SFPA Spring Meeting

March 22, 2023

Pete Stewart
President & CEO

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Agenda

01 Excellent Forest Dynamics

02 Immigrants Underpin Demand

03 Supply Chain Transparency will be required

04 Global Trends in wood usage

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Fisher International

Forest2Market

Prima Markets

Tecnon OrbiChem

Wood Resources International

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01 South's Excellent Forest Dynamics

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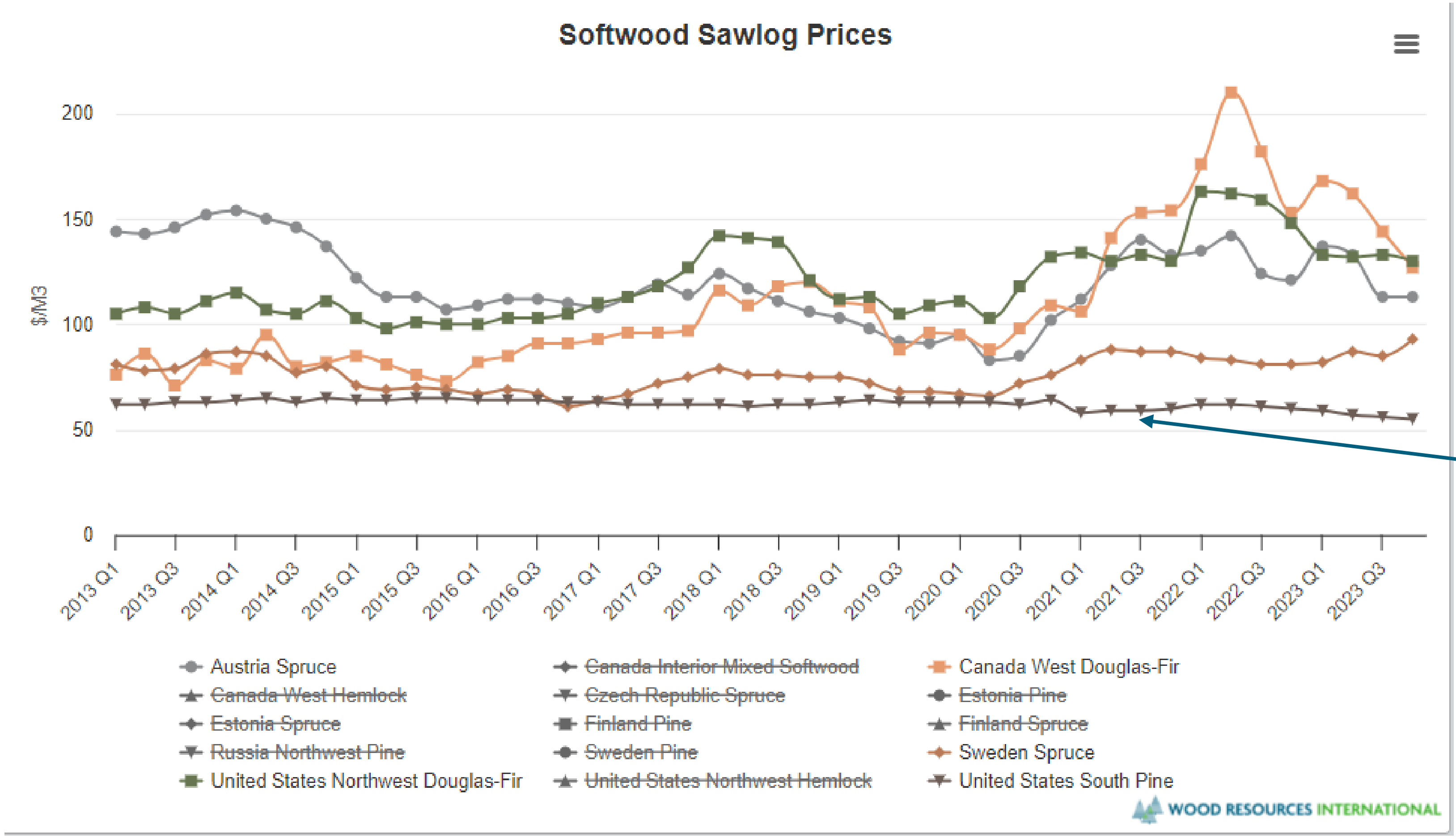
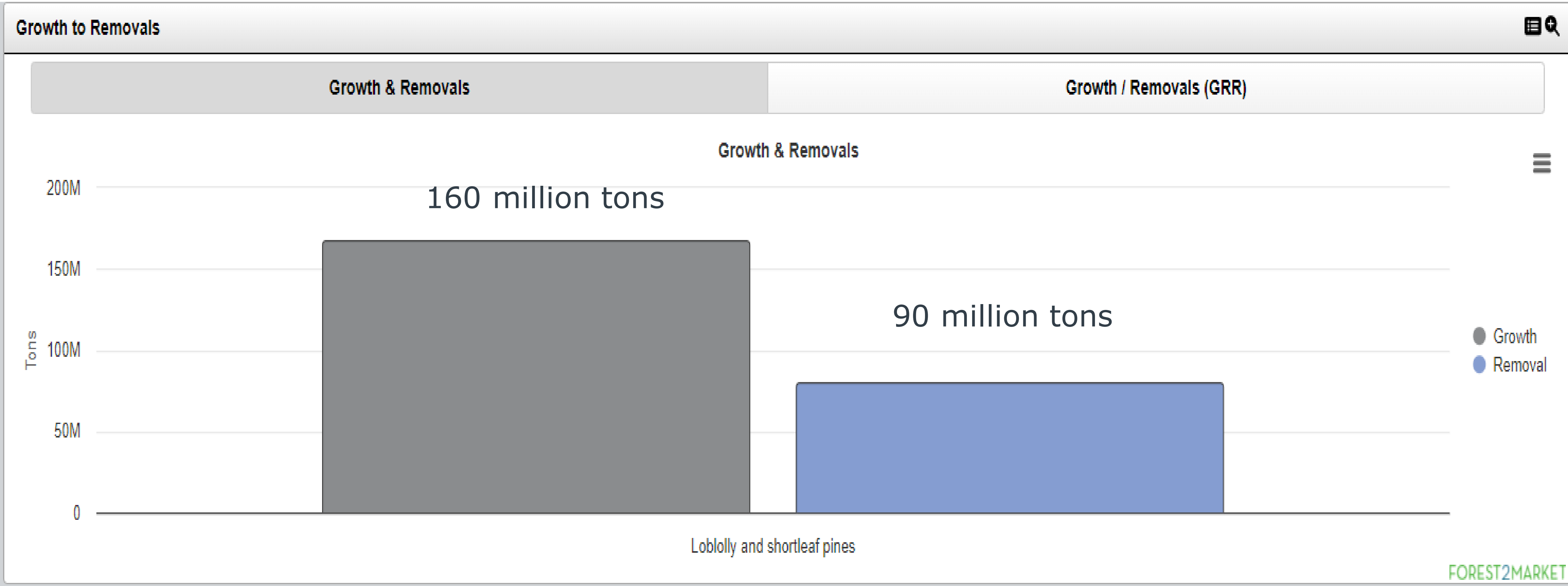
Sawlogs are cheap and have been for a long time

