



MORE THAN
trees

The Carbon Footprint of a Large Forest Owner: A Case Study for Rayonier Inc.

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COMPANY SNAPSHOT



**TIMBER
REIT**

3.0

MILLION ACRES



96
YEARS

EST. **1926**

CERTIFIED



SUSTAINABLE
FORESTRY
INITIATIVE
SFI-00023
UNITED STATES



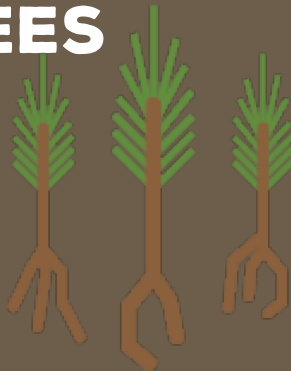
FSC
NEW ZEALAND



PEFC
PEFC/40-23-6

Promoting Sustainable
Forest Management
www.pefc.org

34 MM TREES
PLANTED PER YEAR



400
EMPLOYEES

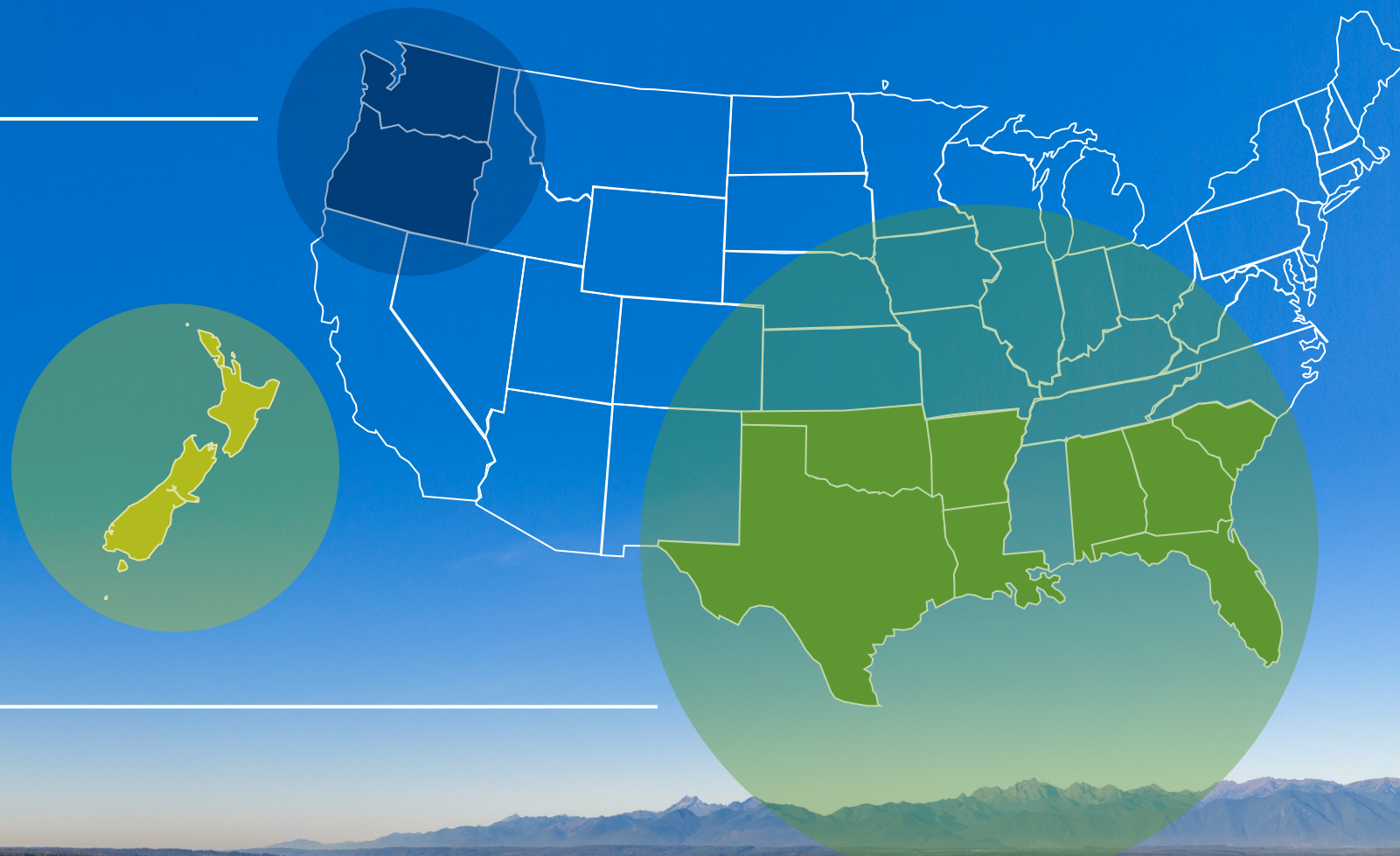


SUSTAINABLE YIELD OF
11,000,000 TONS

499,000 acres
U.S. Pacific Northwest

419,000 acres
New Zealand

2 million acres
U.S. South



FOCUS ON PLANTED CONIFER MANAGEMENT



US South
Southern Pine



US PNW
Douglas-fir
Western Hemlock



New Zealand
Radiata Pine

**IN ALL THREE REGIONS WHERE WE OPERATE,
APPROXIMATELY 1/3 OF OUR LANDBASE IS NON-PLANTATION**



FORESTRY



REAL ESTATE



LAND RESOURCES



COMMITTED TO SUSTAINABLE FORESTRY

Meet the needs of the current generation for forest products and ecosystem services from the forest without impairing the ability of future generations to meet their needs.



