Manulife
Investment Management

Natural capital

Sustainable investing in timberland and agriculture 2023

All information in this report is as of December 31, 2023, unless otherwise indicated.
All currency values are stated in U.S. dollars. Report published June 2024.

What you'll *find*

Why natural capital?

Natural capital is here to stay.

While it's not a new concept, the idea that it can be measured and monetized at scale certainly is, and markets are beginning to pay attention. Those words are from our sustainable investing report in 2021. Fast forward two years and natural capital has become a household name in institutional investment portfolios. In February 2024, we were ranked as the world's largest natural capital investment manager by IPE.[1]

But what is natural capital beyond the hype? Put simply, it's the world's stock of natural assets, which includes minerals, soil, air, water, and all living things. These assets not only have intrinsic value—as if that weren't important enough—but all of society and the entire global economy depend on them! Think for a moment about the implications of a world without food and fiber, clean water, carbon sequestration, pollination, biodiversity, or outdoor recreation. Without natural assets and ecosystem services, the global economy cannot function.

The same is true for our business. To be clear, natural capital is not just a new label or a simple rebranding of timberland or agriculture investing. It's a recognition that the forests and farms we manage on behalf of our investors create value well beyond that of the physical products they generate. They help meet basic human needs with products such as nutritious food or building materials, textiles, or personal care products.

But they do even more than that. As the market for nature-based solutions continues to develop and the benefits of biodiversity, carbon sequestration, and other ecosystem services are increasingly realized, we expect them to become a measurable part of value in both timberland and agriculture investing. And with that measurable value, we see clearer price signals and incentives for businesses and investors, individuals, and governments to direct financial capital toward natural capital. By that we mean not only natural capital asset classes such as timberland and agriculture, but the whole natural capital investment universe. Natural capital themes are embedded in every asset class that impacts or depends on nature—which is all of them.

Nature is the mispriced asset. We see it as our job to help change that. Our investors, our employees, our communities, and our world stand to benefit. That is good stewardship. And good stewardship is good business.

We hope you enjoy our 2023 report on sustainable investing in natural capital!

Tom Sarno
Global Head of Timberland Investments, CIO
Manulife Investment Management

Oliver S. Williams IV, CFA
Global Head of Agriculture Investments, CIO
Manulife Investment Management

1 IPE research, as of February 2024. Ranking is based on total natural capital assets under management (AUM), which includes forestry/timberland and agriculture/farmland AUM.

Who we are

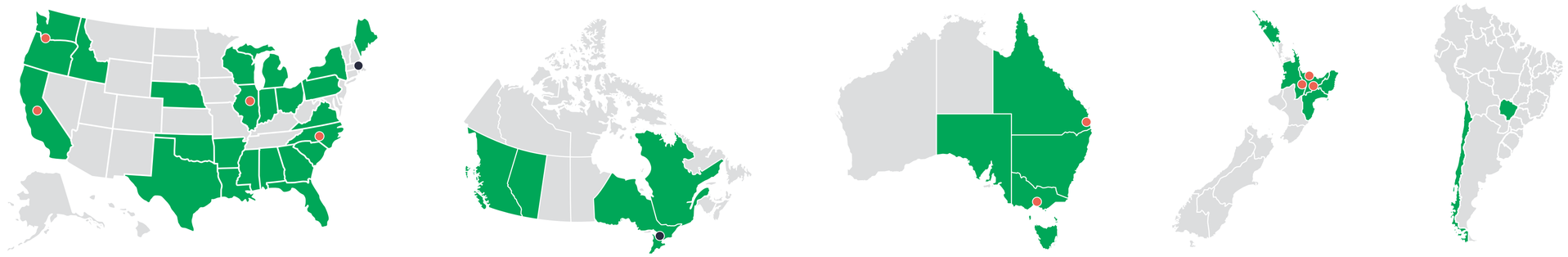
Our foundational investment philosophy

Our investment philosophy—good stewardship is good business—is as relevant and true today as it was when we started in 1985. Our clients' financial success directly depends on the health of the farms and forests we manage on their behalf, and our vertically integrated global farmland and timberland management teams—from portfolio managers to professional farm and forest managers—provide us with the ability to craft and execute long-term property management plans that promote ecological health and resilience, which are intrinsic to generating strong financial returns.

Our natural capital business

Founded in 1985 and with our headquarters in Boston, Manulife Investment Management's (Manulife IM) timberland and agriculture businesses draw on decades of experience and specialized expertise to create value for investors through the sustainable management of natural resource investments. With over $16.0 billion in assets under management, we're the world's largest natural capital investment manager,[2] and we're committed to investing sustainably across our global portfolio of timberland and agriculture assets.

■ Where we operate ● Headquarters (Boston, Toronto) ● Primary field offices (**USA:** Turlock, CA; Vancouver, WA; Savoy, IL; Charlotte, NC. **Australia:** Melbourne; Brisbane. **New Zealand:** Tauranga; Rotorua; Tokoroa)



United States

$9,899
AUM (USD millions)

3,510,000
Acres

Canada

$281
AUM (USD millions)

71,000
Acres

Australia

$3,007
AUM (USD millions)

1,451,000
Acres

New Zealand

$2,500
AUM (USD millions)

518,000
Acres

Chile

$295
AUM (USD millions)

109,000
Acres

Brazil

$116
AUM (USD millions)

138,000
Acres

2 IPE research, as of February 2024. Ranking is based on total natural capital assets under management (AUM), which includes forestry/timberland and agriculture/farmland AUM.

Our governance of sustainability

Good governance is critical for making good decisions. This is our governance structure for making sustainability-related decisions in timberland and agriculture.

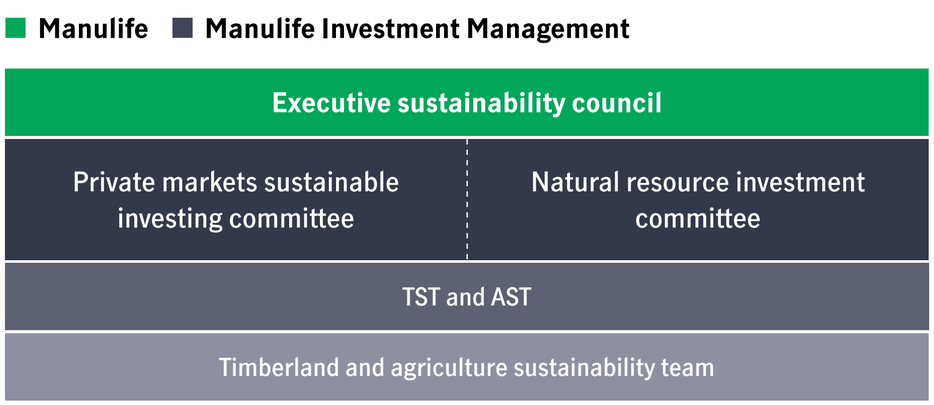
Timberland strategy team (TST) and agriculture strategy team (AST)—The TST and AST consist of the most senior representatives in each asset class and are responsible for developing and implementing investment strategies, including capital raising, acquisitions, portfolio management, property management, and product development. The timberland and agriculture sustainability team works closely with each strategy team to ensure sustainability is a consideration in important business processes and decisions, identifying and developing sustainable investing best practices, supporting investment teams to develop tools and methodologies, advising on product development, and leading the participation in external initiatives or collaborative industry engagement.

Natural resource investment committee (NRIC)—The NRIC, which includes the chief investment officers and deputy chief investment officers from both timberland and agriculture, is the final decision-making authority on all agriculture and timberland investments. It holds responsibility for ensuring that every acquisition made has undergone extensive sustainability due diligence using our proprietary sustainability tool kit.

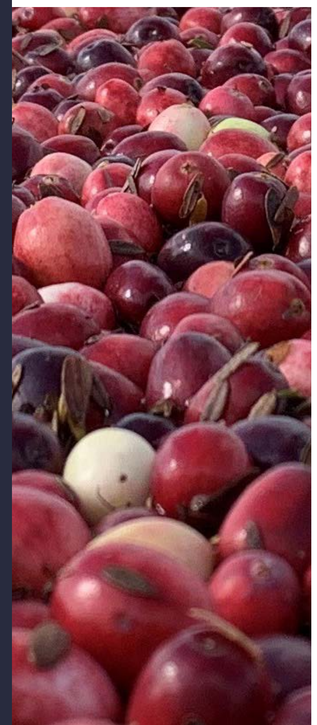
Manulife Investment Management private markets sustainable investing committee (SIC)—The SIC, which includes Manulife Investment Management's global head of private markets and its private markets chief sustainability officer, holds strategic policy and decision authority over sustainable investing and assessment of policies and programs across all private markets asset classes, including timberland and agriculture.

Manulife executive sustainability council (ESC)—This council, which includes Manulife's CEO and chief sustainability officer, as well as the CEO of Manulife Investment Management, is responsible for decisions related to key sustainability priorities across Manulife's global enterprise, including insurance and wealth management. Examples of priorities under ESC oversight include Manulife's Impact Agenda and Journey to Net Zero.

Organizational structure of sustainability governance across timberland and agriculture



For further information about our governance structure, please refer to pages 20–28 of Manulife Investment Management's stewardship report.



Our operations at a glance

Timberland

- **700+** employees globally
- **100+** individual properties managed
- **5.4M** total acres under management
- **Integrated property management services:** harvest planning and supervision, silvicultural prescriptions, oversight and design of forest roads, timber marketing and merchandising, forest inventory oversight, property accounting, alternative source income generation, resource information planning, optimization through biological and financial modeling, health and safety, property inspections

Agriculture

- **300+** employees globally
- **260+** individual properties managed
- **400,000+** total acres under management
- **3** portfolio company farmland plus investments
- **Integrated property management services:** orchard and vineyard development, site selection and due diligence, irrigation design, water storage planning, crop marketing and merchandising, tenant sourcing and oversight, lease negotiations, comprehensive agronomic evaluation and management (irrigation, fertility, pest management, etc.), viticultural and horticultural prescriptions, harvest planning and supervision, farm optimization through financial modeling, property accounting, alternative source income generation, health and safety, property inspections

Value-added revenue generation

- High-value land sales
- Carbon projects
- Carbon capture and storage
- Mitigation banks (timberland only)
- Oil, gas, and mineral agreements
- Recreation licenses
- Cell towers
- Renewable energy
- Biofuels
- Apiary
- Conservation easements
- Surface water retention and water storage (agriculture only)

Agriculture: headcount includes employees working at Manulife Investment Management Agriculture, Manulife Agriculture Services (USA and Australia), Manulife Farmland Services (USA and Australia), and Manulife Investment Management Timberland and Agriculture. **Timberland:** headcount includes employees working at Manulife Investment Management Timberland, Manulife Forest Management (USA, New Zealand, South America, and Brazil), Hancock Victorian Plantations, Hancock Queensland Plantations, and Manulife Investment Management Timberland and Agriculture. The methodologies used to compile total headcount are subject to change.

What we produce

Delivering for clients and broader stakeholders

In addition to financial objectives (such as competitive investment returns, inflation protection, and portfolio diversification) and impact objectives (such as carbon sequestration, biodiversity conservation, or recreational opportunities), investments in timberland and agriculture are investments in assets that meet basic human needs. This section details what those raw materials are and what needs they meet, with a special focus on how we can produce more food with a smaller footprint through regenerative agriculture.

Total portfolio

We manage forests and farms around the globe in key institutional timberland and agriculture investment regions. The following is a summary of our primary commercial tree species, produce, and processing activities.