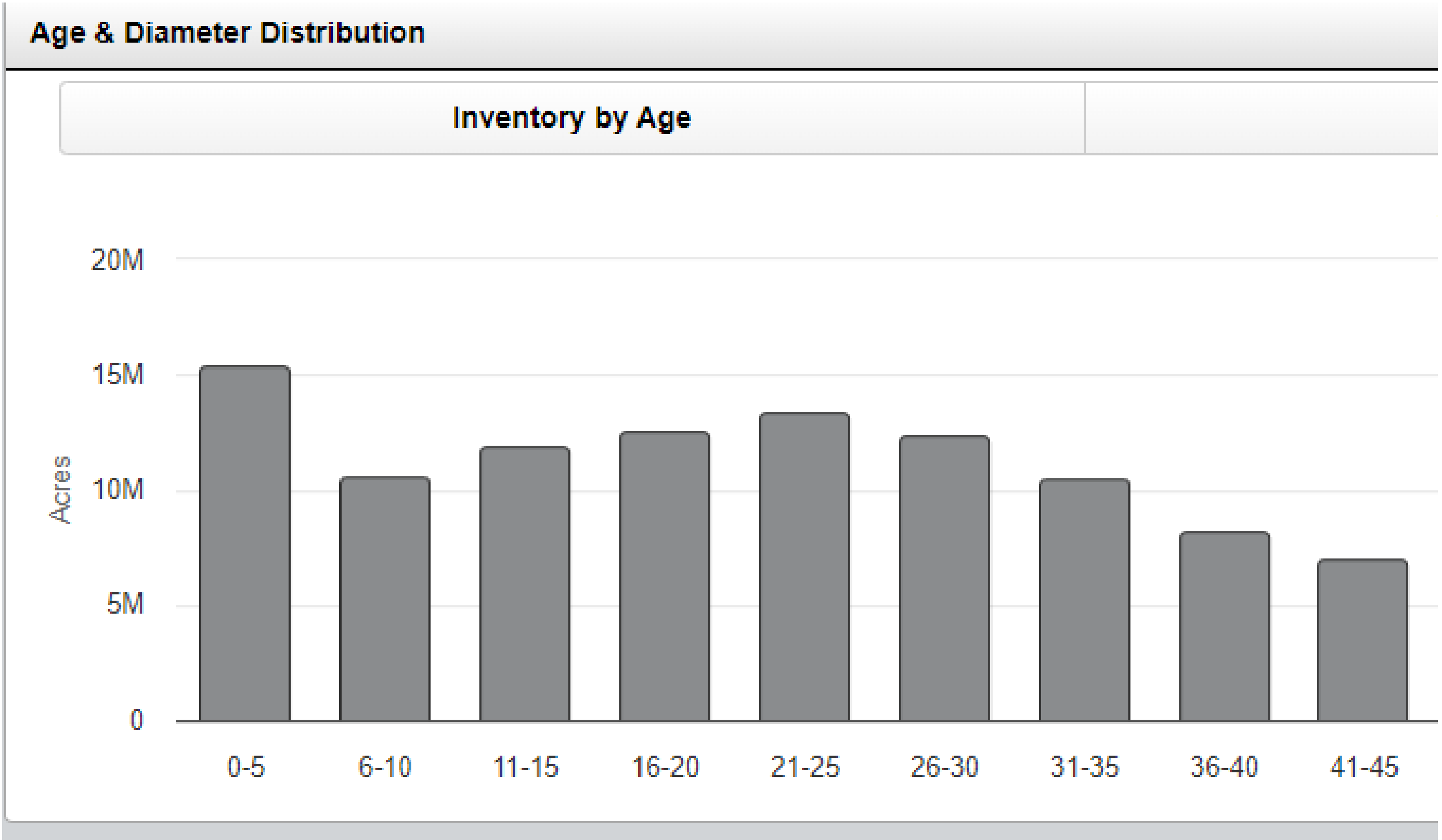


US South – logs are cheap and stable

US South can support solid wood industry twice its size



Massive wave of pine trees coming



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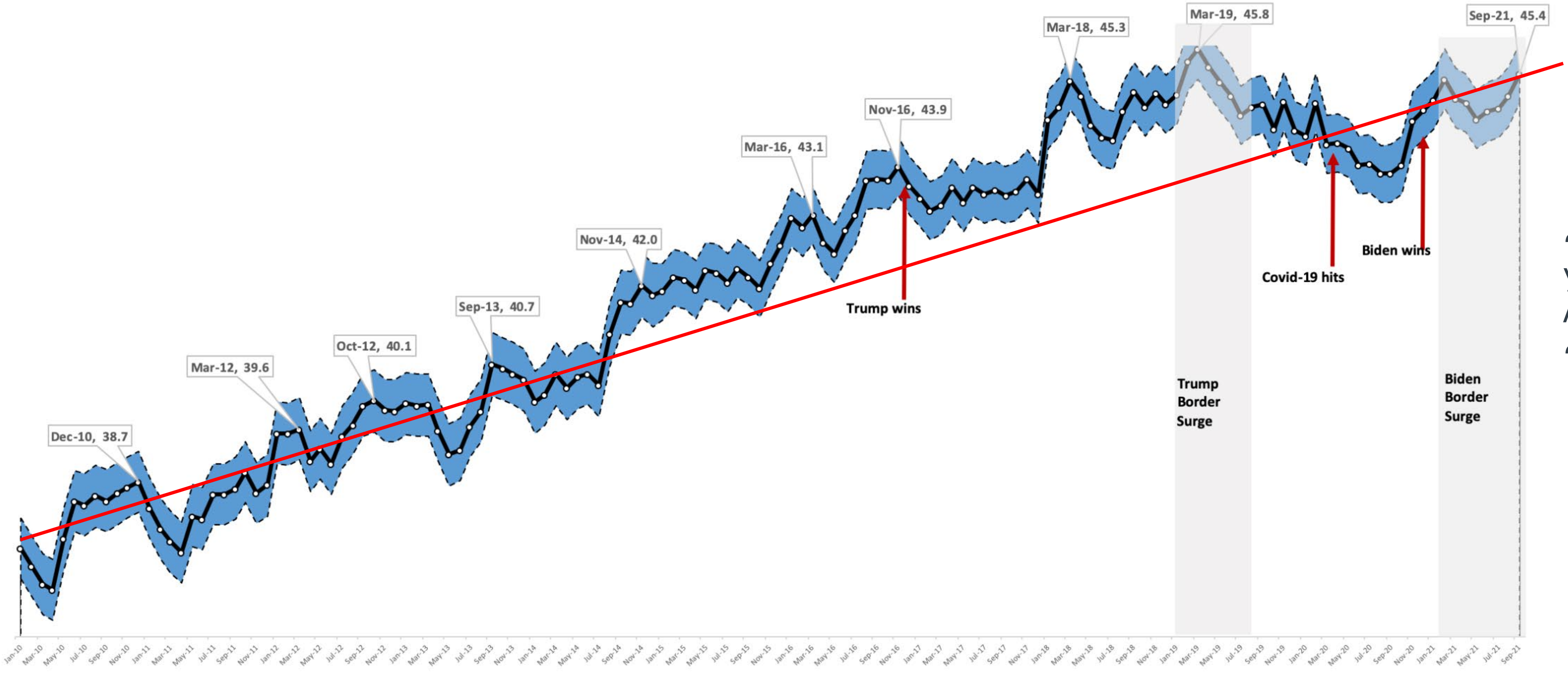
Immigrant Population increased for many years, but has been volatile since 2018

Figure 1. Immigrant Population in the U.S. by Month, January 2010 to September 2021
(in millions)