CERTIFIED



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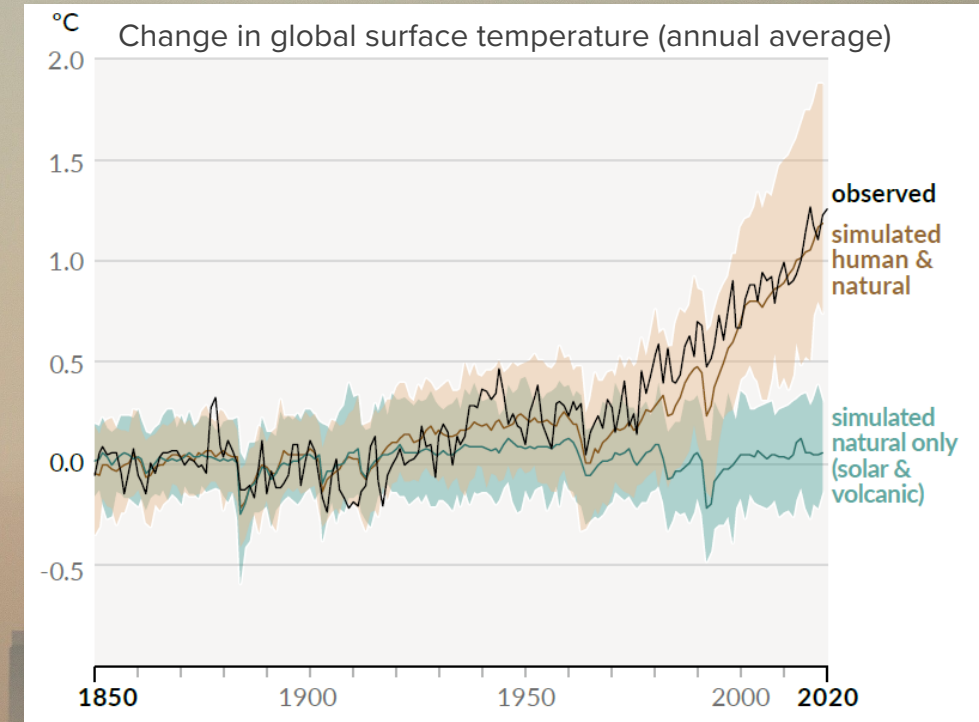
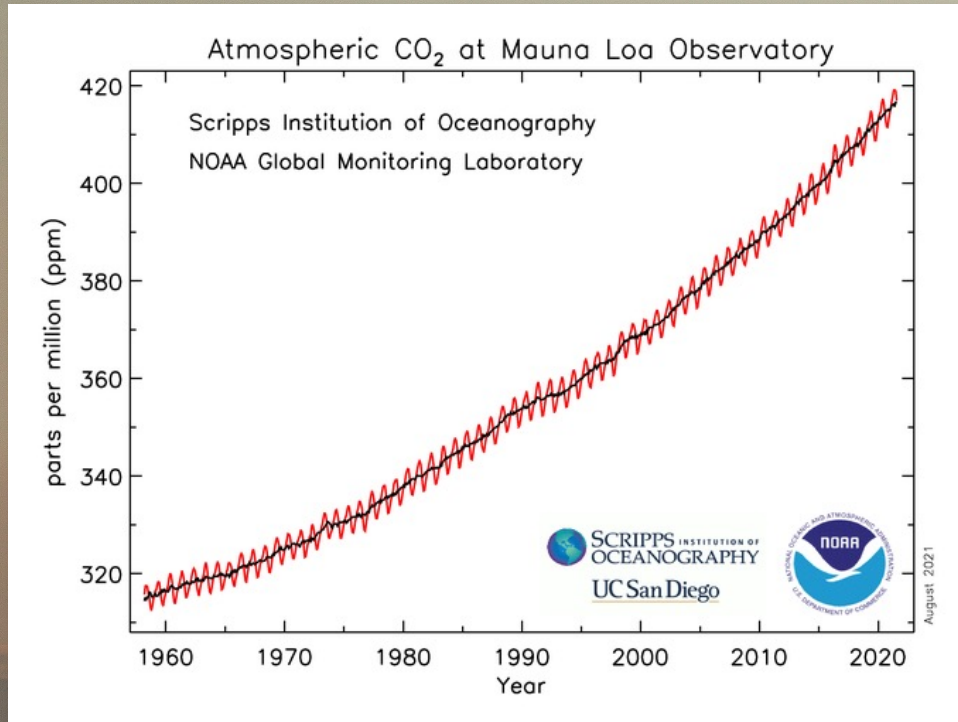
FOREST PRODUCTS AND ECOSYSTEM SERVICES

Forest Products

Ecosystem Services



CLIMATE CHANGE CAUSED BY RISING GREENHOUSE GAS CONCENTRATIONS



Rising greenhouse gas concentrations caused by fossil fuel combustion lead to increased atmosphere temperatures.