	United States	Canada	Australia	New Zealand	Chile	Brazil
Timberland						
Black cherry	•					
Caribbean pine			•			
Douglas fir	•	•				
Eucalyptus			•		•	•
Hoop pine			•			
Loblolly pine	•					
Longleaf pine	•					
Ponderosa pine	•					
Radiata pine			•	•	•	
Slash pine	•		•			
Sugar maple	•					
Western hemlock	•	•				
Western red cedar	•	•				
Agriculture						
Berries	•	•			•	
Citrus	•					
Cotton	•		•			
Grain	•	•	•			
Grapes	•	•	•			
Legume	•	•	•			
Tree fruit	•	•			•	
Tree nut	•		•			
Vegetables	•	•				
Processing (agriculture only)	•	•			•	

Species listed are the primary commercial species in each region. Other commercial species exist in smaller volumes.

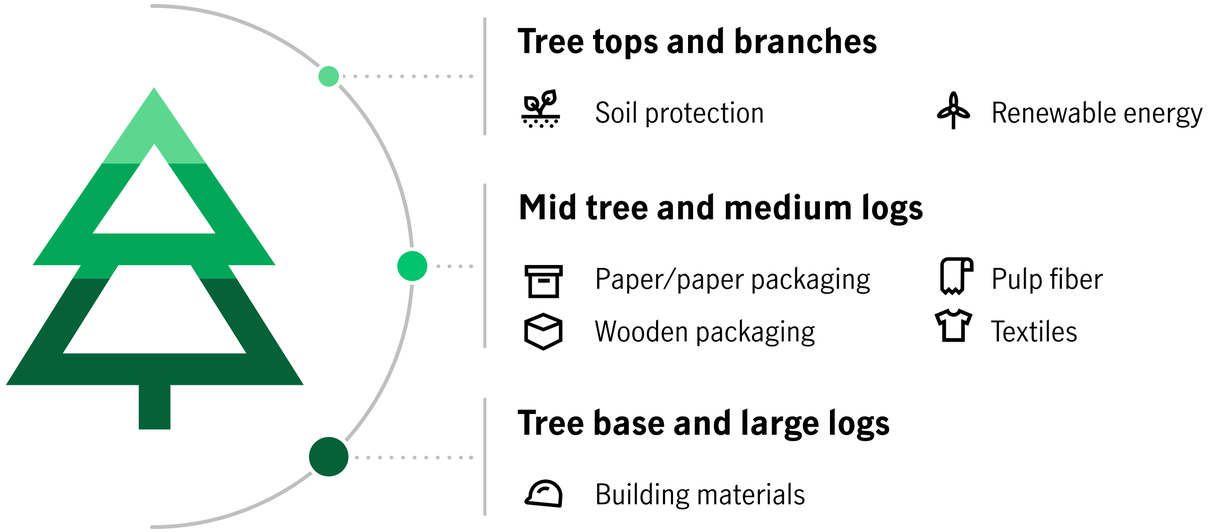
Timberland benefits

Forests are more than just sources of wood or carbon sinks—sustainably managed forests provide a variety of ecological, social, and financial benefits to society.

In 2023, our clients' timberland investment properties:

- Had over **50 million** seedlings planted
- Produced enough lumber to build approximately **101,000 houses**[3]
- Produced enough fiberwood to make approximately **2.2 million tons** of paper[4]
- Yielded enough biomass to produce electricity for the equivalent of **1,500 American homes** for a year[5]

Optimizing parts of a harvest tree



Renewable raw materials, providing for basic human needs (housing, furniture, paper)

Forest carbon sequestration

Protect soil, air, and water quality

Protect biodiversity and high conservation value forest

Contribute to sustainable development through economic growth and rural employment

Recreation opportunities

3 Approximately 11.2 million m^3 of solid wood at 110 m^3 solid wood/house. **4** Approximately 7.7 million m^3 of fiberwood at 3.5 m^3 fiberwood/ton of paper. **5** Approximately 30,000 tons of biomass harvested equates to approximately 15,000 MWh, and 10 MWh can power one average American home for a year.

Agriculture benefits

Sustainable agriculture is essential for providing healthy nutritious food to a growing population. By 2050, the global population is expected to increase to 10 billion, requiring 56% more calories than were produced in 2010.[6] Producing more food on a finite land base while reducing emissions, increasing soil health, enhancing biodiversity, and protecting water security will require significant innovation, investment, and commitment to sustainable management.

That's a tall order, but it's why we're investing in the latest precision irrigation and fertilizer technologies (to reduce input and energy usage where possible), constructing recharge basins to support groundwater aquifers in stressed water districts, and measuring and testing regenerative agriculture practices to continuously improve soil health.

In 2023, our agriculture assets produced:

Over 24 million pounds of almonds
equivalent to 390 million servings[7]

Over 13 million pounds of walnuts
equivalent to more than 210 million servings[7]

41 million pounds of pistachios
equivalent to 660 million servings[7]

Over 1 million pounds of cherries
equivalent to more than 4 million servings[8]

Over 48 million pounds of cranberries
equivalent to more than 220 million servings[9]

8 million pounds of grapes
enough to produce almost 19 million bottles of wine[10]

229,855 bins of apples
equivalent to more than 505 million apples[11]

5,671 bins of citrus
equivalent to more than 13 million oranges[12]

6 "How to Sustainably Feed 10 Billion People by 2050, in 21 Charts," World Resources Institute, 2018. **7** Assumes a 1oz serving size. **8** Assumes a 5oz serving size. **9** Assumes a 3.5oz serving size. **10** Assumes 3lbs of grapes needed per 750ml bottle of wine. **11** Assumes 2,200 apples per bin. **12** Assumes 3,000 mandarins and 2,200 navels per bin.

Healthy nutritious food, contributing to food security

Soil carbon sequestration

Pollinator habitat

Recreation opportunities

Contribute to sustainable development through economic growth and employment in rural areas

Renewable energy opportunities

Integrating regenerative practices across our agriculture portfolio

While no universal definition for regenerative agriculture exists, we define regenerative agriculture as: "A farmland management framework by which the goals of soil health and productivity guide management decisions and in turn lead to optimized farm production, biodiversity, and sequestering atmospheric carbon into soil."

Maintaining soil health and productivity isn't new to us. Consistent with our belief that good stewardship is good business, our farm managers have been using regenerative practices for decades. As an example, we were one of the first operators in California to adopt the now-common practice of allowing native vegetation to grow between rows of orchard trees, as well as using integrated pest management to reduce synthetic pest applications. We also led the development of whole tree chipping and reincorporation into the soil (whole orchard recycling) as part of fruit and nut orchard replacements, practices that add carbon back into the soil and eliminate the need for burning the old orchard.

We continue to expand our documentation of regenerative farming systems across client properties. In 2023, we found that 100% of properties use at least one regenerative practice. We also began tracking active and passive cover crops, as well as planted nonproductive vegetation, and we're beginning to monitor how these practices influence soil health and organic carbon.

We've long known that regenerative agriculture is good for our bottom line. Fewer inputs while maintaining yields means improved outcomes for our clients, for our tenant farmers, for the environment, and for the communities we operate in. We continue to partner with research universities and agriculture think tanks to prove out both the agronomic benefits as well as the economic benefits of using regenerative practices at scale.

78%
of properties use four or more regenerative practices

100%
of our properties use at least one regenerative practice

66%
of our properties are using cover cropping techniques with over 74,000 acres of planted cover crops across the platform

Integrating regenerative practices across our agriculture portfolio

Region	Crop residue	Crop rotation	Conservation tillage	Cover vegetation	Nonproductive vegetation	Soil amendment	Rotational grazing	Intercropping
Unites States								
AR	•	•	•	•	•	•		
CA	•	•	•	•	•	•	•	•
FL	•	•	•	•	•	•	•	•
GA	•	•	•	•	•	•	•	
ID	•	•	•		•	•	•	
IL	•	•	•	•	•	•		
IN	•	•	•	•	•	•		
LA	•	•	•	•	•			
MI	•	•	•	•	•			•
MS	•	•	•		•			
NC	•		•	•	•	•		
NE	•	•	•	•	•	•	•	
OH	•	•	•		•			
OR	•		•	•	•	•		
TX	•	•	•	•	•	•	•	
WA	•	•	•	•	•	•	•	
WI	•	•	•	•	•	•	•	
Canada								
QC					•			
AB	•	•	•	•	•	•		
Australia								
NS	•	•	•	•	•		•	
QL	•	•	•		•			
SA	•		•	•	•			
TS	•		•	•		•		
VI	•							

Percentage of our managed farms using regenerative practices

Crop residues
97%

Crop rotation
97%

Conservation tillage
91%

Cover vegetation
66%

Nonproductive vegetation
63%

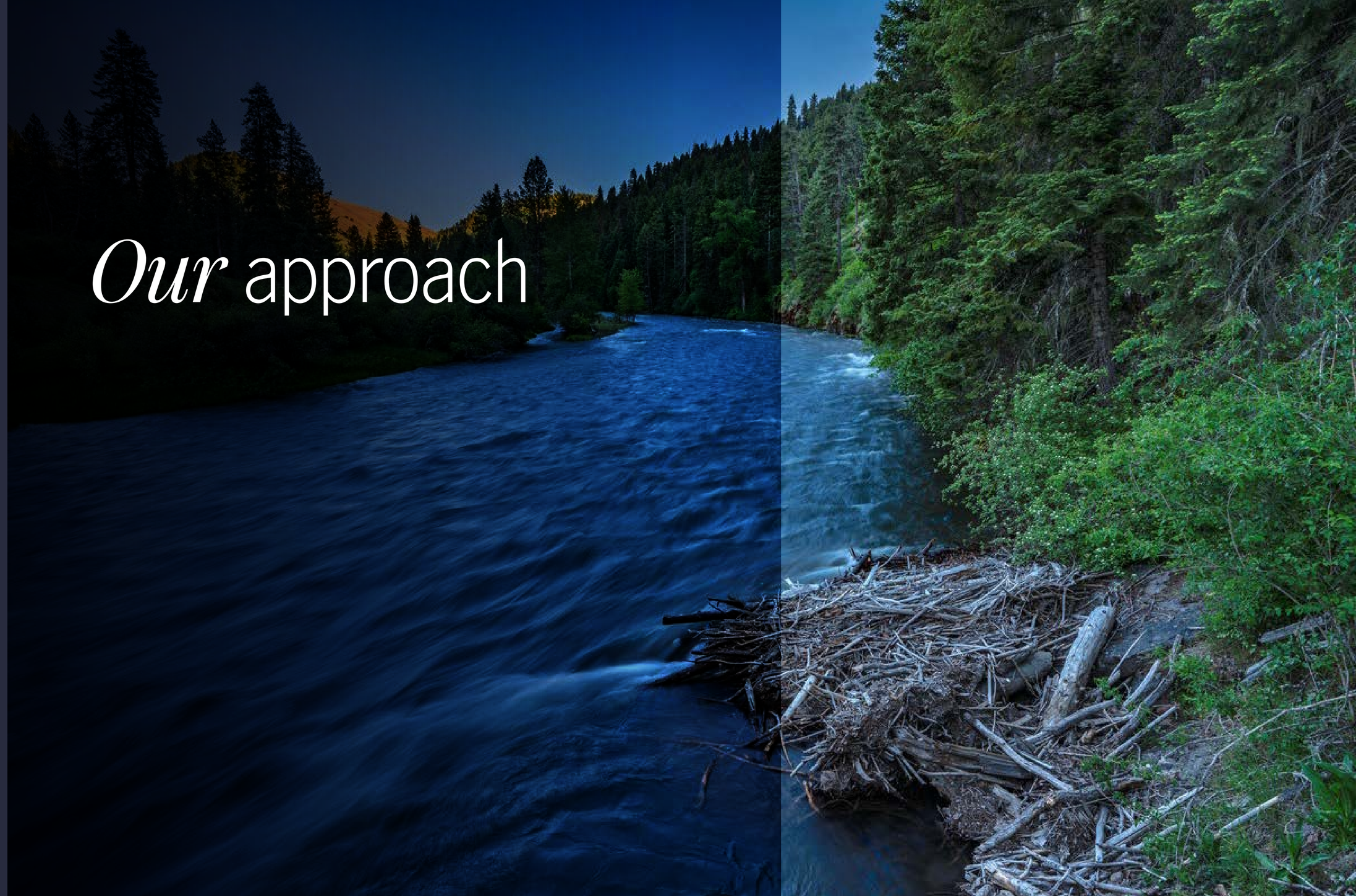
Soil amendment
56%

Rotational grazing
8%

Intercropping
4%

Percentage values represent regenerative agriculture practices implemented when possible for the crop type. For example, crop rotation is not feasible in orchard crop systems, so they were removed from the calculation for that practice.