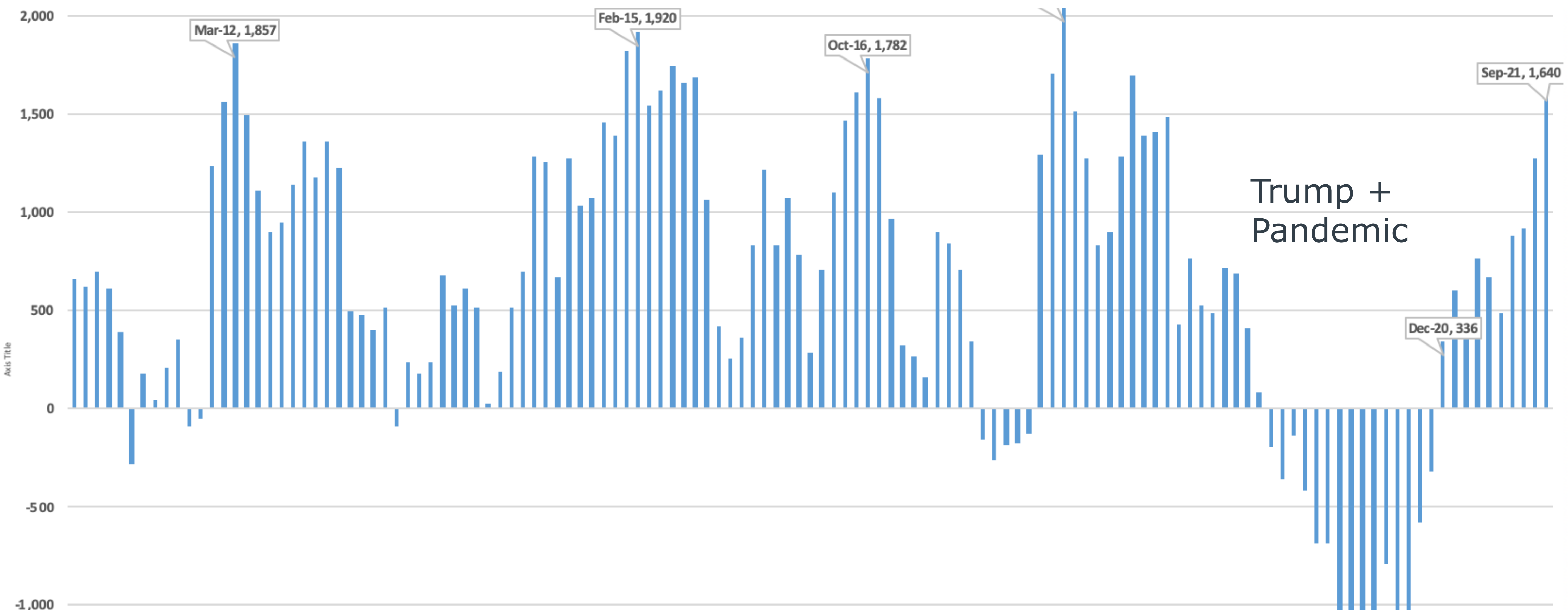


Source: January to September 2021 Current Population Survey. Blue shaded area shows the margins of error around the point estimates, assuming a 90% confidence level.

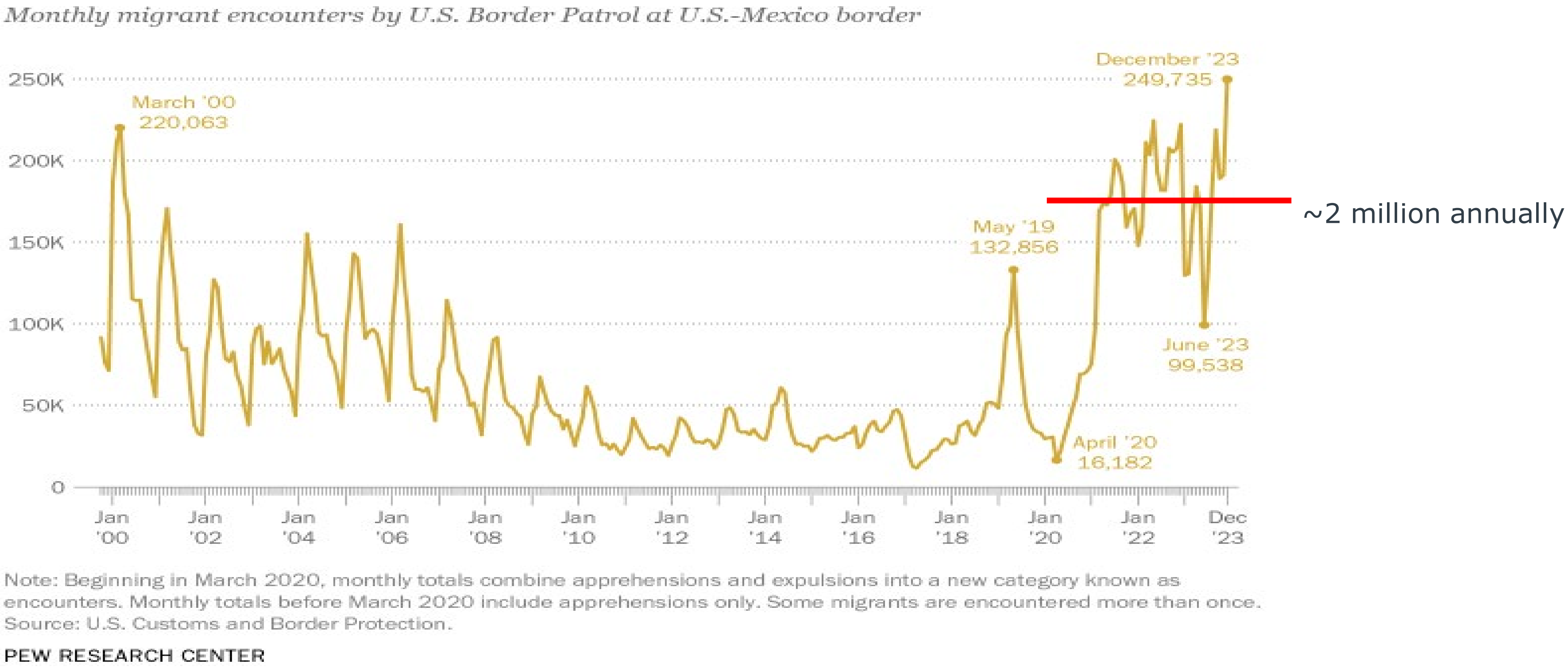
15% per year; 6-7 million immigrants

~ 1% per year for all Americans ~22 million

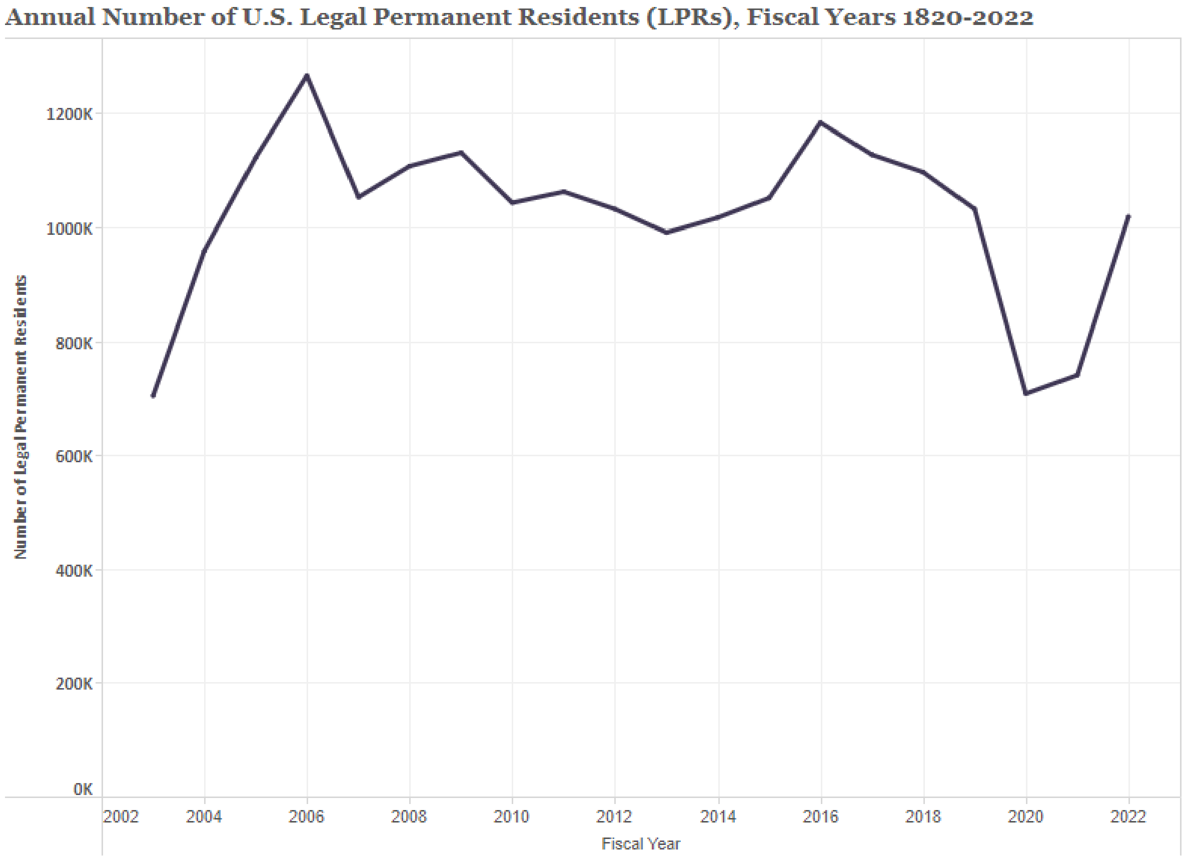
Change in immigrant population consistent with economic conditions and policy changes