The closed loop of FOREST CARBON in the ATMOSPHERE

Carbon Cycle

Fossil fuel use is an **OPEN SYSTEM** where CO₂ remains in the atmosphere.

Wood products can store carbon and can **substitute** for emission-intensive products such as concrete & steel.



Bioenergy from forest biomass can **substitute** for fossil fuel energy.



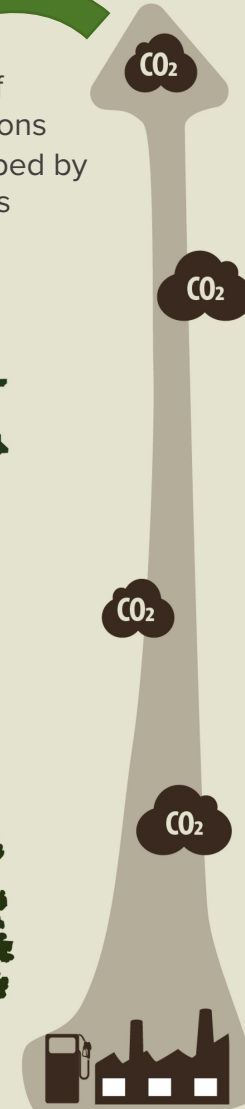
Growing forests remove carbon from the atmosphere.



Fires & decomposition following disturbance events **release** carbon into the atmosphere.



30% of Emissions Absorbed by Forests



**WELL MANAGED WORKING
FORESTS PROVIDE A NATURAL
CLIMATE SOLUTION**

**LONG-TERM CARBON
SEQUESTRATION
&
CARBON OFFSETS**



Rayonier Carbon Footprint

RAYONIER CARBON REPORTS (2019 ONWARD)

- **Carbon stored, sequestered, removed during harvest, stored in products in use and emissions in U.S. and N.Z.**
 - Life Cycle Analysis including carbon in forests and carbon stored in wood products in use
 - Estimate of carbon as CO₂ equivalents (metric tons) in U.S. and N.Z. forests were determined
 - Carbon stored in trees, understory, coarse woody debris, forest floor, and mineral soil
 - Carbon sequestered in trees, understory, coarse woody debris, forest floor and mineral soil
 - Scope 1, 2 and 3 emissions
 - Carbon removed in harvested timber
 - Carbon stored in wood products in use in domestic and export markets from our harvested timber

RAYONIER CARBON REPORT

- **Open and transparent process**

- Used Rayonier data for 12/31/2020 reported in 10K that is publicly available
- Clearly described methods and calculations
- Used data and methods developed and published by governmental agencies or in peer reviewed journals
 - N.Z. Ministry for Primary Industries (Carbon Yield Tables for NZ ETS),
 - U.S. Forest Service (GTR 343),
 - U.S. EPA (Inventory of U.S. Greenhouse Gas Emissions and Sinks)
 - Manley and Evison, 2017. Quantifying the carbon in harvested wood products from longs exported from New Zealand.

- **Welcome dialog and discussion on the role of working forests as natural climate solutions**

RAYONIER CARBON REPORT

- **Carbon is a Financial Disclosure**
 - Information released to the public to provide investors and analysts information that could influence an investors decision to buy a companies stock or bonds
- **Growing sentiment to create a uniform and consistent set of globally accepted ESG and sustainability standards that are similar to financial standards for disclosures**
 - SEC has announced plans to mandate ESG disclosures, including climate change and carbon related disclosures with mandatory disclosure rules

RAYONIER CARBON REPORT

- **Currently Reviewing and Pilot Testing GHG Accounting Guidance for the Land Sector Developed by WRI and WBCSD.**
 - **Can we develop a standardized system of GHG accounting that is similar to GAAP Financial Accounting that produces a standardized approach to GHG that is fair, clear, and workable for all organizations?**



Land Sector and Removals Guidance Part 1: Accounting and Reporting Requirements and Guidance

