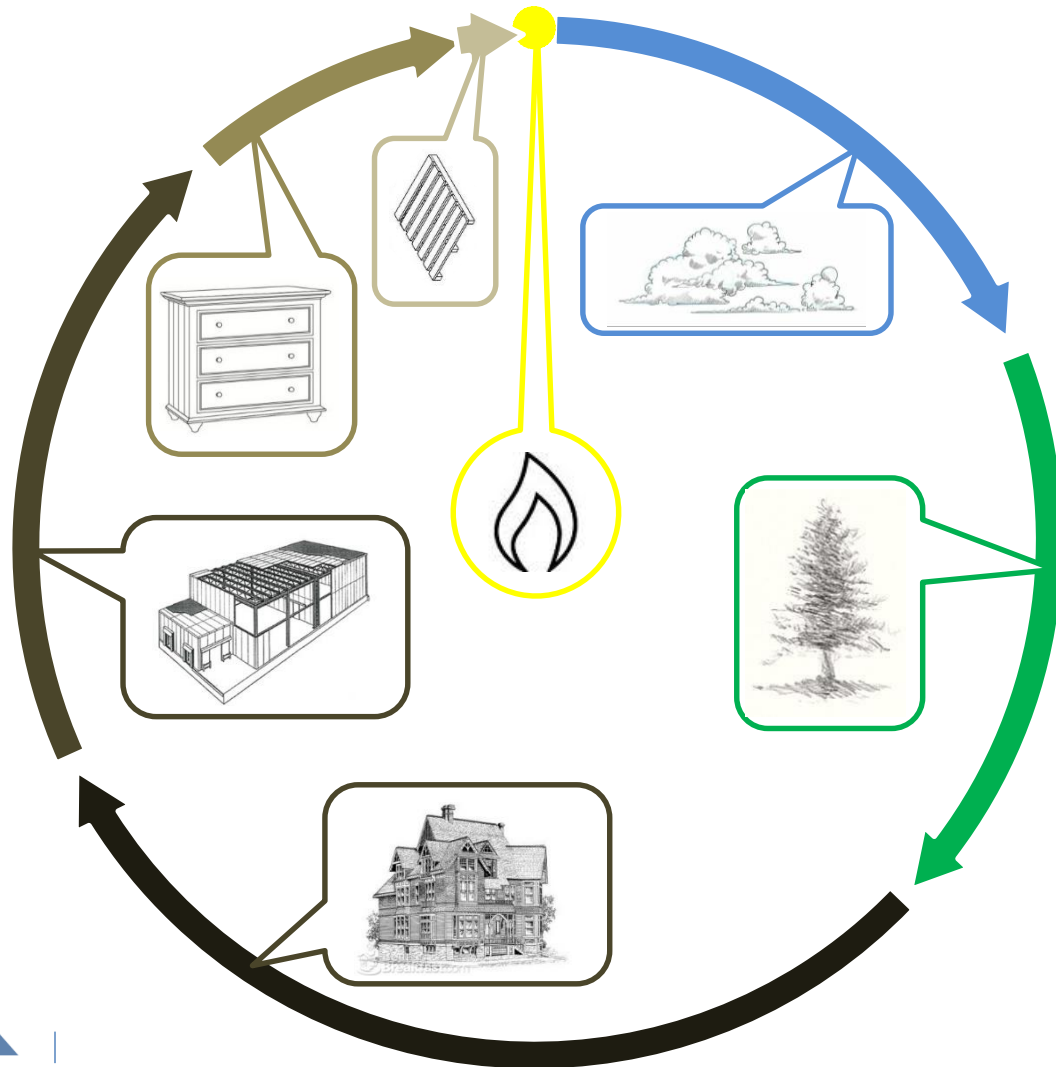
- Our bioeconomy strategy has largely focused on energy outputs; we'd like to match or exceed the global average
- Current forest industry operates in parallel, not sequence; some sequestration of carbon in forest products, generation of energy from waste or unloved woods