US-Mexico boarder encounters average 180,000 per month



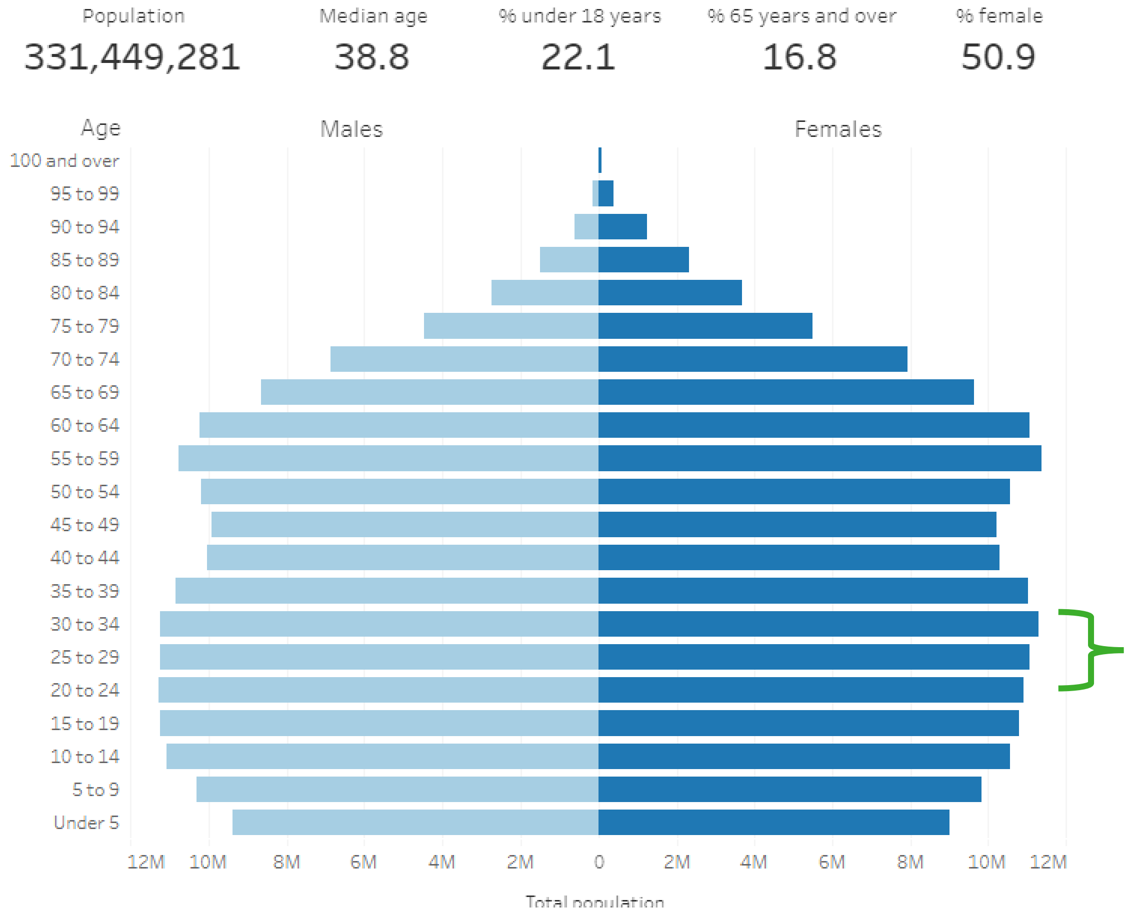
Legal Immigration



Approximately 1 million new legal permanent residents/year

500,000 new visa holders per year

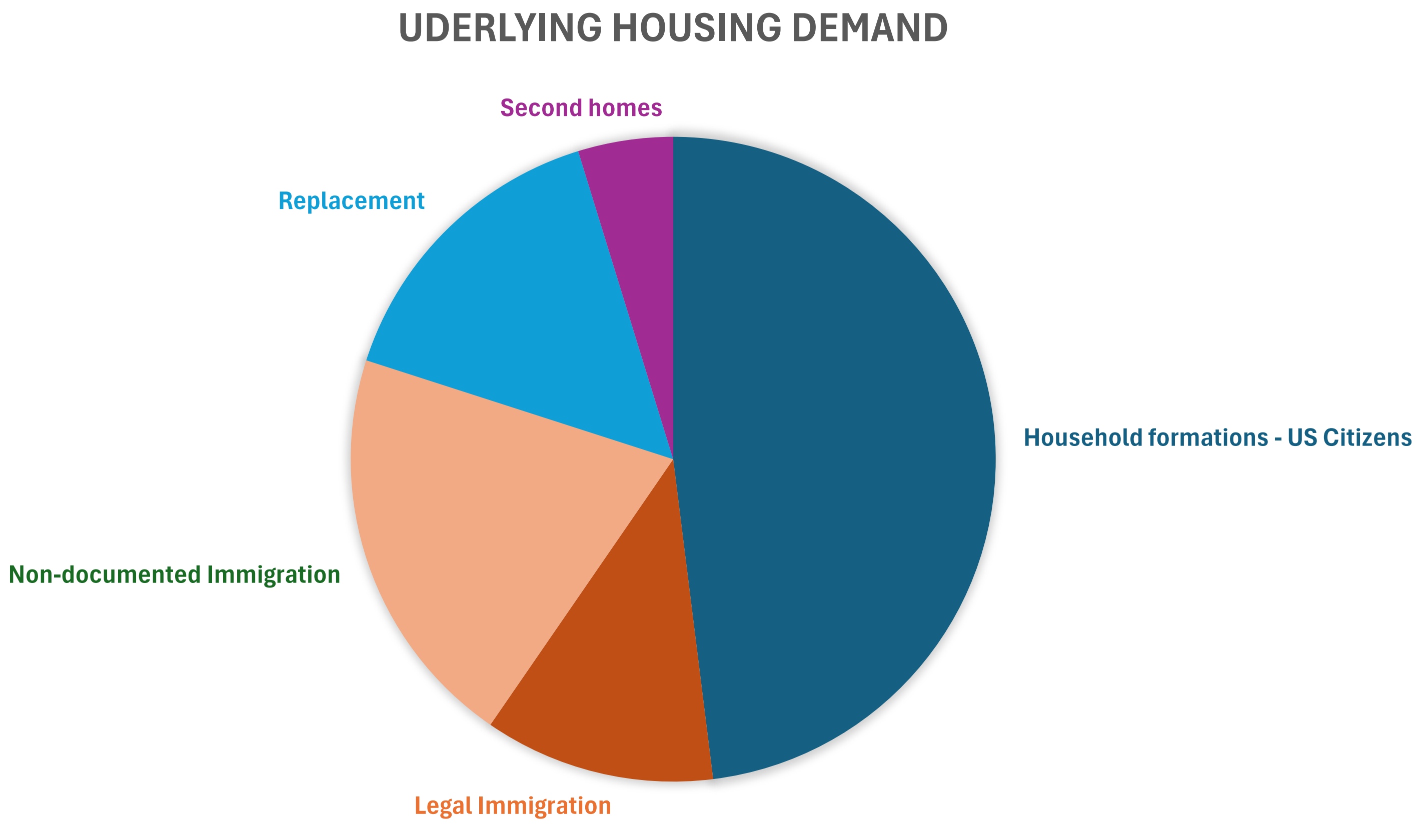
Good underlying population fundamentals



45 millions of people between 24-34 years - the core household formation years

Good underlying population fundamentals

~ 1.9 million new homes



ResourceWise

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03 Supply Chain Transparency will be required

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Industry will need to adapt to new supply chain demands

- New fiber demands come with new transparency rules
  - Track origin, age, biodiversity
  - Audit trail and transparency
- RFS II
- Carbon – voluntary and legislated
- New SEC rules covering scope 1 and scope 2 emissions
- *European Union Deforestation Regulation*

EUDR at a Glance – Key Provisions

Law Passed July 2023, Compliance by Jan 1, 2025

- Applies to nearly all solid wood products and MOST pulp and paper products[1]
    - Excluded “seats of wood” and printed books, newspapers and products of printing
- Operators required to provide customs with due diligence declarations; customs will have the authority to seize goods if compliance is not met or for suspicions of fraud
    - **Penalties can include fines of AT LEAST 4% on total exported turnover to the EU for the most recent year in addition to exclusion from EU market**
- System of diligence must include geolocation for all parts of the article derived from wood
    - Simple geolocation for lots less than 4 hectacres
    - Polygons for lots greater than 4 hectacres
- System is designed to prevent import of goods that contribute in any way to Deforestation and Degradation of Primary Forests – See next slide for terms

EUDR places the onus on operators to provide diligence statements that exports comply with EUDR and specifically including submission of geolocation data for all wood used in the mfg. of the goods[2]

(1) EU 2023/115 Annex 1 (2) EU 2023/115 Article 4

EUDR Key Terms and Provisions, Cont.

- **Primary Forests**
  - Means naturally regenerated forest of native tree species , where there are no clearly visible indications of human activities, and the ecological processes are not significantly disturbed.

- **Deforestation Free**