*Supplement to the GHG Protocol Corporate Standard
and Scope 3 Standard*

*DRAFT FOR PILOT TESTING AND REVIEW
(SEPTEMBER 2022)*



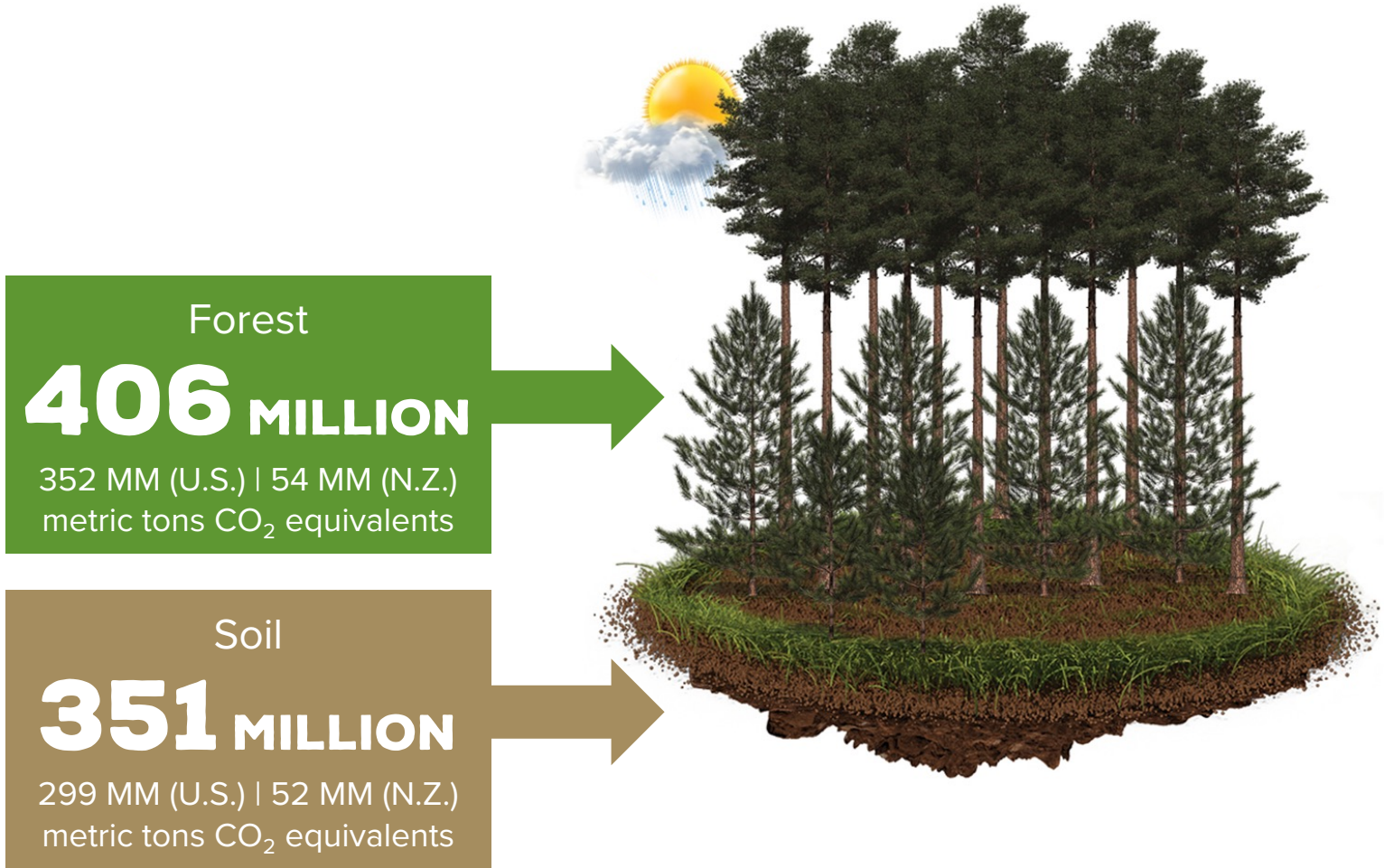
RAYONIER CARBON REPORT PUBLISHED ANNUALLY

Carbon reports available at www.rayonier.com/sustainability



757 MILLION TONS OF CARBON STORED

In Rayonier forests at year-end 2020



Carbon stored in Rayonier forests is equal to the annual emissions of 158 million people.