Our approach



What's material

Materiality underpins our approach to sustainability and stewardship. Across both timberland and agriculture, we focus on three core themes: climate, nature, and people. These themes are directly linked to our original materiality assessment, which identified and communicated sustainability issues that may be financially material to our business. Our goal is to mitigate the risks to the extent we're able, adapt to the risks that cannot be fully mitigated, and realize as many of the opportunities as we can.

We integrate materiality by considering climate, nature, and people throughout the cycle of an investment, from the establishment of our strategy through investment due diligence to delivery of our integrated property management services (including both directly operated and leased properties) throughout our clients' ownership of the property. And we champion independent third-party certification because we believe it's the most comprehensive and credible way to demonstrate our materiality-focused approach toward sustainable asset management to our stakeholders. The pages that follow summarize our risk management strategies for each of these three themes.

Management for the long term

Long-term thinking is fundamental to timberland and agriculture investment management. Our financial models and asset management plans are forecasted over 50 years for timberland, while for agriculture we typically look 10 to 30 years ahead, depending on the type of asset. Given the uncertainties that might exist over such extended time periods, we do our best to plan for multiple possible futures through climate scenario analysis using a combination of third-party analytical tools and our in-house expertise.

Certification status

Timberland—100% of our managed forests were certified under either the Sustainable Forestry Initiative® (SFI) or Forest Stewardship Council® (FSC) and our forests in Australia and New Zealand carry dual certification to both FSC and the Programme for the Endorsement of Forest Certification (PEFC) standards.[13]

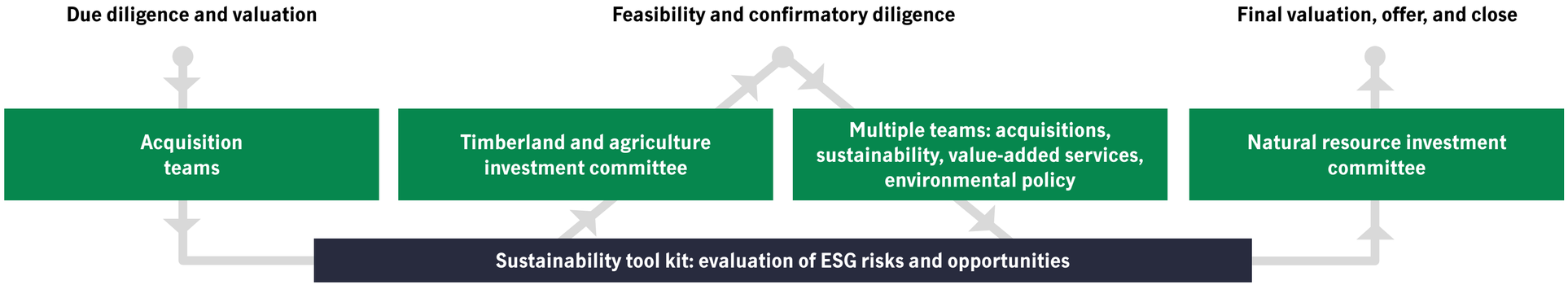
Agriculture—100% of our U.S. and Australian agriculture assets, both directly managed and leased, are certified as sustainable under Leading Harvest.[14] Our Canadian assets are participating in Leading Harvest's Canada pilot project in 2024.

13 As of December 31, 2023. 100% of our forests were certified under either Sustainable Forestry Initiative® (SFI®) (3.6 million acres in the United States and Canada) or Forest Stewardship Council® (FSC®) (2.2 million acres in Australia, New Zealand, and Chile). Most current data shown. **14** Certification as of June 2023, by Leading Harvest and is based on an annual assessment of the conformation to the Farmland Management Standard. Most current data shown. Please see leadingharvest.org/certificationdocuments for further information.

Due diligence

Since 2021, we've used a proprietary question-based tool kit co-developed in house by our sustainability, acquisitions, and operations teams to identify, assess, and score environmental, social, and governance (ESG) components of every deal we consider. We call this our sustainability tool kit. This tool kit highlights both potential risks and opportunities, and it enables us to quantify risk using stoplight indicators to rate inherent risk, risk mitigation potential, and residual risk. We then aggregate these upward to produce an overall numerical sustainability score for the asset, which can be used in our underwriting. The completed tool kit assessment is provided in every deal package presented to our NRIC to ensure that investment decisions explicitly consider relevant sustainability risks and opportunities. Together with our policy on deforestation, carbon principles, and carbon tool kit (used specifically for forest carbon project evaluation), this approach is designed to systematically consider all identified material sustainability considerations in our investment process.

The investment process: using our sustainability tool kit



Sustainability theme	Climate	Nature		People	
Material risks and opportunities	• Climate change impacts • Emissions • Deforestation • CO_2 sequestration	• Sensitive lands • Protected areas • Biodiversity • T&E species • Mitigation banking	• Water quantity/quality • Flood, drought risk • Groundwater depletion • Water banking	• Health and safety • Training and development • Labor practices • Human rights	• Community relations • Indigenous peoples • Job creation • Research, internships

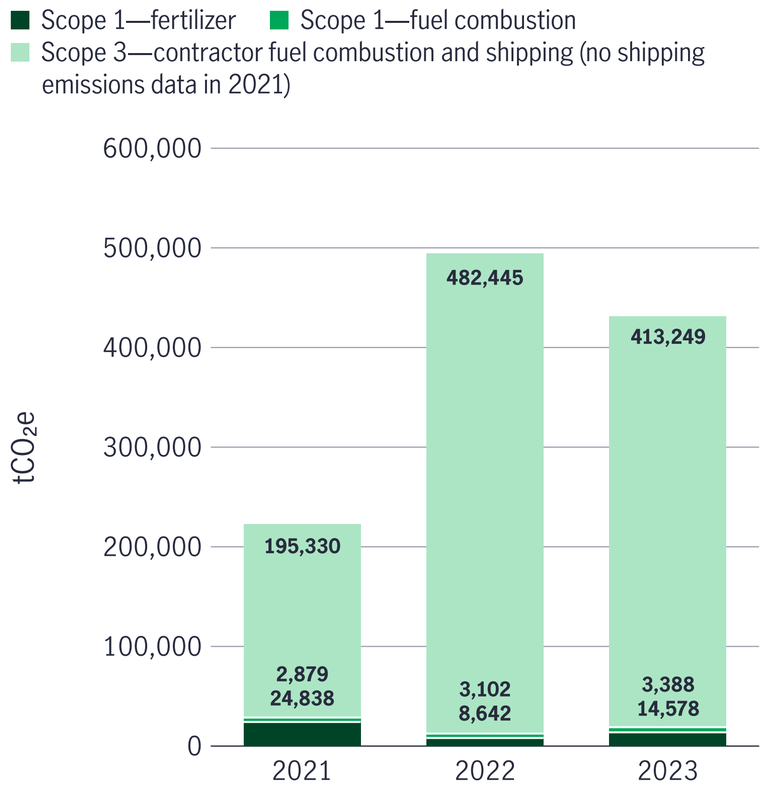
Source: Manulife Investment Management. For illustrative purposes only. T&E refers to threatened and endangered.

Climate

The table below lays out material climate-related risks and opportunities, and our strategies for managing them.

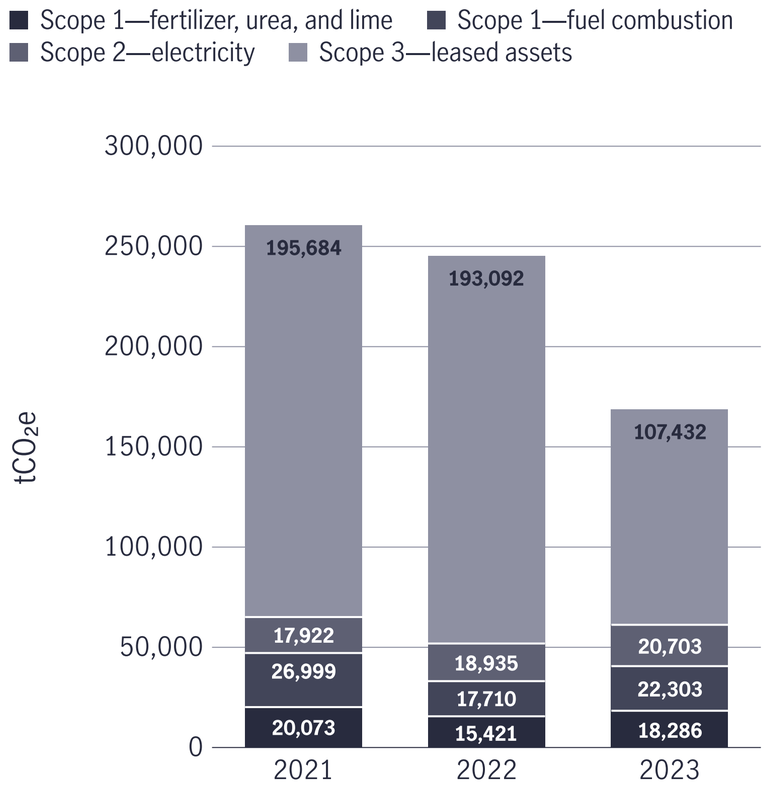
	Timberland	Agriculture
Risks	• Climate change can lead to more frequent and severe weather events such as storms, wildfires, and droughts, which have the potential to negatively impact forests. • Rising temperatures and changing rainfall patterns can also lead to pest and disease outbreaks and shifts in growing conditions, altering where species can be grown.	• Climate change, temperature fluctuations, and extreme weather events pose risks for management and longevity of our assets. • More frequent heat waves, droughts, and flooding can make farmland management more challenging (for example, increasing susceptibility to pests or diseases) and require additional management and risk mitigation strategies.
Opportunities	• Carbon sequestration can be enhanced through silvicultural management techniques, species selection, and diversification. • Shifts in growing conditions will increase growth rates in some areas and operational innovation provides opportunities through detailed research and development.	• Regenerative agriculture provides opportunities to build more resilient assets; practices that focus on building soil health, like reduced tillage and cover cropping, increase water infiltration, reduce the risk of soil erosion, and regulate soil temperature. • Storing excess water as recharge can help maintain and improve aquifer health. • Development of new crop varieties and rootstocks may enhance adaptation to changing conditions or open new growing regions.
Strategies	• We undertake detailed risk assessment and mitigation planning for every investment we consider and on every property we manage. • We implement sustainable management practices, informed by monitoring, research, and certification. • Our timberland decarbonization working group is focused on identifying and implementing practical solutions to reduce our operational carbon footprint.	• We undertake detailed risk assessment and mitigation planning for every investment we consider and on every property we manage. • We identify the assets at the greatest risk due to climate change, track soil responses to regenerative practices, and use precision agriculture to reduce our emissions and water usage. • We implement sustainable management practices, informed by monitoring, research, and certification. • Our agriculture decarbonization working group is focused on identifying and implementing practical solutions to reduce our operational carbon footprint.