  - Relevant products have been produced on land that has not been subject to deforestation after December 31, 2020
  - In the case of products made from wood, that the wood has been harvested from the forest without inducing forest degradation after December 31, 2020

- **Forest Degradation**
  - Means structural changes to forest cover, taking the form of the conversion of Primary forest or naturally regenerating forest into plantation forests or into other wood land; or primary forests into planted forests.

Will EUDR Be Implemented?

EUDR is an Offshoot of the European Green New Deal – For the Most Part, the EU is Executing on Their GND Policies

- As in the GND, EURD recognizes the contribution of the Forest Value Chain to a sustainable, lower carbon future
- However, the regulations beginning clauses cite deforestation as a significant cause of climate change, among other issues (biodiversity loss, indigenous rights, etc.)[1]
- Additionally, a central tenet of the GND and associated policies us the use of "assertive" trade policy to accomplish climate change (direct and indirect) objects both in keeping with the GND but also, the Paris Agreement
- ResourceWise regularly monitors mandates in the EU especially as it pertains to decarbonization; we note that EUDR is consistent with other climate change trade policies
  - Biofuel blending mandates ("Fit for 55", EU Red II)
  - Carbon Adjustment Mechanism ("CBAM") on energy intensive imports

Based on the current political environment in EU relating to climate change, and interviews with EU stakeholders, we believe it is likely that EUDR will be implemented

(1) EU 2023/115 clauses 1-27

Which U.S Forest Commodities are Most at Risk?

Pellet Manufacturers and EU Importers - ~ $1.5 Billion

Pulp and Paper Manufactures and Traders - ~$2.4 Billion

RW Focus/Most willing to engage
in a solution

Lumber Manufacturers - ~ $500-800 Million

EUDR likely advantages pulp and paper producers with owned plantation operations for pulp fiber

(1) FisherSolve Market Trade Data, 2022

Lumber Manufacturers will have to adapt

To sell primary products (lumber) into the European market

To sell residuals to pellets or pulp/paper that export to Europe

EUDR likely advantages pulp and paper producers with owned plantation operations for pulp fiber

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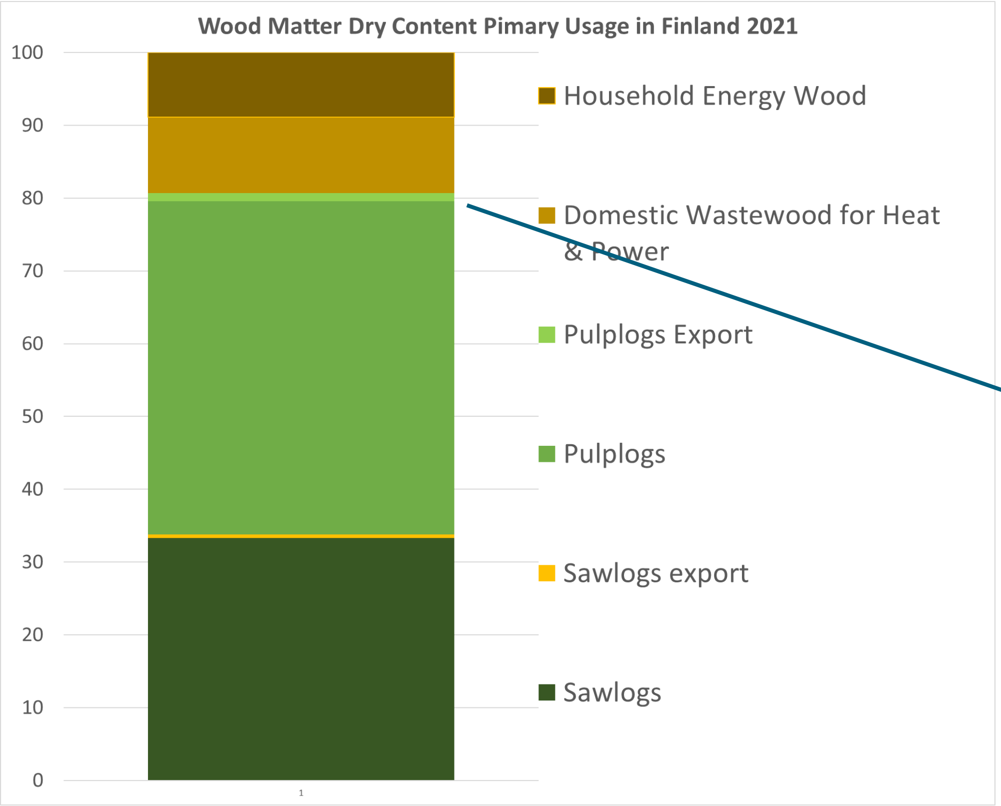
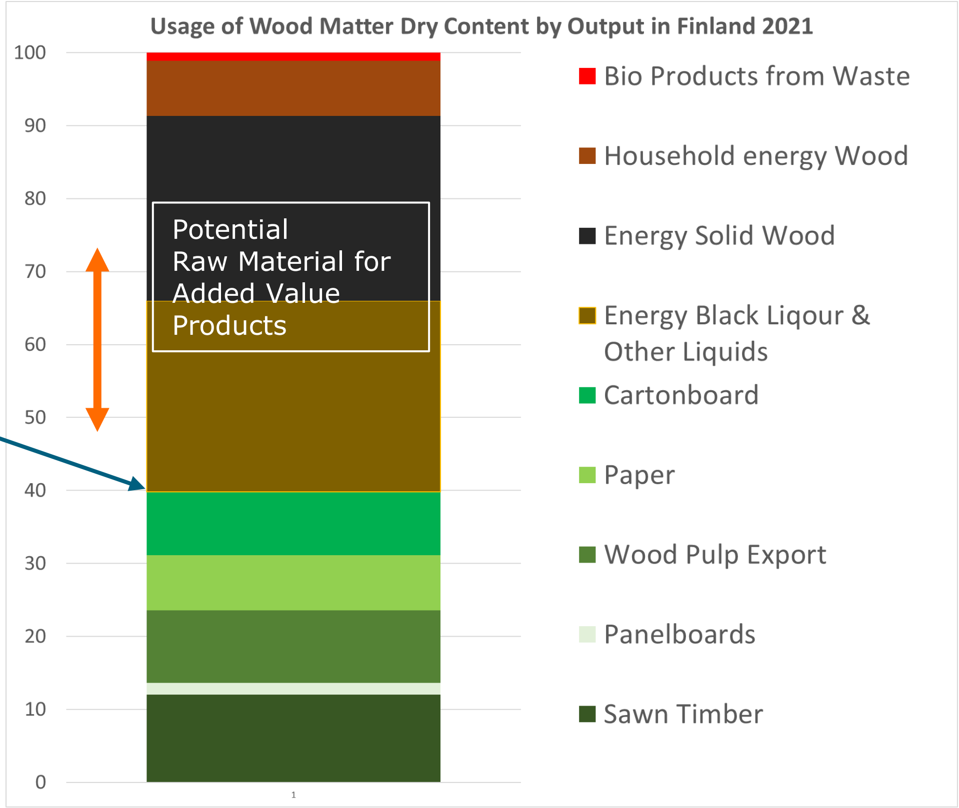
04 Decarbonization is affecting wood demand