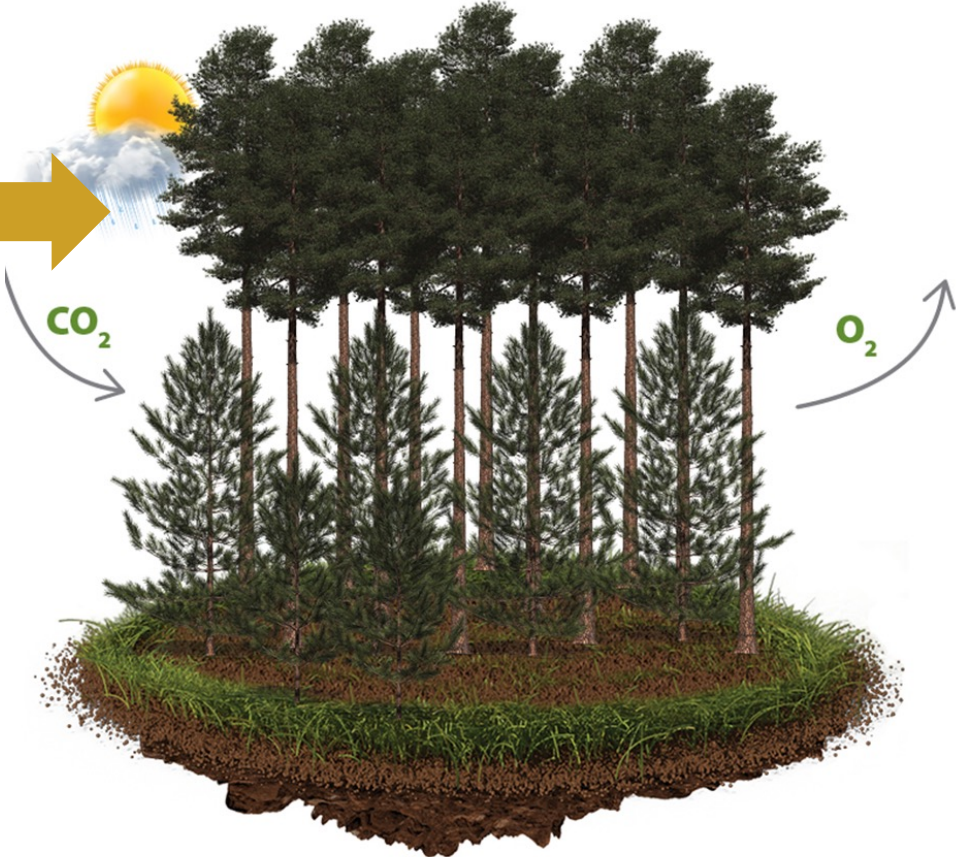
158 MILLION

Source: The World Bank reports that the global annual per capita carbon emissions are 4.8 metric tonnes.

14.5 MILLION TONS OF CARBON SEQUESTERED

by Rayonier forests during 2020

Sequestration
14.5 MILLION
11.8 MM (U.S.) | 2.7 MM (N.Z.)
metric tons CO₂ equivalents



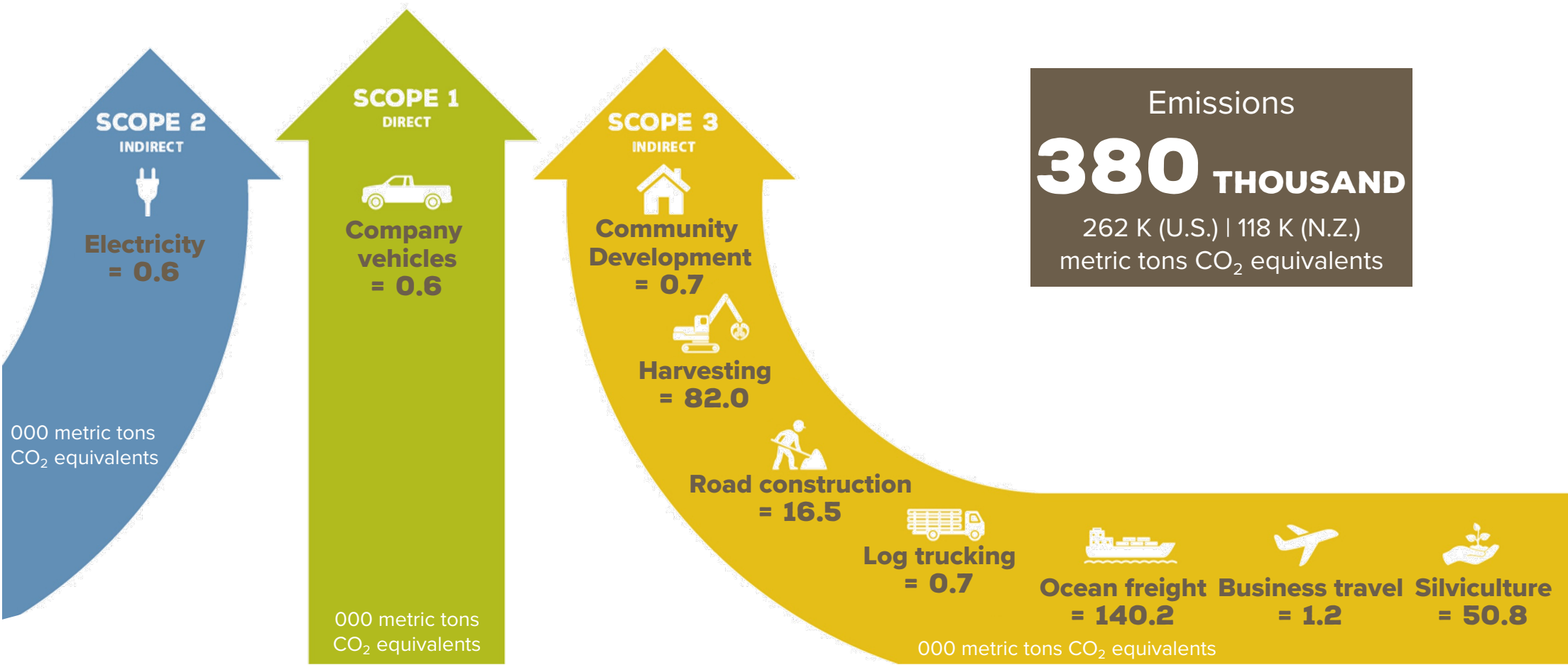
Carbon sequestered by Rayonier forests during 2020 was equal to removing 3.1 million cars from the road.