Timberland emissions 2021–2023



Fluctuations in timberland scope 1 and 3 emissions from year to year are related primarily to increases or decreases in harvesting and silvicultural operations, which are themselves related to dynamic timber markets. The large increase in scope 3 emissions from 2021 to 2022 is due to inclusion of emissions associated with shipping logs from our Australasian operations, which had not previously been accounted for.

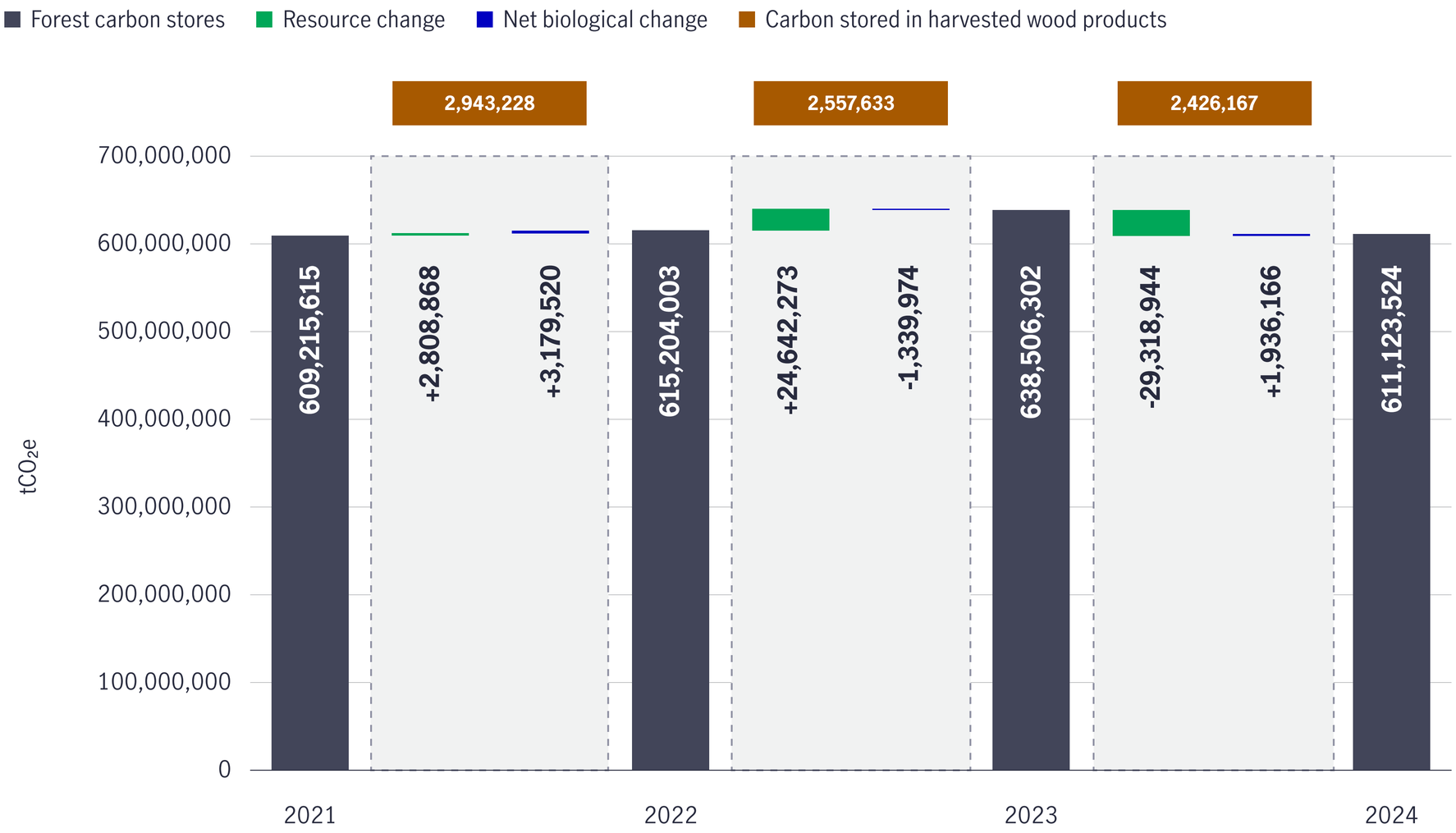
Agriculture emissions 2021–2023



Fluctuations in agriculture scope 1 and 3 emissions from year to year are related to several factors, including global commodity prices, weather patterns, and irrigation requirements, among others. The large reduction in scope 3 emissions from 2022 to 2023 is due primarily to data quality improvements.

Source: Manulife Investment Management. tCO_2e refers to tons of carbon dioxide equivalent. Data shown in these graphs is presented in table form on pages 35–36. For detailed explanation of what is included in each component of the above graphs, see footnotes accompanying the tables on those pages.

Timberland forest carbon flow 2021–2024



Data shown in this graph is presented in table form on page 35. For detailed explanation of what is included in each component of the above graph, see footnotes accompanying the table on page 35.

Climate target progress

In 2021, we set short-term targets for both our agriculture and timberland businesses. The following provides brief updates on our progress against these targets in the reporting year. Our medium-term climate goals, documented in Manulife's 1t.org commitment (see appendix), are designed to help us take the next steps toward reaching our climate ambitions.

Asset class	Short-term target	2023 progress	Status (year-end 2023)
Timberland	Decarbonization strategy launch	We established the timberland decarbonization working group. This group is global in scope and focused on identifying and implementing practical solutions to reduce our timberland portfolio's emissions.	Strategy is complete, implementation is ongoing
	Launch of forest climate strategy focused on carbon sequestration	Launched in 2022.	Fundraising and capital deployment is ongoing
	Net zero commitment partnerships with Australasian timberland management entities	Partially completed in 2022 and we continue working with partners to support these commitments.	Ongoing
Agriculture	Improve greenhouse gas (GHG) quantification methods	We refined our calculation of fertilizer emissions, improved the tracking of crop types and their acreages, and increased the quality of estimate values.	Complete
	Launch our decarbonization strategy	We've developed two working groups for decarbonization in agriculture, focused on row crops and permanent crops. These groups focus on identifying and implementing practical solutions to reduce our agriculture portfolio's emissions.	Strategy is complete, implementation is ongoing
	Scale regenerative agriculture	We've engaged with external experts to help us scale regenerative practices on both our row crop and permanent crop operations. As of 2023, 100% of our properties are using at least one regenerative practice.	Ongoing

Nature

The table below lays out material nature-related risks and opportunities as well as our strategies for managing them.

	Timberland	Agriculture
Risks	• Forest management both depends on and affects nature. • Unsustainable forest management may negatively affect forest and ecosystem health, eroding value and long-term productivity of the forest asset, and potentially contributing to soil degradation, water pollution, and biodiversity loss.	• Agriculture both depends on and affects nature. • Unsustainable agricultural management may negatively affect soil and ecosystem health, eroding value and long-term productivity of the farm asset, and potentially contributing to soil erosion, aquifer depletion, water pollution, and biodiversity loss.
Opportunities	Beyond good stewardship and sustainable management, opportunities exist to help reverse nature loss through ecosystem and habitat restoration projects such as stream channel rehabilitation.	Beyond good stewardship and sustainable management, opportunities exist to help reverse nature loss through ecosystem and habitat restoration projects such as planting habitats for native species and pollinators.
Strategies	• We're committed to sustainable forest management through certification of all timberland assets • We manage 100% of our clients' properties to rigorous third-party certification standards, which ensures protection of biodiversity and high conservation values. • One of our core strategies for measuring our clients' assets' impact on the business and society is natural capital accounting, which will inform decisions that will contribute to a nature-positive future.	• We're committed to sustainable agriculture through certification of all farmland assets. • As of 2023, 100% of our clients' properties in the United States and Australia are certified to the Leading Harvest Farmland Management Standard and we're participating in a pilot in Canada. • In 2024, we released the Manulife Investment Management water statement, which recognizes the importance of water to investment decision-making.

Nature target progress

Our nature targets apply across both agriculture and timberland. As signatories to the Finance for Biodiversity Pledge, we've pledged to fulfill the five targets below by the end of 2025[15] at the latest. As pledge signatories, we've taken these commitments (verbatim from the pledge) as our own and will adapt them as needed. For example, because the investments we manage are predominantly real assets rather than companies, we could adapt "engaging with companies" to "engaging with value-chain partners," referring to contractors or purchasers of our products.

Nature targets (set 2021)	Progress	Status (year-end 2023)
Collaborate and share knowledge on assessment methodologies, metrics, targets, and financing approaches	In 2022, we launched our Nature-positive ecosystem, a practical guide to major initiatives focused on protecting and restoring nature. As members of industry and sustainability organizations, we're actively part of conversations to evolve knowledge of nature in sustainable investing.	Complete
Engage with companies and incorporate criteria for biodiversity in our ESG policies	We incorporate multiple biodiversity-related considerations into our ESG policies, due diligence processes, and management approaches for our real asset and portfolio company investments.	Complete
Assess the impact of our investments on biodiversity and identify drivers of its loss	We're building a system of natural capital accounts across our global operations to capture, quantify, and potentially monetize the relationship between our operations and nature that will enable us to track how our operations affect biodiversity, land, and water. In 2023, we completed natural capital balance sheets for our 77 U.S. timberland assets. We plan to expand the approach globally in 2024.	In progress
Set and disclose science-based targets to increase positive and reduce negative effects on biodiversity	We're engaged in multiple external work streams focused on applying emerging guidance from the Taskforce on Nature-related Financial Disclosures (TNFD) and science-based targets for nature, and we'll leverage this work to inform our nature target-setting process.	In progress
Annual public reporting on the significant positive and negative contributions of our investments to global biodiversity goals	We publicly report on progress through our annual sustainable investing reports and in private regulatory disclosures to individual investors, where applicable. In December 2023, we published our inaugural nature disclosure, which aligned with the recommendations of the TNFD.	Complete

15 The original pledge implementation deadline was 2024, but in 2023 the Finance for Biodiversity Foundation extended the deadline to 2025 for pre-2024 signatories in order to "encourage more financial institutions to join the biodiversity movement." Despite this extension, we believe our commitments will be substantially complete by year-end 2024.

People

The table below lays out material risks and opportunities related to our employees and the communities where we operate as well as our strategies for managing them.

	Timberland	Agriculture
Risks	People-related risks in forest management include workplace injuries and accidents, mental health, and well-being, displacement of local communities, loss of traditional livelihoods, and conflicts over resource access.	People-related risks in farmland management include workplace injuries and accidents, mental health, and well-being, exposure to outdoor elements, and potential human rights concerns.
Opportunities	Our forests provide employment opportunities in rural areas, and they support local related businesses and timber market infrastructure, creating economic value and opportunities for community engagements and partnerships.	Our farms provide employment opportunities in rural areas, and they support local related businesses and agricultural market infrastructure, creating economic value and opportunities for community engagements and partnerships.
Strategies	• 100% of our forests are certified under either the SFI or FSC, and our forests in Australia and New Zealand carry dual FSC and PEFC accreditation.[16] Third-party certification standards provide a framework for and assurance of our commitment to socially sustainable operation. • We undertake staff, contractor, community, and stakeholder engagement. Human rights and social considerations are an important part of our investment due diligence. • An important strategy for mitigating workplace injuries is fostering a culture where our people's safety is prioritized. This is done through constant engagement regarding safety issues, as well as pay incentives correlated directly to how safely and engaged our operators conduct was throughout the year.	• 100% of our U.S. and Australian farmland properties are certified under Leading Harvest,[17] which includes principles on employees and farm labor, local communities, and tenant-operated operations. • We engage with our staff, contractors, tenants, and local communities in our stakeholder engagement processes. • An important strategy for mitigating workplace injuries is fostering a culture where our people's safety is prioritized. This is done through constant engagement regarding safety issues, as well as pay incentives correlated directly to how safely and engaged our operators conduct was throughout the year.