Where Does the Wood Go in Finland?

Who Will Have Harvesting Rights in the Future?





Since 2008, Finland has produced less pulp and paper from dry wood than is burned for energy in pulp and paper mills.

The New Bio-Pathway Economy Towards Zero Emissions

Forest as a Means of Influence

- Net positive carbon sequestration, bio-diversity and land use change regulation are drivers in EU.
- Less forest availability for industrial use in EU.
- Who will have legitimacy to harvest forests?
  - Social and community values
- Long vs. short carbon restoration may shift use of wood in the future.
- Voluntary forest carbon credits are losing importance due to lack of standards and transparency.

Example;
JP Morgan investment in forest land motivated by carbon offset

Manufacturing as a Means of Influence (Scope 1,2 & 3)

- Fossil fuel usage must go down due to high costs and tightening CO2 regulation in the EU.
- Measured value chain mitigation instead of external & voluntary carbon credits thru European Sustainability Reporting Standard **ESRS**, a reporting framework under the CSRD
  - All big companies have to report their CO2 reduction plan starting in 2024
  - Increasing focus is on Scope 3 emissions from products & value chains.

Bio based fuels usage & electric boilers optimizing costs and biomaterial use in paper mill

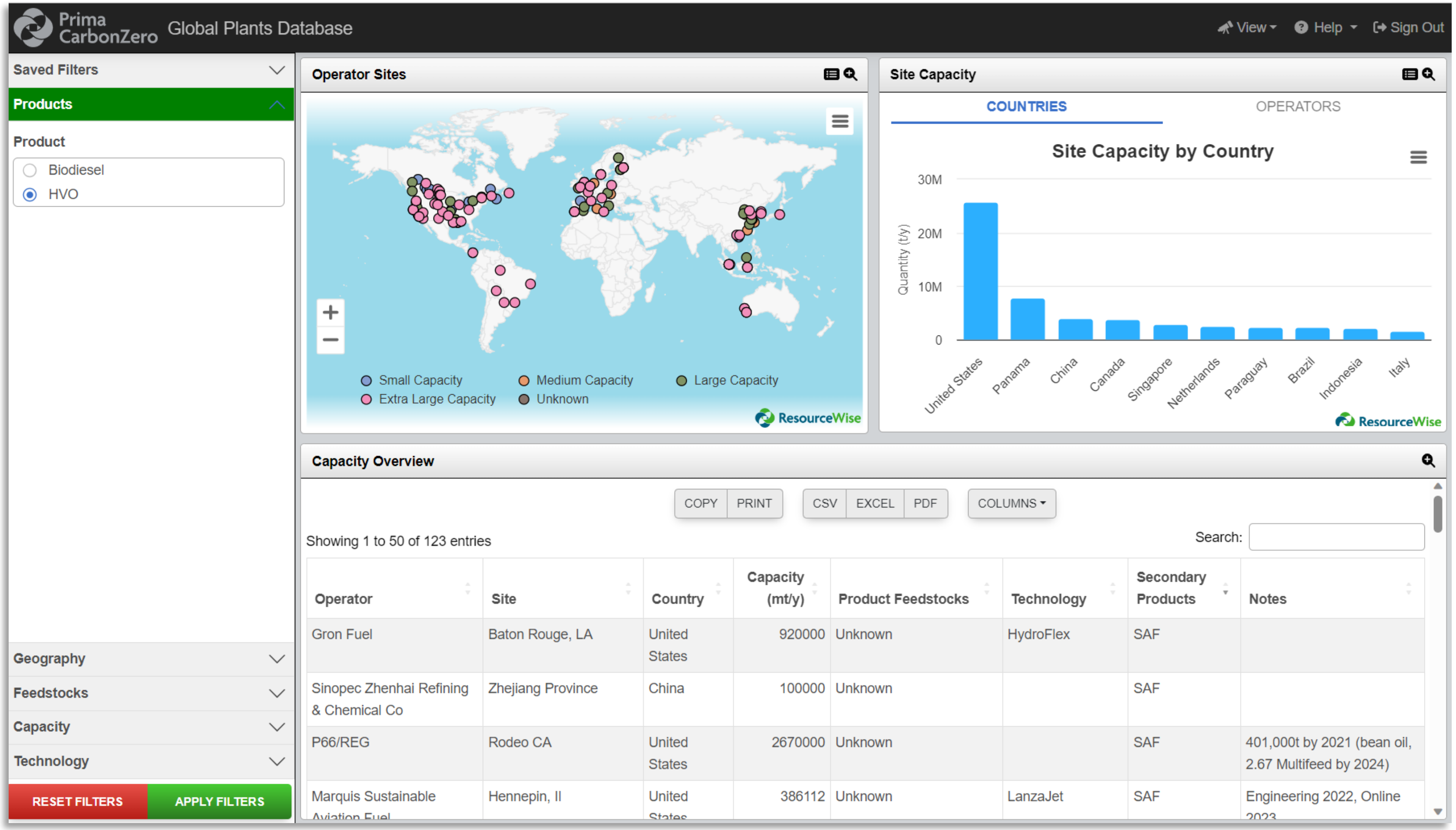
Products as a Means of Influence

- Wood as the largest bio-based feedstock provides an opportunity for fossil based feedstock substitutions.
- Investments are often big, and technology is still under development.
- In EU, each member state provides guidance about how to reach EU directives, which makes long term investments complicated.
- Can early adopters win or just to launch a new requested way to operate?