3.1 MILLION

EMISSIONS ASSOCIATED WITH OUR BUSINESS

During our operations in 2020



Scope 1 emissions are direct emissions from owned or controlled sources.
 Scope 2 emissions are indirect emissions from the generation of purchased energy.
 Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain, including both upstream and downstream emissions.



9.2 MILLION TONS TRANSFERRED THROUGH HARVEST

During our operations in 2020



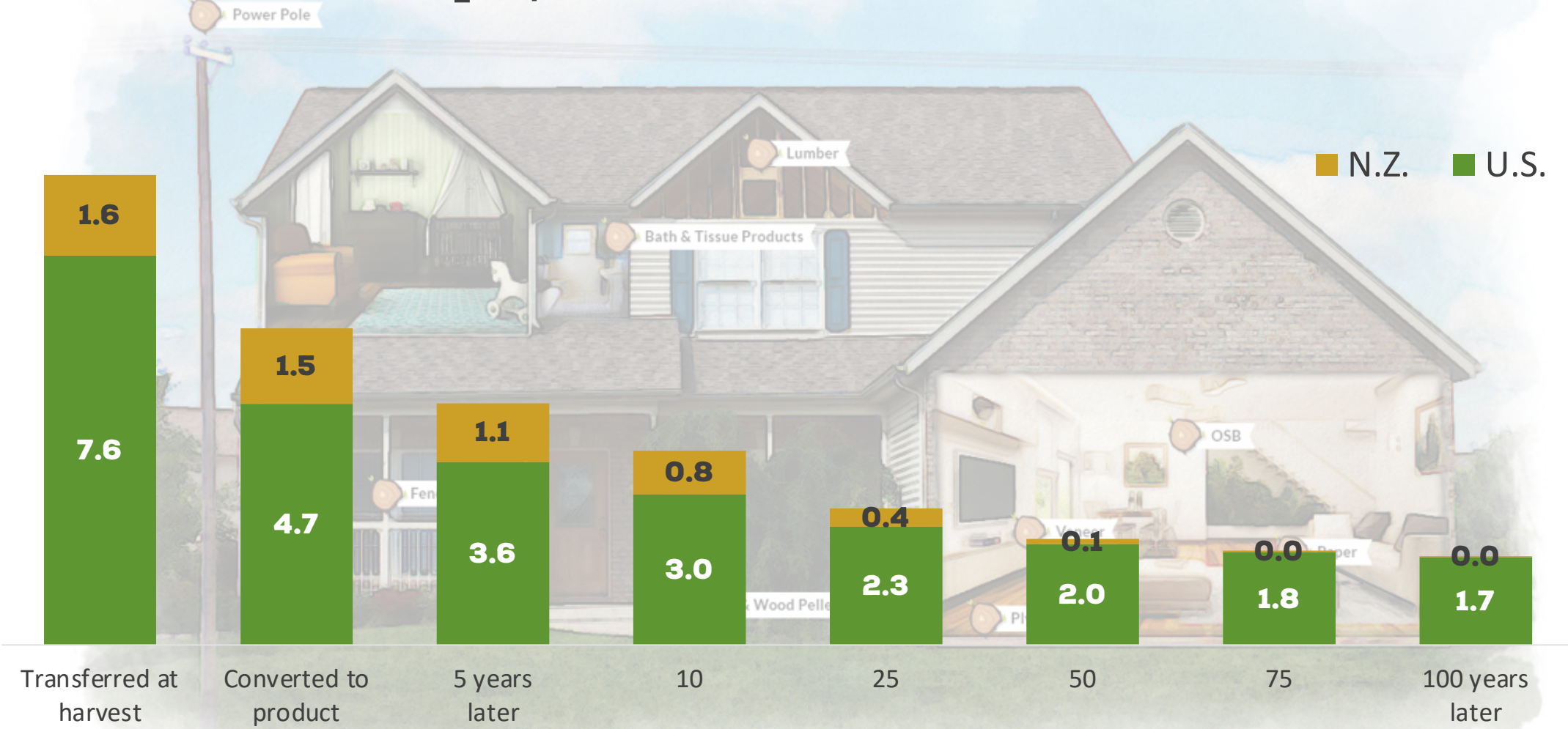
Harvest transfer
9.2 MILLION
7.6 MM (U.S.) | 1.6 MM (N.Z.)
metric tons CO₂ equivalents