16 As of December 31, 2023. 100% of our forests were certified under either Sustainable Forestry Initiative® (SFI®) (3.6 million acres in the United States and Canada) or Forest Stewardship Council® (FSC®) (2.2 million acres in Australia, New Zealand, and Chile). Most current data shown. **17** Certification as of June 2023, by Leading Harvest and is based on an annual assessment of the conformation to the Farmland Management Standard. Most current data shown. Please see leadingharvest.org/certificationdocuments for further information.

People target progress

Our people targets apply across both agriculture and timberland.

People targets (set 2021)	Status (year-end 2023)	Status (year-end 2022)
Employee engagement		
Achieve top quartile employee engagement scores (percentile)	70th	60th
Diversity		
Increase racially and ethnically diverse representation within our North American leadership by 60% by 2025 relative to 2021 (leadership is defined as those at VP, AVP, and director levels, approximately 10% to 15% of the company with leadership responsibilities)	-33%[18]	-11%[19]
Achieve a sector-specific talent pool of 20% racially and ethnically diverse hiring over the next four years (U.S. agricultural and natural resources bachelor's degrees at 21% racially and ethnically diverse)	19%	14%
Increase the share of women in leadership roles to at least 20% by 2025	15%	15%

18 -33% represents a decrease from 12% to 8% overall in the proportion of racially and ethnically diverse individuals within our North American leadership relative to 2023. The decrease from 12% to 8% is a -33% change. **19** -11% represents a decrease from 12% to 11% overall in the proportion of racially and ethnically diverse individuals within our North American leadership relative to 2021. The decrease from 12% to 11% is a -11% change.

Examples of our work

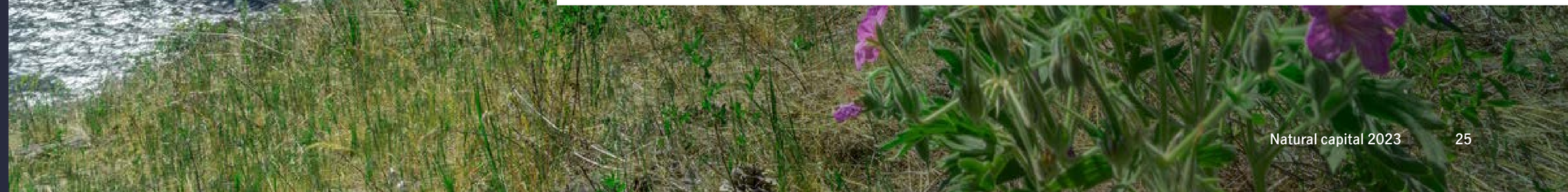
Minam River Wildlife Area

In the 37-year history of our sensitive lands program, we've helped to conserve over 490 thousand acres of land best suited to conservation.

We think of sensitive lands as areas that have critical habitat for threatened or endangered species, or high scenic, cultural, historical, or recreational values. We actively seek out and work closely with public agencies and environmental groups to protect these lands.

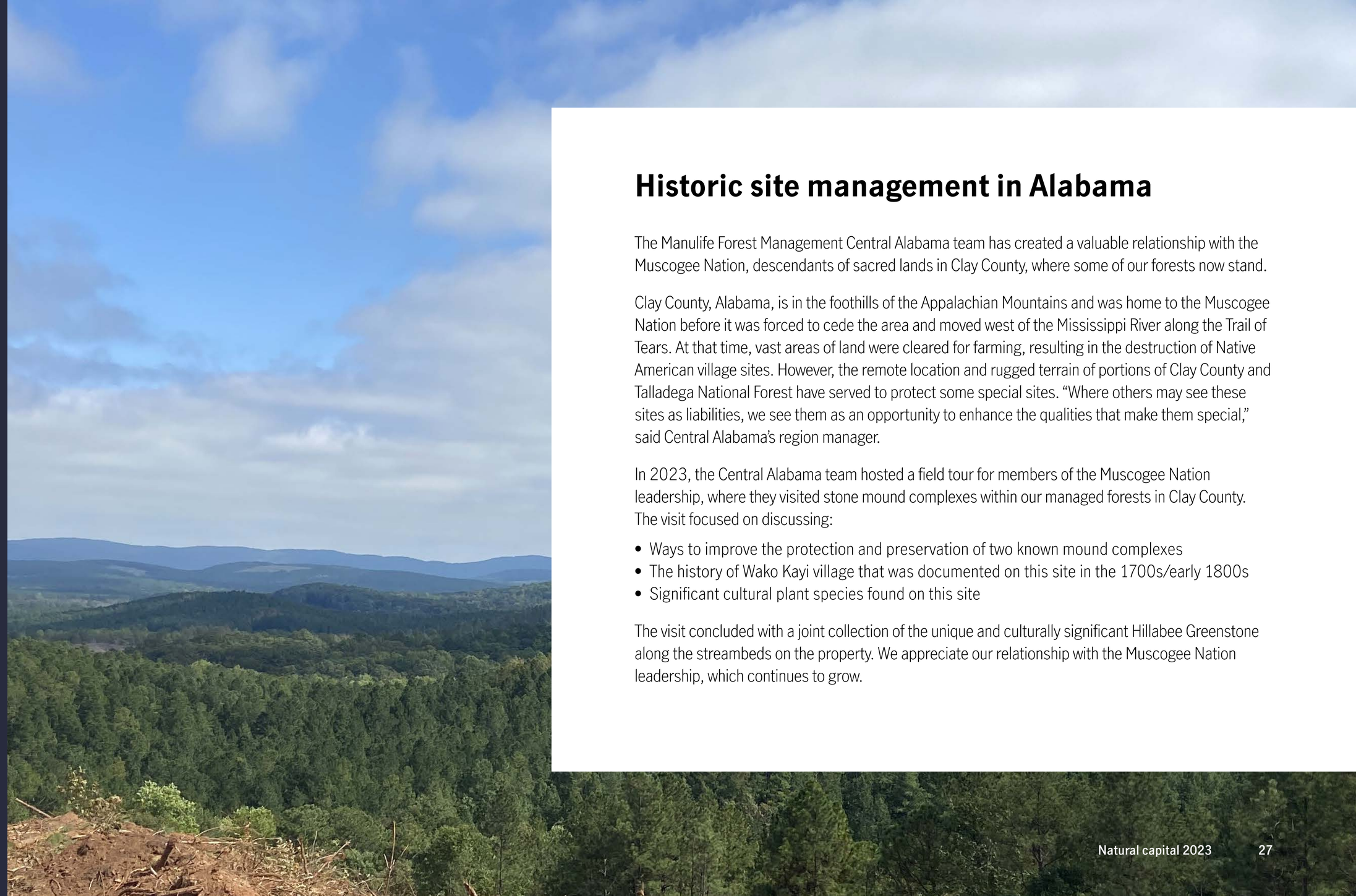
An example of this work is in the Minam River Valley in Oregon where in 2021 we sold 4,600 acres into public conservation ownership. In late 2023, we completed the second and final Minam Forest sale (Minam II) through selling a further 10,900 acres. This sale was possible through sustained relationship building and partnership with the Rocky Mountain Elk Foundation and the Oregon Department of Fish and Wildlife.

These land sales became the Minam River Wildlife Area with boundaries that include a wild and scenic designation river, another beautiful but non-designated river, and a public wilderness area with snow-capped peaks as the backdrop. It's one of the most unique blocks of timberland we've managed and was very worthy of permanent conservation; we're proud to have moved it into public ownership.



Sustainable orchard replanting systems for fruit and nut crops

We're testing different systems of regenerative practices on our Washington apple orchards. Due to changing market preferences, apple orchards are regularly replaced with new varieties that have higher market demand. We're interested in understanding how to support the best replanting systems for apple crops and are testing five variations of soil treatments. These include (1) biochar and manure applied directly to the soil without wood chips; the orchard chipped and incorporated along with (2) manure, (3) sludge, (4) biochar generated from orchard and forestry waste along with manure, and (5) biochar with sludge. In all cases, the biochar is being generated using orchard and forestry waste from Manulife farms and forests that is then reapplied to our farms creating a closed loop. We're working closely with Washington State University on the trial and have received a grant to cover a portion of the costs. We're looking forward to the results of the trial and the wider implications for orchard recycling practices in tree fruit crops.



Historic site management in Alabama

The Manulife Forest Management Central Alabama team has created a valuable relationship with the Muscogee Nation, descendants of sacred lands in Clay County, where some of our forests now stand.

Clay County, Alabama, is in the foothills of the Appalachian Mountains and was home to the Muscogee Nation before it was forced to cede the area and moved west of the Mississippi River along the Trail of Tears. At that time, vast areas of land were cleared for farming, resulting in the destruction of Native American village sites. However, the remote location and rugged terrain of portions of Clay County and Talladega National Forest have served to protect some special sites. "Where others may see these sites as liabilities, we see them as an opportunity to enhance the qualities that make them special," said Central Alabama's region manager.

In 2023, the Central Alabama team hosted a field tour for members of the Muscogee Nation leadership, where they visited stone mound complexes within our managed forests in Clay County. The visit focused on discussing:

- Ways to improve the protection and preservation of two known mound complexes
- The history of Wako Kayi village that was documented on this site in the 1700s/early 1800s
- Significant cultural plant species found on this site

The visit concluded with a joint collection of the unique and culturally significant Hillabee Greenstone along the streambeds on the property. We appreciate our relationship with the Muscogee Nation leadership, which continues to grow.