Wood based liquid fuels and biogenic pulp mill carbon capture for e-fuel

1) Availability: We Need Alternative Feedstocks to HVO’s

- The industry’s grand challenge will not realistically be accomplished via any single feedstock or pathway
- **70% of current SAF uses HVO’s:** Supply is not expected to keep up with demand
- **Ethanol:** Food crop restrictions are realistic
- **New Plants:** Will require a learning curve and ambassadors
- **Woody Biomass:** Renewable and readily available resource in many markets



3) Regulations: The Expected Pace of Government Action Will Create Some Market Imbalances

EU directives within RED II regarding caps in the use of certain food crops are one current example of creating feedstock risks

Other regulations and credits have the ability to shift supply and demand balance within countries and/or regions

Prima CarbonZero Global Biofuel Mandates

View Help Sign Out

GERMAN MANDATE

The German mandate finalised in 2021 sets an aggressive schedule to raise the greenhouse gas saving requirement in transport fuel from 6% in 2021 to 25% in 2030.
The mandate is divided into sub-mandates. Growth in crop and RED II Annex B biofuels is limited under a 4.4% cap on crops, with the government still deliberating over a cut to the 4.4% national crop cap which was first mooted following the Russian invasion of Ukraine in spring 2022. Palm oil was phased out completely from the German mandate in 2023. Annex B feedstocks are subject to a 1.9% cap, with no double counting permitted for this category.
Blending of RED II Annex IX part A "Advanced" feedstocks into transport fuel is uncapped, but these fuel streams must compete with electric vehicle tickets generated at a triple count multiplier and e-fuels generated at a double count multiplier. Advanced biofuels derived from a list of approved feestocks following the EU's Annex IX Part A eligibility list were permitted to double count if blended above the sub-mandated level from late 2022, stimulating an immediate supply side response from China in POME-ME and food waste methyl ester. The German government is petitioning Brussels for an EU-wide bloc on POME being counted in this Annex IX Part A category.

Banned or excluded feedstocks?

Palm oil was phased out with a complete ban on its biofuels eligibility from 2023, with German government pushing to have POME excluded from the EU Annex IX Part A eligibility list.

Obligatory system used

Germany operates a GHG saving system

Details of ticketing system, buyout price/penalties

Tickets

1. The previous year's quota statitistics must be complied by 15 April the

Prima Mandates EU

EUROPE MAP | NORTH AMERICA MAP

GERMAN MANDATE

COPY PRINT CSV EXCEL PDF COLUMNS

Showing 1 to 22 of 22 entries

Search:

Mandate	2023	2024	2025	2026	2027	2028	2029	2030
Cap for food and feed (%)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Cap for food and feed (%) Multiplier for advanced above minimum	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)
Cap for food and feed (%) Multiplier for EV	4.4 (x3)	4.4 (x3)	4.4 (x3)	4.4 (x3)	4.4 (x3)	4.4 (x3)	4.4 (x3)	4.4 (x3)
Cap for food and feed (%) Multipllier for E-fuel	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)	4.4 (x2)
Annex B cap (%)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Annex B cap (%) Multiplier for advanced above minimum	1.9 (x2)	1.9 (x2)	1.9 (x2)	1.9 (x2)	1.9 (x2)	1.9 (x2)	1.9 (x2)	1.9 (x2)

4) Sustainability: Global Companies Are Rethinking Their Approach to Net Zero

- Momentum has been shifting away from global corporations using the carbon credit and offset markets to provide meaningful neutrality.
- We expect this trend to intensify over the next few years and begin to impact both significant consumers of travel and investors across the sector.
- BECCS and Direct Air Capture projects are creating great interest and many questions related to resources used to capture carbon.


In The News | Heat death | Artists Rep season on hold | Mosier going green | Climate change takes toll | Toxic algae

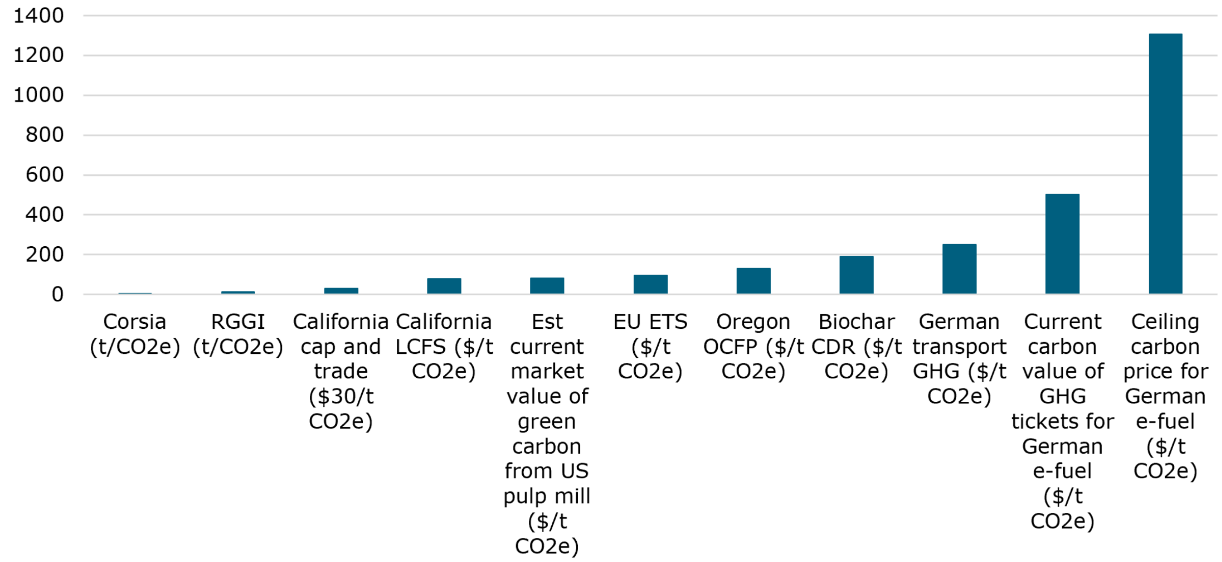
A giant Oregon wildfire shows the limits of carbon offsets in fighting climate change

By Hal Bernton (Special to OPB)
BLY, Ore. Aug. 2, 2023 8 a.m.

To help counter their greenhouse gas pollution, Microsoft and other companies invested millions in a project to store more carbon in Southern Oregon trees. The 2021 Bootleg Fire upended that plan.

How the Potential Biogenic E-Fuel Investment Can Be Estimated?