RAYONIER CARBON DATA SUMMARY

	2019	2020	2021
Landbase Included (acres)	2,495,000	2,617,000	2,719,000
Total Ecosystem C (metric tonnes)	731,720,931	756,758,556	766,786,879
Net C Sequestration after Harvest Removals (metric tonnes/year)	14,905,916	14,528,018	14,675,169
Corp and Mgt Emissions (metric tonnes/year)	343,837	380,234	347,809
Harvest Removals of C (metric tonnes)	8,821,676	9,204,070	8,932,697

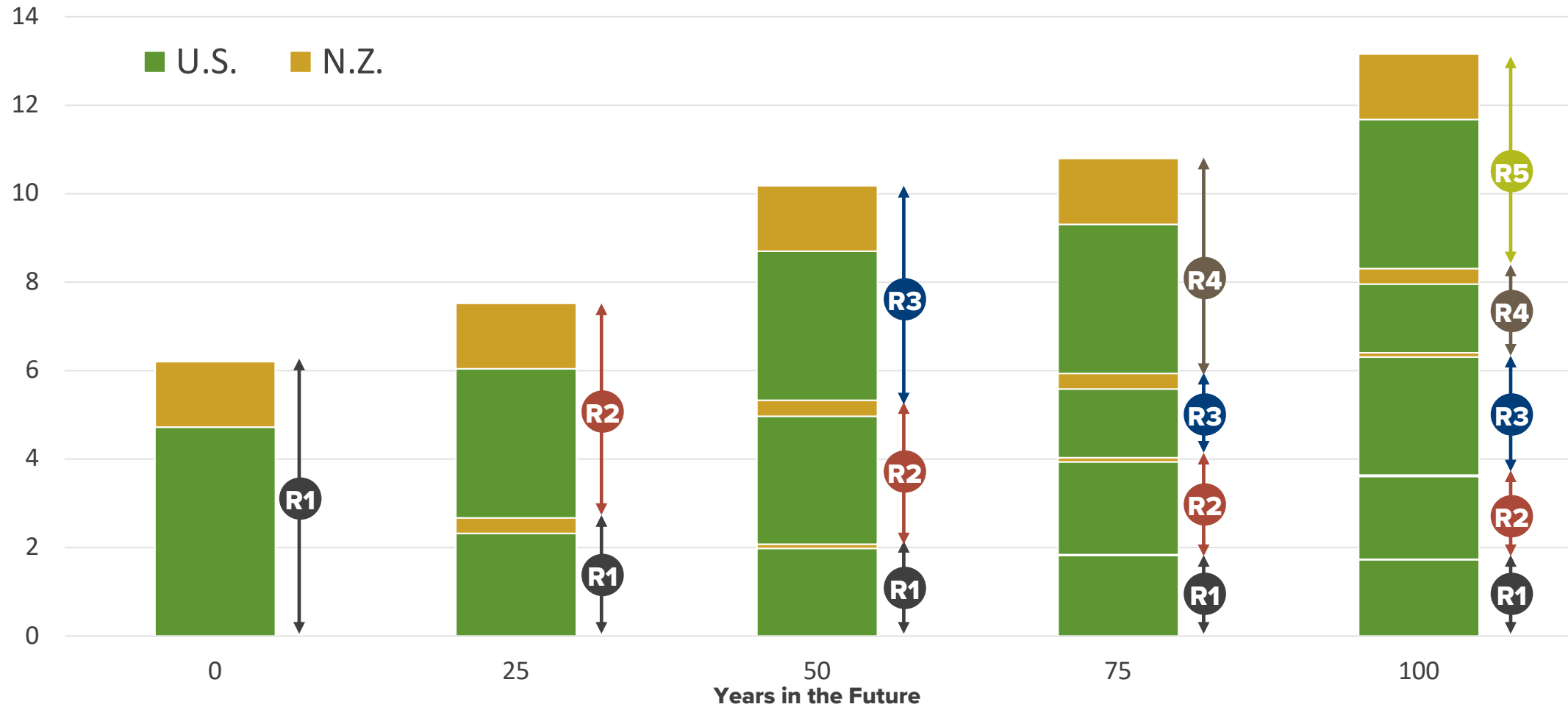
CARBON STORED IN WOOD PRODUCTS IN USE

Million metric tons CO₂ equivalents



CARBON STORED IN PRODUCTS IN MULTIPLE ROTATIONS

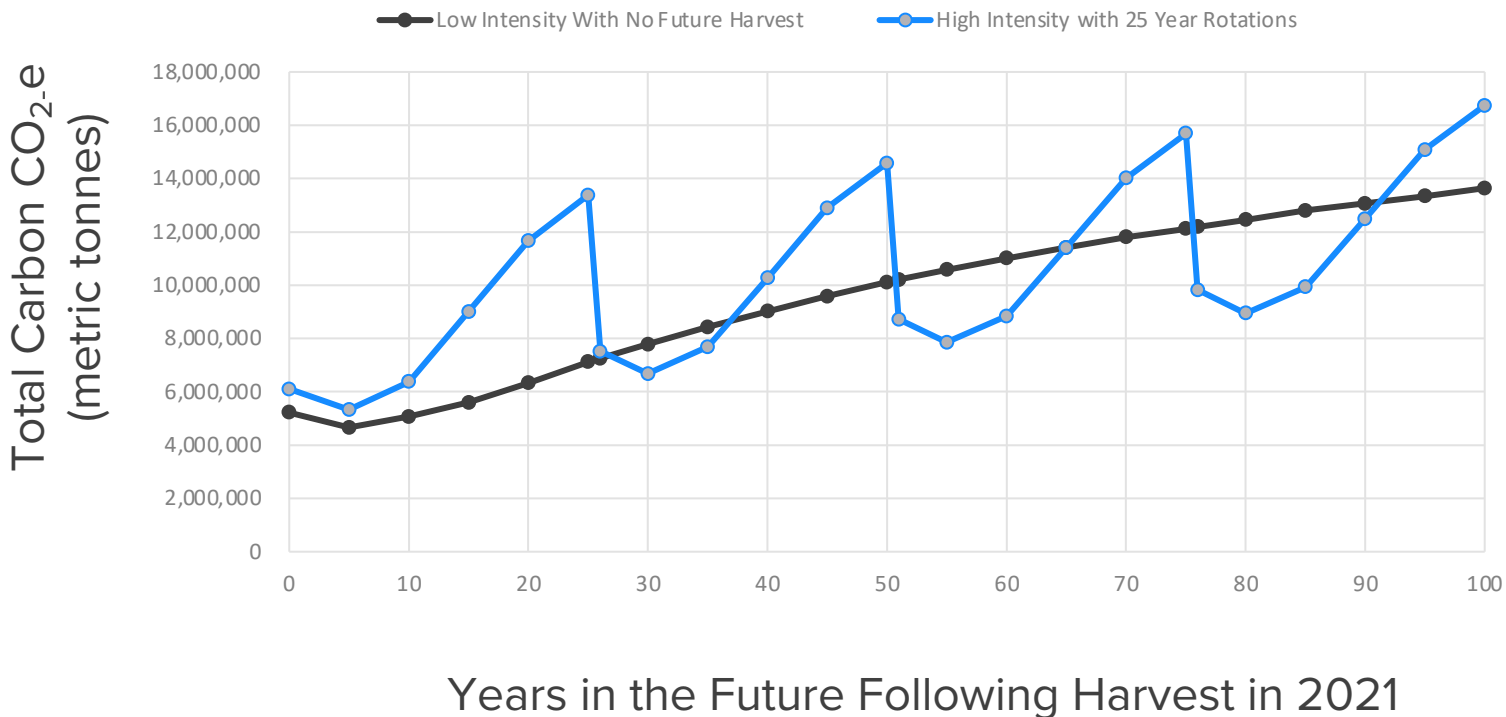
Million metric tons CO₂ equivalents



Using 25-year rotations for pine in US south and NZ, 50-year rotations for southern hardwoods and western conifers

Carbon in Stored in Rayonier Southern Forests and Harvested Wood Products over 100 Years Following Harvests and Replanting in 2021

(Comparing Intensive Management with Multiple Future Harvests vs Non-Intensive Management with No Future Harvests)



Assumes 25 year rotations for Loblolly and Slash Pine in the South

SUMMARY AND CONCLUSIONS (1/2)

- Rayonier forests stored more than 750 million metric tons of CO₂ equivalents in 2020. This is the net results of 100 years of sustainable forest management.
- Rayonier forests sequestered 14.5 million metric tons of CO₂ equivalents in 2020. This offsets the annual emissions of approximately 910,000 people in the U.S. or is equivalent to taking 3.1 million vehicles off the road.