Continuous improvement with Therizo Farms

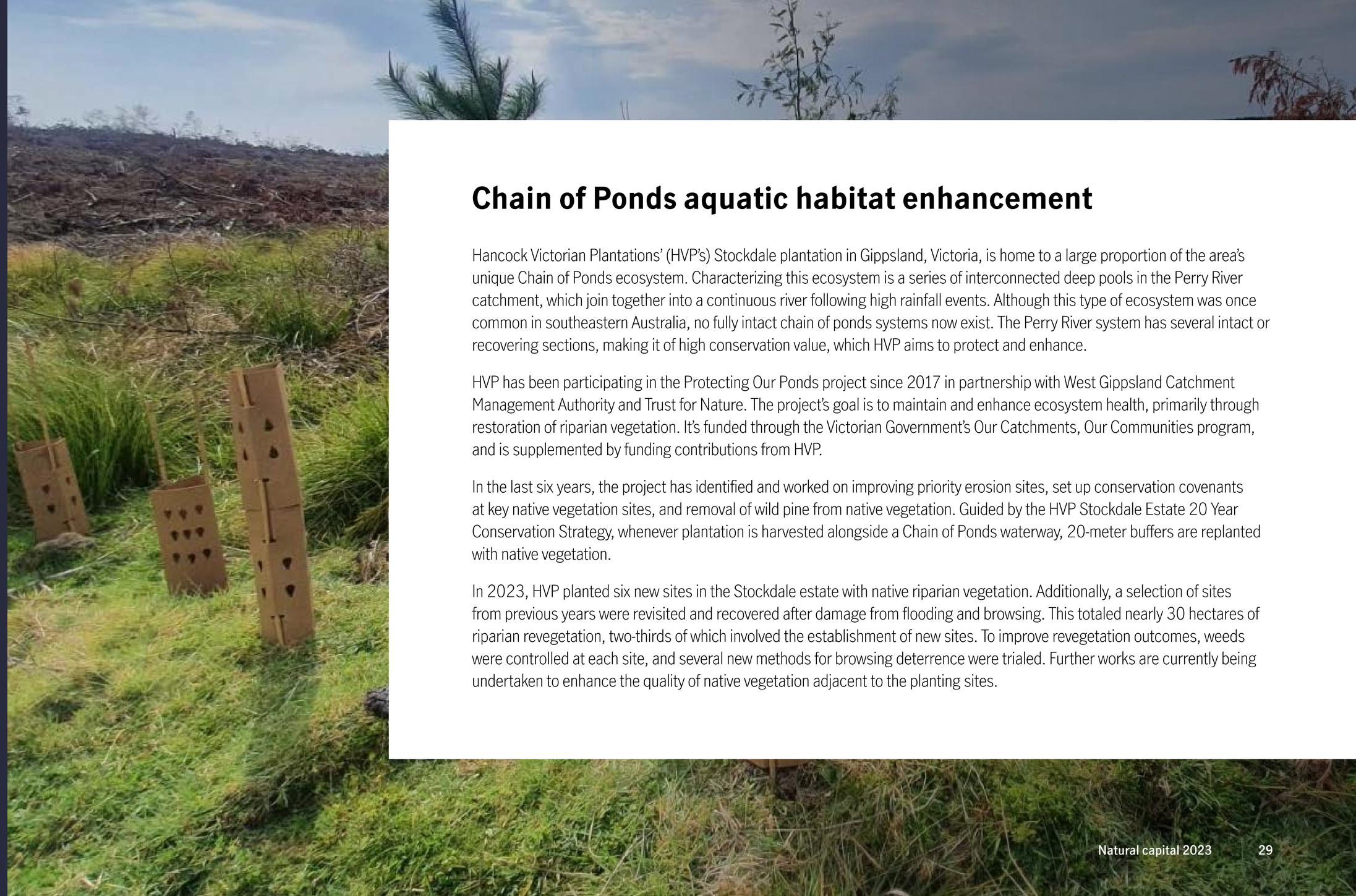
We're proud to partner with top-notch tenants. Therizo Farms is a forward-thinking tenant on one of our Nebraska farms who is using cover cropping, strip tillage, and precision water management to produce high-quality crops. All told, the tenant is using seven regenerative practices. These are some of the most important:

The farm currently operates on a corn and soybean rotation, but in 2023/2024 will incorporate additional crops, including winter wheat, sorghum, and barley; dry peas and lentils, both of which fix nitrogen, are also being considered.

The property is located next to a pig farm with excess swine effluent that our tenant uses as fertilizer.

The tenant is testing new technologies, including sentinel fertigation, which uses red-edge imagery to identify nitrogen deficiencies in the crops, and seed priming technologies, which use plant electrophysiology to increase yields without additional inputs.

Trialing and testing one thing at a time, and taking meticulous notes on inputs, outputs, and soil health, our tenant can assess what works well and build on that each year.



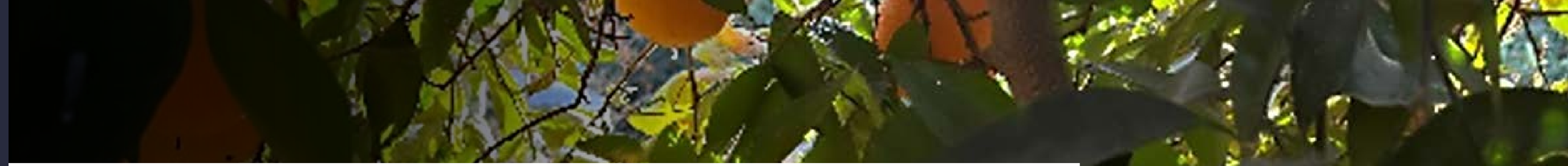
Chain of Ponds aquatic habitat enhancement

Hancock Victorian Plantations' (HVP's) Stockdale plantation in Gippsland, Victoria, is home to a large proportion of the area's unique Chain of Ponds ecosystem. Characterizing this ecosystem is a series of interconnected deep pools in the Perry River catchment, which join together into a continuous river following high rainfall events. Although this type of ecosystem was once common in southeastern Australia, no fully intact chain of ponds systems now exist. The Perry River system has several intact or recovering sections, making it of high conservation value, which HVP aims to protect and enhance.

HVP has been participating in the Protecting Our Ponds project since 2017 in partnership with West Gippsland Catchment Management Authority and Trust for Nature. The project's goal is to maintain and enhance ecosystem health, primarily through restoration of riparian vegetation. It's funded through the Victorian Government's Our Catchments, Our Communities program, and is supplemented by funding contributions from HVP.

In the last six years, the project has identified and worked on improving priority erosion sites, set up conservation covenants at key native vegetation sites, and removal of wild pine from native vegetation. Guided by the HVP Stockdale Estate 20 Year Conservation Strategy, whenever plantation is harvested alongside a Chain of Ponds waterway, 20-meter buffers are replanted with native vegetation.

In 2023, HVP planted six new sites in the Stockdale estate with native riparian vegetation. Additionally, a selection of sites from previous years were revisited and recovered after damage from flooding and browsing. This totaled nearly 30 hectares of riparian revegetation, two-thirds of which involved the establishment of new sites. To improve revegetation outcomes, weeds were controlled at each site, and several new methods for browsing deterrence were trialed. Further works are currently being undertaken to enhance the quality of native vegetation adjacent to the planting sites.



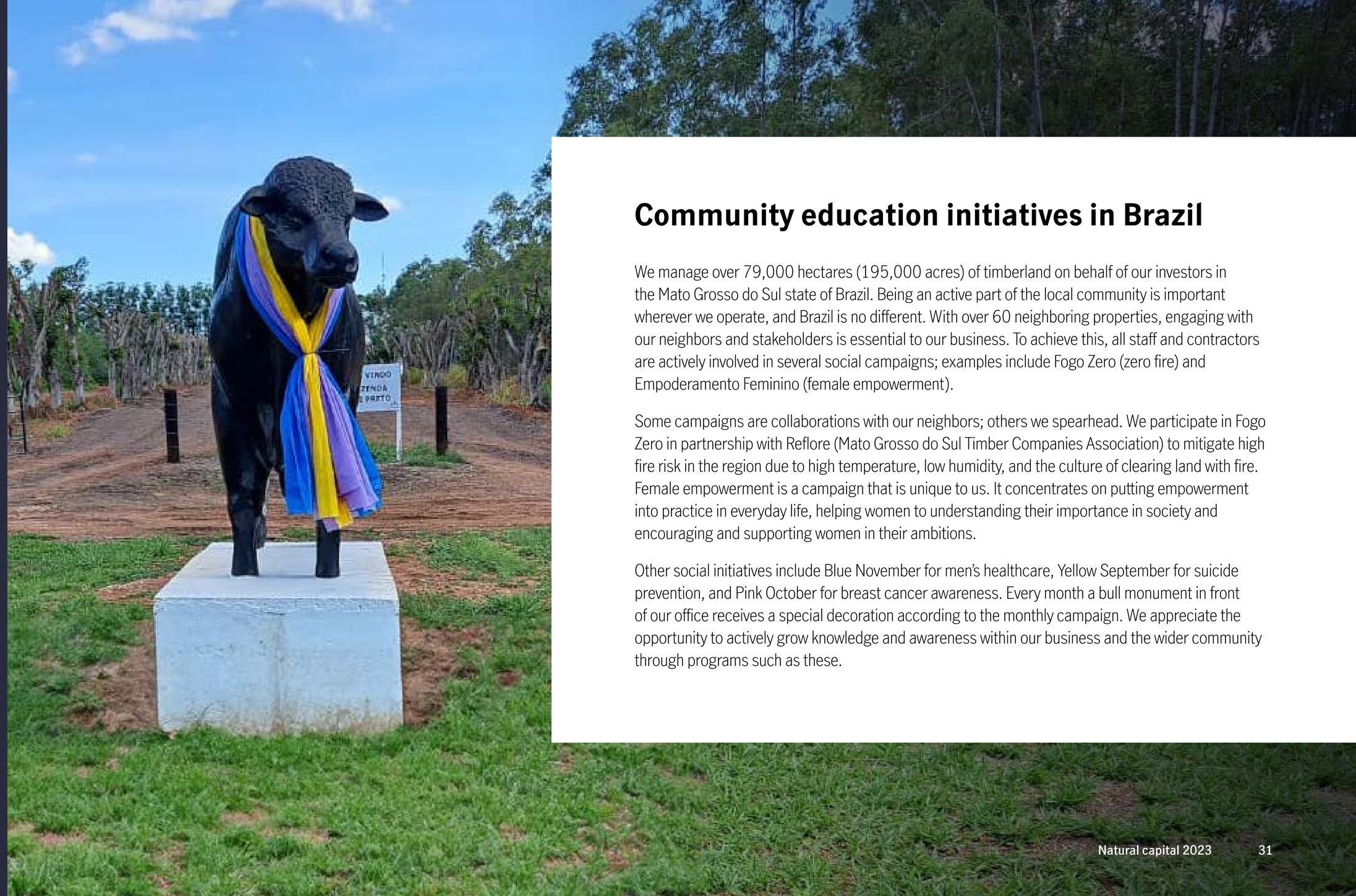
Fresno Irrigation District

One example of our proactive leadership in the local agricultural community is the 8-acre recharge basin on the Shields Ranch section of the Fresno Frankwood property. Working in cooperation with Fresno Irrigation District (FID), our local integrated property management expertise allowed us to develop a water recharge project on a client farmland property. This project improves the health of the local aquifer and reduces flood risk to our neighbors, benefiting all lands within FID.

Groundwater recharge occurs when surface water is flooded over a specific area of land and percolates into the ground to replenish underground aquifers. Recharge at the farm level is considered a crucial aspect of the California Sustainable Groundwater Management Act implementation and overdraft mitigation.

On completing the acquisition of the property, our farm management team determined that surface water access and open land provided a beneficial opportunity to collaborate with the local district to develop a recharge basin. Implementation of the recharge basin will provide more surface water capacity during the irrigation season so the property can be less dependent on groundwater wells but, additionally, in years of excess water, the property will receive excess water from the local water district that will reduce the risk of flooding in other areas of the water district.

To date, our farm management team has completed construction of an 8-acre recharge basin on the property and is currently waiting for approval from Pacific Gas and Electric Company for a permit to install a lift pump for the recharge basin. Once approved and installed, the recharge basin will be able to recharge 11 acre-feet per day. This is equivalent to approximately 3.6 million gallons of water per day.



Community education initiatives in Brazil

We manage over 79,000 hectares (195,000 acres) of timberland on behalf of our investors in the Mato Grosso do Sul state of Brazil. Being an active part of the local community is important wherever we operate, and Brazil is no different. With over 60 neighboring properties, engaging with our neighbors and stakeholders is essential to our business. To achieve this, all staff and contractors are actively involved in several social campaigns; examples include Fogo Zero (zero fire) and Empoderamento Feminino (female empowerment).