# Circular economies

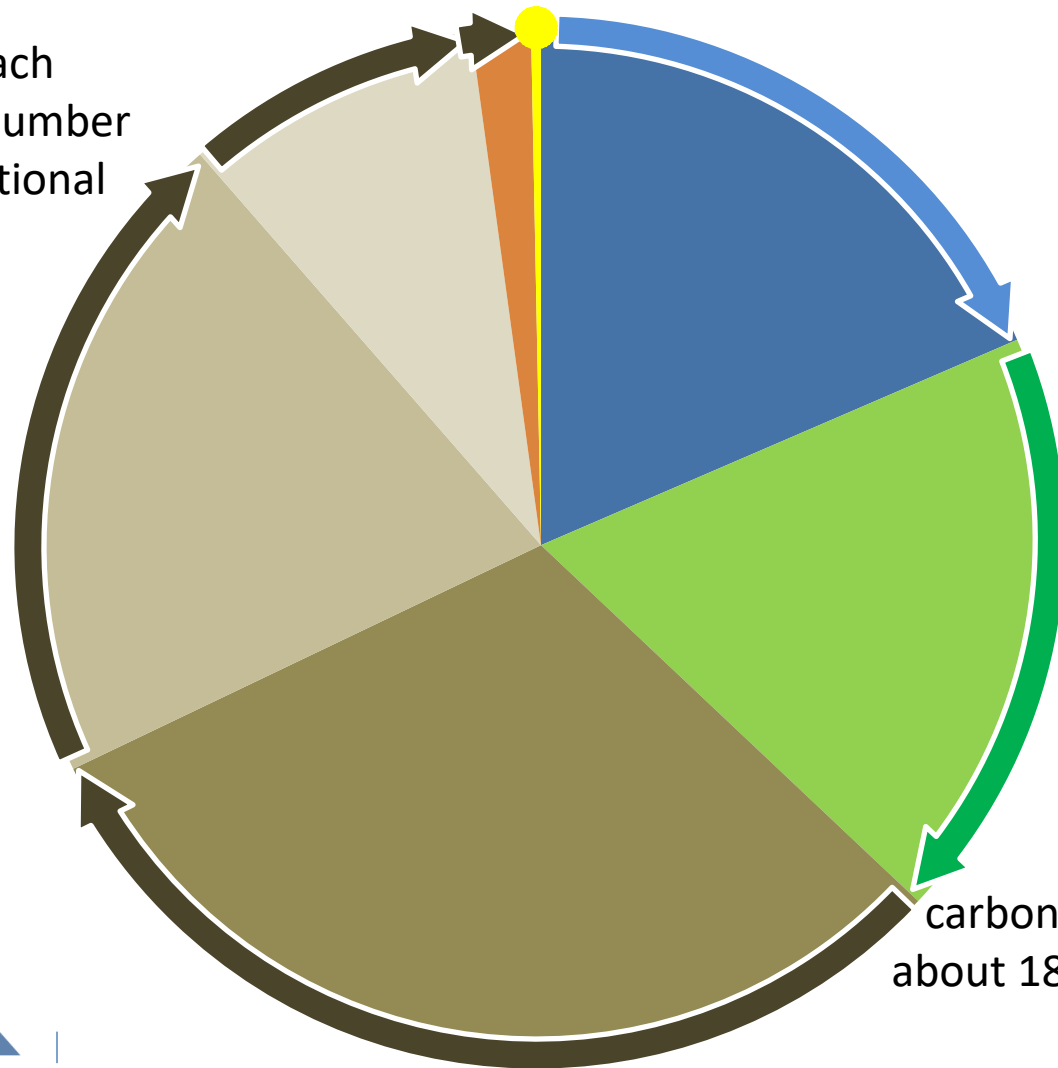
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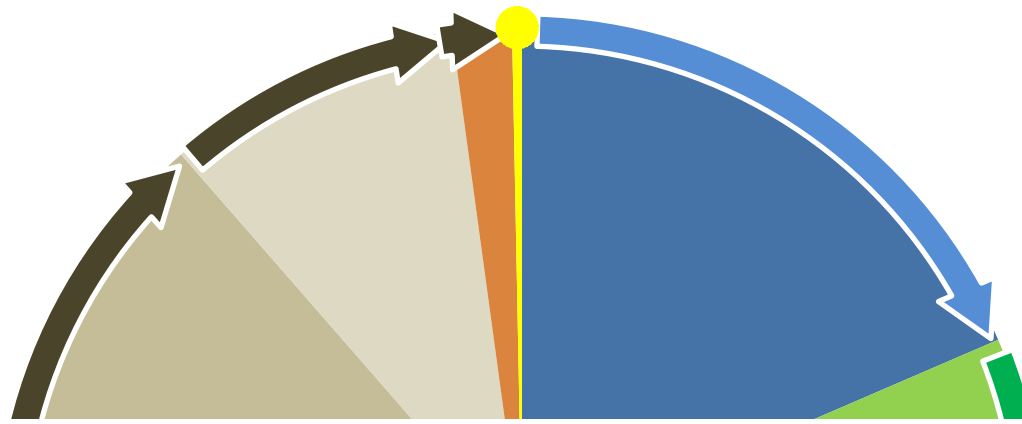
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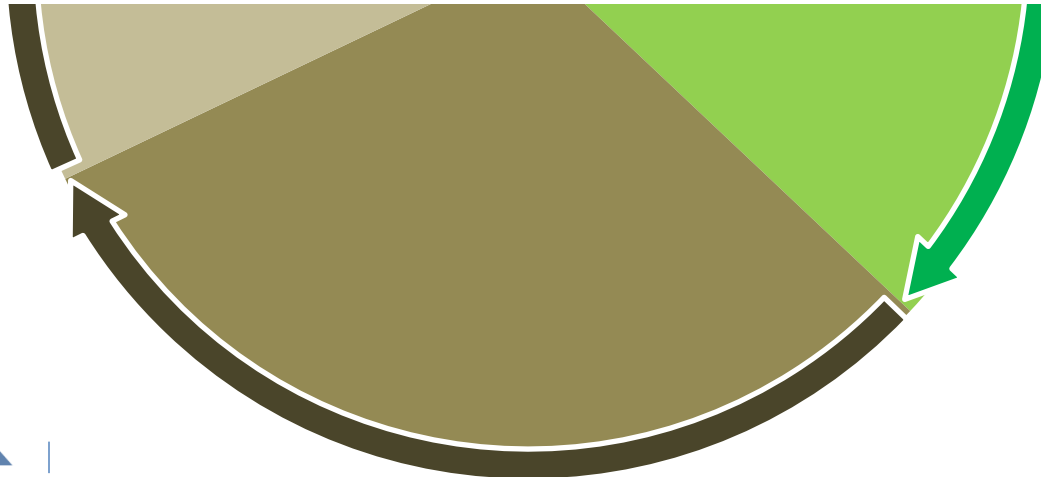
The circular approach creates the same number of jobs as the traditional approach – but over a much longer time and with much less material