- Rayonier emissions from all business sectors totaled 380,000 metric tons of CO₂ equivalents in 2020. This is substantially less than the carbon sequestered in our forests demonstrating that Rayonier has net-negative emissions.
- Rayonier removed 9.2 million metric tons of CO₂ equivalents in harvested timber in 2020.

SUMMARY AND CONCLUSIONS (2/2)

- Carbon continues to be stored in forest products made from our trees for many decades and this carbon continues to accumulate through multiple rotations. After 100 years, over 12 million metric tons of CO₂ equivalents will remain in wood products in use from the trees harvested from our forests in 2020.
- More carbon is stored in forests and the wood products in use over multiple cycles of harvest, replanting, and regrowth than in forests without future harvest.

**Rayonier Carbon report available @
www.rayonier.com/sustainability**



TAKE HOME POINTS ON CARBON REPORTING

- Credibility is key....USFS/FIA
- Transparency....Users must be able to understand and duplicate what we present
- Open.... Rely on published data (GTR 343). Avoid use of proprietary data including our internal G&Y models and our individual shape files
- Consistency....Large year-to year variations are problematic
- Comprehensive....Total ecosystem carbon including soil
- Annual Sequestration... Critical in a world focused on Net Zero by 2050
- Multiple Rotations....Long term management over decades to centuries
- HWP....Important part of the life cycle analysis that is critical to the role of managed forests as natural climate solutions



Questions?

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