Some campaigns are collaborations with our neighbors; others we spearhead. We participate in Fogo Zero in partnership with Reflore (Mato Grosso do Sul Timber Companies Association) to mitigate high fire risk in the region due to high temperature, low humidity, and the culture of clearing land with fire. Female empowerment is a campaign that is unique to us. It concentrates on putting empowerment into practice in everyday life, helping women to understanding their importance in society and encouraging and supporting women in their ambitions.

Other social initiatives include Blue November for men's healthcare, Yellow September for suicide prevention, and Pink October for breast cancer awareness. Every month a bull monument in front of our office receives a special decoration according to the monthly campaign. We appreciate the opportunity to actively grow knowledge and awareness within our business and the wider community through programs such as these.

Decarbonization working groups

In 2023, both our timberland and agriculture businesses convened global decarbonization working groups to develop pathways to reduce GHG emissions and increase CO_2 removal in a manner consistent with global and corporate decarbonization goals as articulated in the Paris Agreement and Manulife's journey to net zero, respectively. More specifically, this will entail contributing to Manulife's climate target to reduce scope 1 and 2 emissions by 40% by 2035 relative to a 2019 baseline.

Both groups gathered information on potential opportunities, completed high-level assessments, and prioritized opportunities for further exploration. They identified focus areas for 2024 where we'll progress detailed research, develop project plans, and consider piloting or scaling the most promising decarbonization pathways.

Potential near-term decarbonization opportunities

- Forest rotation length
- Trucking/machinery telematics
- Precision fertilizer
- Solar photovoltaic
- Biochar

Appendix

Our statements, disclosures, and certifications

Sustainability reports and disclosures

- Timberland and agriculture climate disclosure
- Timberland and agriculture nature disclosure
- Manulife Investment Management stewardship report

Statements and policies

- Timberland and agriculture sustainable investing framework
- Timberland and agriculture materiality assessment
- Timberland and agriculture policy on deforestation
- Manulife Investment Management climate statement
- Manulife Investment Management nature statement
- Manulife Investment Management water statement
- Manulife global human rights statement

Third-party certification and verifications

- Leading Harvest audit
  - Direct operated
  - Tenant operated
  - Australia
- Forest certification
  - Australia HQP
  - Australia HVP
  - Brazil
  - Chile
  - New Zealand
  - United States—Western division
  - United States—Southern division
- GHG inventory verification
  - Timberland
  - Agriculture

Climate metrics

Timberland

Metric	2023	2022	2021
Total standing forest carbon stock (tCO_2e)	**611,123,524**	638,506,302	615,204,003
Scope 1 GHG emissions (tCO_2e)[20]	**17,966**	11,744	27,717
of which: fertilizer (N_2O) emissions (tCO_2e)	**14,578**	8,642	24,838
of which: fuel combustion emissions	**3,388**	3,102	2,879
Scope 2 GHG emissions (tCO_2e)[20]	**0**	0	0
Scope 3 GHG emissions (tCO_2e)[20]	**413,249**	482,445	195,330
Biogenic stock change (tCO_2; +ve = sequestration; -ve = emissions)[21]	**1,936,166**	-1,339,974	3,179,520
Managed fire emissions (tCO_2e)	**46,862**	37,489	52,318
Carbon stored in harvested wood products (tCO_2e)[22]	**2,426,167**	2,557,633	2,943,228
Net sequestration (tCO_2; +ve = sequestration; -ve = emissions)[23]	**3,884,256**	686,164	5,851,021
5-year average sequestration (tCO_2; +ve = sequestration; -ve = emissions)[24]	**1,492,609**	1,791,934	2,747,283
Percent net productive area[25]	**82.1%**	82.3%	82.9%
Percent of net productive area harvested	**2.8%**	2.8%	2.9%
Percent of net productive area planted[26]	**2.5%**	2.7%	2.6%
Percent of harvest to solid wood	**59.1%**	63.4%	59.2%
Percent of harvest to fiber	**40.7%**	35.6%	40.7%
Percent of harvest to biomass	**0.2%**	1.1%	0%
38-year history number of trees planted	**1,354,509,684**	1,304,430,265	1,253,935,422

Source: Manulife Investment Management, 2023.

20 Scope 1: According to the GHG Protocol, scope 1 emissions are all direct GHG emissions, which are "emissions from sources that are owned or controlled by the reporting entity." Scope 2: According to the GHG Protocol, scope 2 emissions are "indirect GHG emissions from consumption of purchased electricity, heat or steam." Scope 3: According to the GHG Protocol, scope 3 emissions are "other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc." Fluctuations in scope 1 and 3 emissions from year to year are related primarily to increases or decreases in harvesting and silvicultural operations, which are themselves related to dynamic timber markets. Large increase in scope 3 emissions from 2021 to 2022 is due to inclusion of emissions associated with shipping logs from our Australasian operations, which had not previously been accounted for. **21** Net change in total forest carbon stocks over calendar year 2023. Positive values indicate more forest grew than was harvested (net sequestration); negative values indicate more forest was harvested than grew (net emission). **22** Quantity of carbon assumed to be stored in harvested wood products (from trees harvested over calendar year 2023) after 100 years. Represents long-term storage and calculated using market-specific (geography/species) conversion factors. It is a fraction of biogenic stock change, as only some of the carbon transferred from forest carbon pool to wood products pool goes into long-lived wood products. **23** Biogenic stock change, plus carbon stored in harvested wood products, minus scope 1, 2, and 3 emissions. **24** The average net sequestration per year over the last five years. **25** Fractional area of timberland under management that is managed for commercial production of wood products. Area not managed for commercial production of wood products may include areas with high conservation value, old growth forest, buffer zones, conservation easements, threatened and endangered species habitat, or areas with historical or cultural significance. **26** Fractional area of timberland under management that is managed for commercial production of wood products. Area not managed for commercial production of wood products may include areas with high conservation value, old growth forest, buffer zones, conservation easements, threatened and endangered species habitat, or areas with historical or cultural significance.

Climate metrics

Agriculture

Metric	2023	2022	2021
Properties managed	**259**	263	269
Scope 1 GHG emissions (tCO2e)[27]	**40,588**	33,131	47,072
of which: fertilizer, urea, and lime emissions (tCO_2e)	**18,285**	15,421	20,073
of which: fuel combustion emissions (tCO_2e)	**22,303**	17,710	26,999
Scope 2 GHG emissions (tCO_2e)[27]	**20,703**	18,935	17,922
Scope 3 GHG emissions (tCO_2e)[27]	**107,432**	193,092	195,684
Biogenic removals (tCO_2e)[28]	**310,215**	329,853	293,046
Net sequestration (tCO_2; +ve = sequestration; -ve = emissions)	**141,491**	84,695	32,368
Number of crop types grown	**26**	24	25
Percent net productive area	**84%**	87%	88%

Source: Manulife Investment Management, 2023.

27 Scope 1: According to the GHG Protocol, scope 1 emissions are all direct GHG emissions, which are "emissions from sources that are owned or controlled by the reporting entity." Scope 2: According to the GHG Protocol, scope 2 emissions are "indirect GHG emissions from consumption of purchased electricity, heat or steam." Scope 3: According to the GHG Protocol, scope 3 emissions are "other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc. Fluctuations in scope 1 and 3 emissions from year to year are related to several factors including global commodity prices, weather patterns, and irrigation requirements, among others. Large reduction in scope 3 emissions from 2022 to 2023 is due primarily to data quality improvements.
28 Estimated soil carbon sequestration over the reporting period (calendar year 2023), using publicly available crop-specific soil carbon sequestration rates.

Nature metrics

Timberland

Metric	2023	2022	2021
Number of tree species grown (plantation I total)[29]	**15 | 63**	15 | 63	15 | 63
Forest third-party certified as sustainably managed[30]	**100%**	100%	100%
Forests with forest management plan	**100%**	100%	100%
Forests with biodiversity assessment	**100%**	100%	100%
Forests with conservation designation[31]	**23.0%**	20.9%	20.0%
38-year history sensitive lands program acres conserved[32]	**492K**	479K	479K
Number of stream miles protected by BMPs	**17.0K**	19.2K	20.5K

Source: Manulife Investment Management, 2023. BMP refers to best management practice.

29 Total includes 48 naturally regenerating species. **30** As of year-end 2023, 100% of our forests were certified under either the SFI or FSC, and our forests in Australia and New Zealand carry dual FSC and PEFC accreditation. As a condition of certification, forests must have management plans, including consideration of biodiversity. **31** Forests with conservation designation include land bearing one or more of the following designations: old growth forest, forest ecosystem of high conservation value, high-conservation value forest, conservation easements, areas with restricted management due to presence of threatened and endangered species, areas of culture or historical significance, and buffer areas such as stream management zones and riparian management zones. Year-on-year change may be affected by asset acquisitions and/or dispositions in addition to new conservation designations on the existing land base. **32** Sensitive lands are defined as lands whose attributes may lend themselves to management for purposes not related to timber production. They typically are deemed critical habitat for sensitive or endangered species or are lands with high scenic, historical, cultural, or recreational values. We actively seek out and work closely with public agencies and environmental groups to consummate conservation transactions and initiatives that will protect these lands. Land preservation transactions are conducted on behalf of clients in accordance with the terms of the investment mandate, and in seeking to generate overall risk-adjusted returns on their assets. Protection may include moving the land into public or conservation group ownership or placing permanent restrictions on how it can be managed, such as through a conservation easement.

Nature metrics

Agriculture

Metric	2023	2022	2021
Farms third-party certified as sustainably managed[33]	**94%**	91%	78%
Farms with farm management plan	**100%**	100%	100%
Farms with regenerative agriculture practices[34]	**100%**	98%	55%
Farms with biodiversity assessment	**100%**	100%	100%
Number of acres of pollinator habitat	**295**	295	295
Number of stream miles protected by BMPs[35]	**0.9K**	0.8K	0.6K
Area using integrated pest management	**100%**	100%	100%
Investments accounting for water risk and opportunity	**100%**	100%	100%
Number of crop types grown	**26**	24	25

Source: Manulife Investment Management, 2023. BMP refers to best management practice.

33 100% of U.S. and Australian farms are third-party certified sustainable. Certification as of June 2023, by Leading Harvest and is based on an annual assessment of the conformation to the Farmland Management Standard. Most current data shown. Please see leadingharvest.org. **34** Includes farms employing one or more of the following practices: conservation tillage or no till; cover vegetation/crop; crop residues; crop rotation; intercropping; nonproductive vegetation; rotational grazing; and soil amendment. **35** Includes North America and Australia only.

People metrics

Timberland

Metric	2023	2022	2021
Number of employees (timberland)[36]	**706**	699	721
Number of employees (total)[37]	**956**	947	972
Number of contractors (estimated)[38]	**4,123**	4,283	4,542
Percent women	**30%**	29%	31%
Percent racially and ethnically diverse individuals[39]	**19%**	14%	6%
Percent of leadership women[39]	**15%**	15%	18%
Percent of leadership racially and ethnically diverse[40]	**8%**	11%	14%
Number of new hires[41]	**64**	57	50
Percent attrition[42]	**14%**	18%	12%
Lost time injury frequency rate[43]	**5.2**	4.4	2.9
Percent employees responding to engagement survey[44]	**87%**	89%	96%
Percentile employee engagement survey score[44]	**70th**	60th	57th
Lands with public access (acres)[45]	**5,034,160**	4,963,322	5,365,021

Source: Manulife Investment Management, 2023.