Atmospheric carbon is now minimized to about 18% of the entire cycle



Not *Carbon Capture and Sequestration (CCS)*  
but **Carbon Capture and Recycling (CCR)**



# Key messages

Circular economy maximizes the availability of fibre; a single fibre could provide multiple jobs over decades/centuries; ultimately most material is available for energy production

*A circular economy is the only way that we can make limited resources available to a rapidly increasing and affluent global society*

The circular economy could be used to maximize both carbon sequestration and fibre usage, reducing the proportion of time that forest carbon will spend in the atmosphere (relative to the total cycle)

*We can keep the carbon where it belongs (out of the atmosphere) for longer and still get the power we need at the end of the day*

# Policy to adopt the circular bioeconomy

Carbon prices are helpful but transactional – you get paid when you sequester carbon, you pay when you emit it

The circular bioeconomy concept hinges on recognizing that long-term sequestration is worth more than short-term sequestration

*Policy needs to find a way to reward and encourage durable, long-term carbon storage in wood products – as well as green energy recovery at end of life*



# Carbon equity

The term carbon equity usually is used to refer to social access to carbon opportunities

We could think of carbon equity as similar to home equity – something that builds over time

Long-term sequestration could be rewarded in the form of tax relief or dividends; the current Federal proposal could be linked to this

# Takeaway

- Our bioeconomy strategy has largely focused on energy outputs; we'd like to match or exceed the global average
- Current forest industry operates in parallel, not sequence; some sequestration of carbon in forest products, generation of energy from waste or unloved woods
- Adopting a carbon equity reward strategy could encourage development of key elements of the circular bioeconomy