Estimated Value of Carbon by Scheme and Geography



E-fuel from Biogenic Carbon
Buyout price in Germany

Biogenic Carbon

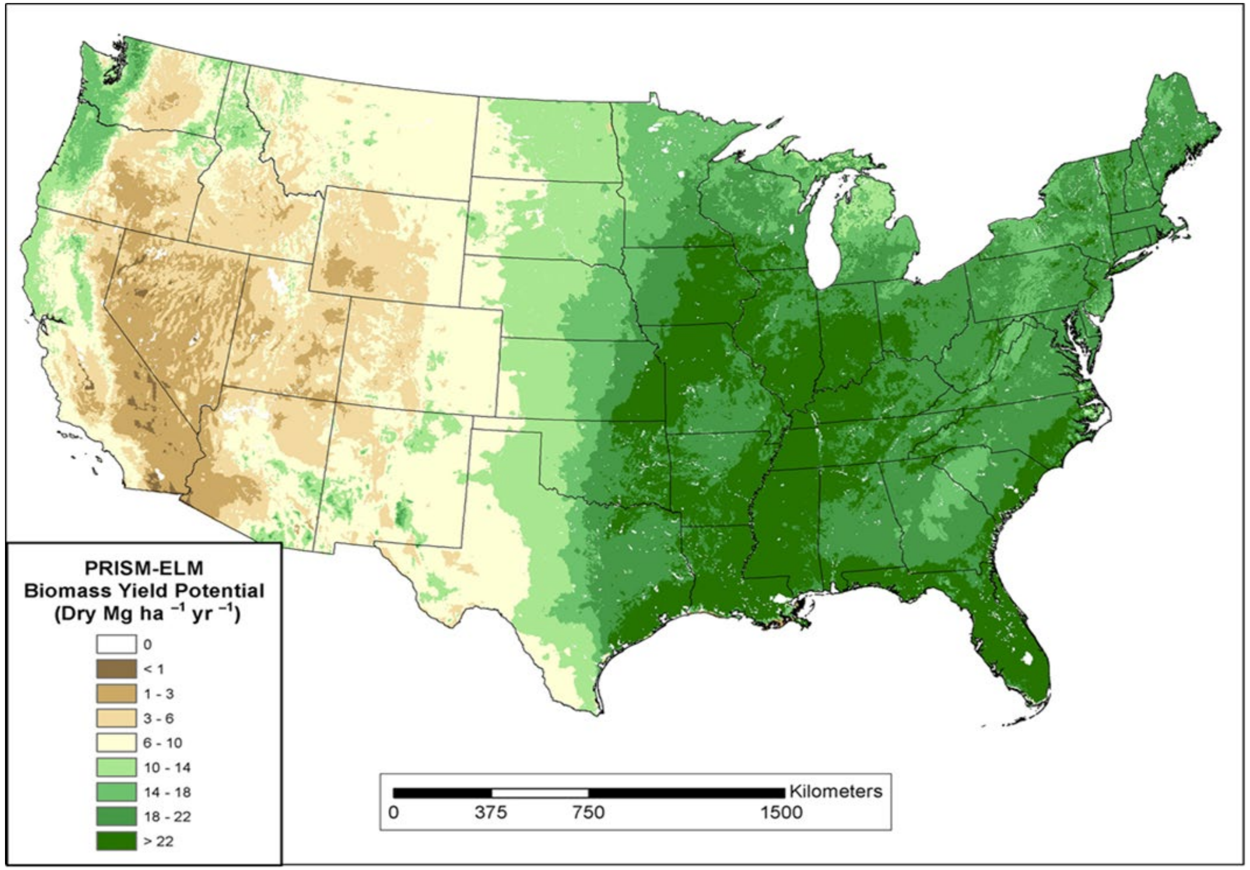
Cost of gasoil
+ (ticket carbon price ceiling German e-fuel)
Multiplied with tons of carbon saved by ton of e-fuels used

Cost of gasoil = 1000 €
German e-fuel buyout ceiling = 1200 €
Gasoil carbon saved = 3 tons of CO2 in ton of gasoil
1000 €/t + 3* 1200 €/t = 4600 €/t at ceiling

Can a ton of e-fuel be produced for less than these numbers including investment capex added with opex for carbon capture and electrolysed hydrogen?

In the short term, this business is theoretical. When decarbonisation moves forward, sources of available carbon will shrink and the size of the opportunity for biogenic carbon will grow. How do companies prepare and think about their long-term position?

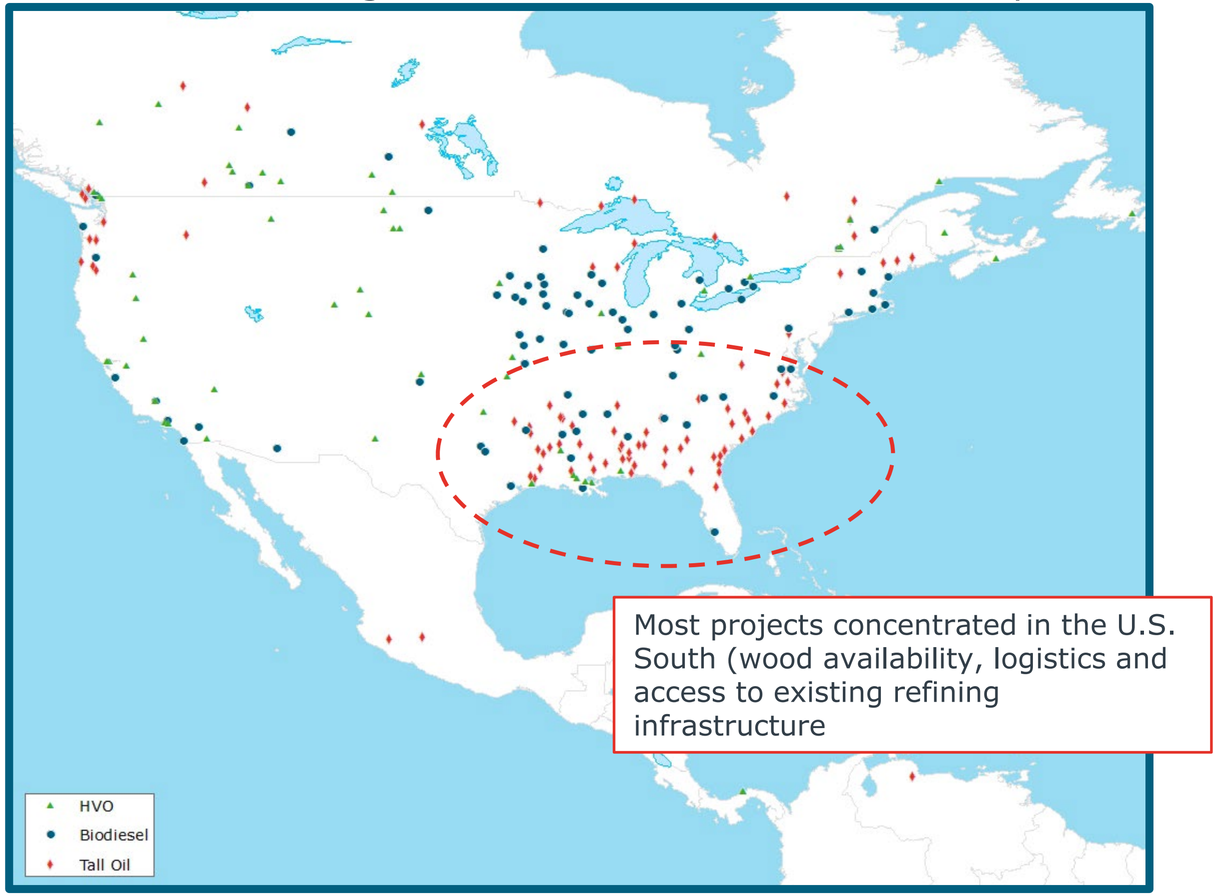
Start With the Largest Biomass Source in the US: Forest Resources



- There are approximately 1.4 trillion live trees across all age/size classes on more than 635 million acres of forestland in the continental US.
- US forests contain an incredible amount of inventory as biomass – there is opportunity if you know where to look!

Wood-Based SAF Investments Are Flowing into the US; a Tsunami of Wood-Based Molecules Are Set to Be Unleashed

Location of Existing Renewable Fuel Facilities and Pulp Mills



SAF Project	Location	Wood Biomass Consumption, GT / yr
Velocys Bayou Fuels	**Natchez, MS**	**1,500,000**
USA BioEnergy	**Bon Weir, TX**	**1,000,000**
Alder Fuels	**U.S. South**	**750,000**
Fidelis Gron	**Baton Rouge, LA**	**4,000,000**
Other Projects (Confidential – Not Announced)	**Various**	**15,000,000 to 27,000,000**
SCA – St1 (CTO)	**Gothenburg, Sweden**	*(200,000 tonnes of liquid biofuel)*

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