36 Includes 91 (2023), 119 (2022), and 93 (2021) employees with timberland and agriculture responsibility. Employees of HVP and HQP are included. **37** Includes 250 (2023), 248 (2022), and 251 (2021) agriculture-only employees. Employees of HVP and HQP are included. **38** Timberland contractors only; full-timeequivalent, not individuals. **39** Includes North America staff as voluntarily reported in Workday only. **40** Leadership includes all timberland and agriculture staff at the level of director or higher (including AVP, VP). **41** Includes 11 (2023) employees with timberland and agriculture responsibility. **42** Combined result for timberland and agriculture. **43** Incidents per 1 million hours; timberland only. **44** Combined result for timberland and agriculture in 2023 Gallup employee engagement survey. **45** Access of any type, including by permit, exclusive recreation lease, or unrestricted open public access.

People metrics

Agriculture

Metric	2023	2022	2021
Number of employees (agriculture)[46]	**341**	367	344
Number of employees (total)[47]	**956**	947	972
Number of contractors (estimated)[48]	**1,666**	1,870	1,389
Percent women	**24%**	29%	20%
Percent racially and ethnically diverse individuals[39]	**19%**	14%	28%
Percent of leadership women[40]	**15%**	15%	18%
Percent of leadership racially and ethnically diverse[40]	**8%**	11%	14%
Number of new hires[41]	**58**	54	52
Percent attrition[42]	**14%**	18%	12%
Lost time injury frequency rate[49]	**7.3**	5.2	20.8
Percent employees responding to engagement survey[44]	**87%**	89%	96%
Percentile employee engagement survey score[44]	**70th**	60th	57th
Lands with public access (acres)[50]	**90,441**	81,456	70,837

Source: Manulife Investment Management, 2023.

46 Includes 91 (2023), 119 (2022), and 93 (2021) employees with agriculture and timberland responsibility. **47** Includes 615 (2023), 580 (2022), and 628 (2021) timberland-only employees. **48** Agriculture contractors only; full-time equivalent, not individuals. **49** Incidents per 1 million hours; 2021 and 2022 are agriculture only. **50** Refers to public access available for recreation by permit or lease.

Manulife's 1t.org commitment

Our medium-term climate goals, documented in Manulife's 1t.org commitment, are designed to help us take the next steps toward reaching our climate ambitions.

Medium-term objectives (2023–2027)	Supporting actions
Nature-based solutions	Building on Manulife's existing $100 million commitment, we'll continue to grow our clients' investments in nature-based climate solutions over the next four years.
Meeting investor's climate-related goals	Grow the scale of the Manulife Investment Management client's carbon-focused forestry investments we manage, offering innovative products that meet investors' climate-related goals.
Carbon sequestration	Increase our sequestration of CO_2 in the forests we manage in accordance with Manulife Investment Management's carbon principles and leading sustainability certification standards, including the SFI, FSC, and PEFC.
Partnerships and scale	• Create additional financial opportunities and incentives for conservation, restoration, and afforestation or reforestation (e.g., blended financing vehicles) • Support scaling the market for sustainable timber in building construction • Further the development of high-quality forest-based carbon credit standards • Accelerate the development of sustainable investment strategies for companies interested in natural climate solutions to support their climate goals • Partner to pilot new programs and technologies to promote nature-based climate solutions

Crosswalks: global reporting frameworks and certification

Crosswalk: climate (TCFD/ISSB)

We published our first climate disclosure in 2020 and have included updated climate reporting within subsequent sustainable investing reports. The table below serves to update our climate reporting by mapping how this report aligns with the TCFD/ISSB framework.

Recommended disclosures	Response	
Governance—Understand the governance processes, controls, and procedures used to monitor, manage, and oversee climate-related risks and opportunities.	Refer to: Who we are—our governance of sustainability Our approach—climate	Also refer to: Timberland and agriculture sustainable investing framework
Strategy—Understand a company's strategy for managing climate-related risks and opportunities.	Refer to: Our approach—climate	
Risk management—Understand the processes to identify, assess, prioritize, and monitor climate-related risks and opportunities, including whether and how those processes are integrated into and inform the company's overall risk management process.	Refer to: Our approach—what's material? Our approach—climate	Also refer to: Our materiality assessment
Metrics and targets—Understand a company's performance in relation to its climate-related risks and opportunities, including progress toward any climate-related targets it has set and any targets it's required to meet by law or regulation.	Refer to: Appendix—climate metrics	

TCFD refers to Task Force on Climate related Financial Disclosures ISSB refers to International Sustainability Standards Board.

Crosswalk: nature (TNFD)

We published our first nature disclosure, aligned with the recommendations of the TNFD, in December 2023. The information in the table below is supplemental to that disclosure, with some data updates, and shows how the TNFD framework is integrated in this report.

Recommended disclosures	Response	
Governance—Disclose the organization's governance of nature-related dependencies, impacts, risks, and opportunities.	Refer to: Who we are—our governance of sustainability Our approach—climate Our approach—nature Our approach—people	Also refer to: Timberland and agriculture sustainable investing framework
Strategy—Disclose the effects of nature-related dependencies, impacts, risks, and opportunities on the organization's business model, strategy, and financial planning where such information is material.	Refer to: Our approach—nature	
Risk management—Describe the process used by the organization to identify, assess, prioritize, and monitor nature-related dependencies, impacts, risk, and opportunities.	Refer to: Our approach—what's material? Our approach—climate Our approach—nature Our approach—people	Also refer to: Our materiality assessment

TNFD refers to Taskforce on Nature-related Financial Disclosures.

General requirements	Response	
The application of materiality	Refer to: Our approach—what's material?	Also refer to: Our materiality assessment
The scope of disclosures	Refer to: Who we are—our natural capital business	The scope of the disclosure includes our timberland and agriculture businesses and the activities within those businesses that are within our direct operational control.
The location of nature-related issues	Refer to: Who we are—our natural capital business	
Integration with other sustainability-related disclosures	This report serves to integrate our nature, climate, and sustainability reporting.	
The time horizons considered	Refer to: Our approach	
The engagement of indigenous peoples, local communities, and affected stakeholders in the identification and assessment of the organization's nature-related issues	Refer to: Our approach—people Our approach—climate Our approach—nature	

Disclosure metrics	Response
Core global metrics	Refer to: Appendix—climate metrics Appendix—nature metrics Appendix—people metrics
Additional disclosure and assessment metrics	

Crosswalk: farmland certification, EU SFDR PAIs, and SDGs

The table below illustrates alignment of our agriculture sustainability priorities (MIM themes) with ESG themes as well as principles of the Leading Harvest Farmland Management Standard, relevant principal adverse impact indicators (PAIs) of the European Union Sustainable Finance Disclosure Regulation (EU SFDR), and the United Nations Sustainable Development Goals (UN SDGs).

MIM themes ESG themes

	Climate	Nature	People	People
	Environment	**Environment**	**Social**	**Governance**
LH certification principles	LH 2—Soil health and conservation	LH 3—Protection of water resources	LH 8—Protection of special sites	LH 11—Legal and regulatory compliance
	LH 5—Energy use, air quality, and climate change	LH 4—Protection of crops	LH 9—Local communities	LH 12—Management review and continual improvement
		LH 6—Waste and material management	LH 10—Employees and farm labor	LH 13—Tenant-operated operations
		LH 7—Conservation of biodiversity		
Applicable SFDR PAIs (Table number.PAI)	1.1—Greenhouse gas (GHG) emissions	1.7—Activities negatively affecting biodiversity-sensitive areas	3.2—Rate of accidents	1.16—Investee countries subject to social violations
		2.8—Exposure to areas of high water stress		2.11—Investments in companies without sustainable land practices
		2.15—Deforestation		
UN SDGs	SDG 13—Climate action	SDG 6—Clean water and sanitation	SDG 2—Zero hunger	SDG 16—Peace, justice and strong institutions
		SDG 15—Life on land	SDG 11—Sustainable cities and communities	
			SDG 12—Responsible consumption and production	

Manulife Investment Management (MIM). LH principles, SFDR PAIs, and UN SDGs. SFI objectives sit one level below principles and address more specific topics such as climate smart forestry (objective 9), and fire resilience and awareness (objective 10).

Crosswalk: forest certification, EU SFDR PAIs, and SDGs

The table below illustrates alignment of our agriculture sustainability priorities (MIM themes) with ESG themes as well as certification principles of the Sustainable Forestry Initiative (SFI) and Forest Stewardship Council (FSC), relevant principal adverse impact indicators (PAIs) of the European Union Sustainable Finance Disclosure Regulation (EU SFDR), and the United Nations Sustainable Development Goals (UN SDGs).

MIM themes ESG themes

	Climate	Nature	People	People
	Environment	**Environment**	**Social**	**Governance**
SFI certification principles	SFI 1—Sustainable forestry	SFI 2—Forest productivity and health	SFI 5—Aesthetics and recreation	SFI 7—Legal compliance
		SFI 3—Protection of water resources	SFI 8—Research	SFI 11—Transparency
		SFI 4—Protection of biological diversity	SFI 9—Training and education	SFI 12—Continual improvement
		SFI 6—Protection of special sites	SFI 10—Community involvement and social responsibility, and respect for indigenous rights	SFI 13—Responsible fiber sourcing
FSC certification principles		FSC 5—Benefits from the forest	FSC 2—Workers rights and employment conditions	FSC 1—Compliance with laws
		FSC 6—Environmental values and impacts	FSC 3—Indigenous peoples' rights	FSC 8—Monitoring and assessment
		FSC 9—High conservation values	FSC 4—Community relations	FSC 10—Implementation of management activities
			FSC 7—Management planning	
Applicable SFDR PAIs (Table number.PAI)	1.1—Greenhouse gas (GHG) emissions	1.7—Activities negatively affecting biodiversity-sensitive areas	3.2—Rate of accidents	1.16—Investee countries subject to social violations
		2.8—Exposure to areas of high water stress		2.11—Investments in companies without sustainable land practices
		2.15—Deforestation		
UN SDGs	SDG 13—Climate action	SDG 6—Clean water and sanitation	SDG 11—Sustainable cities and communities	SDG 16—Peace, justice and strong institutions
		SDG 15—Life on land	SDG 12—Responsible consumption and production	

Manulife Investment Management (MIM), SFI principles, FSC principles, SFDR PAIs, and UN SDGs.

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The case study/ies shown here are for illustrative purposes only, do not represent all of the investments made, sold, or recommended for client accounts, and should not be considered an indication of the ESG integration, performance, or characteristics of any current or future Manulife Investment Management product or investment strategy.

Manulife Investment Management conducts many ESG engagements each year but does not engage on all issues or with all issuers in our portfolios. We also frequently conduct collaborative engagements in which we do not set the terms of engagement but lend our support in order to achieve a desired outcome. Where we own and operate physical assets, we seek to weave sustainability into our operational strategies and execution. The case studies shown are illustrative of different types of engagements across our in-house investment teams, asset classes and geographies in which we operate. While we conduct outcome-based engagements to enhance long term-financial value for our clients, we recognize that our engagements may not necessarily result in outcomes which are significant or quantifiable. In addition, we acknowledge that any observed outcomes may be attributable to factors and influences independent of our engagement activities. The case studies shown are a sampling across issues and geographies. Our approach to ESG investing and incorporation of ESG principles into the investment process differs by investment strategy and investment team. It should not be assumed that an investment in the company discussed herein was or will be profitable. Actual investments will vary and there is no guarantee that a particular fund or client account will hold the investments or reflect the characteristics identified herein. Please see our ESG policies for details.

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Investing involves risks, including the potential loss of principal. Financial markets are volatile and can fluctuate significantly in response to company, industry, political, regulatory, market, or economic developments. These risks are magnified for investments made in emerging markets. Currency risk is the risk that fluctuations in exchange rates may adversely affect the value of a portfolio's investments.

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