

Sustainable investing

Real assets 2022



A message from Christoph Schumacher

During my first 18 months at Manulife Investment Management, it became clear that our commitment to innovating and building on our significant expertise in the sustainable management of real assets is authentic, alongside our deep dedication to ESG principles. Long-term experience of both investing in and operating real assets has shaped our ability to manage these assets sustainably, over extended time horizons, and I'm delighted to introduce our inaugural real assets sustainable investing report as a testament to that success.

Private real assets are a rapidly growing allocation for investors searching for sources of diversification, long-term income, inflation protection, and reduced volatility, but they're also a natural fit for investors wishing to put their capital to work sustainably, in ways that generate a positive contribution to society. Real estate and natural capital assets such as timberland and agriculture are vital to investing sustainably for a better world, each playing a profound role in providing solutions to three of our greatest challenges—climate change, nature loss, and rising inequality. Whether we're managing nearly 90,000 acres of forest for climate impact and carbon value, certifying our entire U.S. agriculture platform to the Leading Harvest Farmland Management Standard,¹

or having our global real estate portfolio recognized as a GRESB Sector Leader,² ranked first among its peer group for sustainability leadership, we're focused on delivering the innovation and efficiency demanded by our investors.

This has been a year of extraordinary upheaval, and despite the ongoing challenges, we're seeing many encouraging sustainability commitments from global government and corporate leaders that promise enduring and positive change. I feel strongly that real assets—and all of us who work, invest, or manage in this varied field—can play a part in mitigating some of the most urgent planetary challenges we face.

Christoph Schumacher

Global Head of Real Assets

¹ Certification as of May 17, 2021, 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](https://www.leadingharvest.org).

² Based on GRESB results released October 2022 that cover the 2021 calendar year. Manulife Investment Management paid a per fund submission fee, per year. The GRESB Rating is an overall measure of how well ESG issues are integrated into the management and practices of companies and funds. Please see the [GRESB Real Estate Assessment](#) for more information.

Looking *ahead*: working together

Investors increasingly seek to put their capital to work within sustainable investment strategies—and the real assets within our comprehensive private markets capabilities speak directly to these values.

We believe that real assets represent part of the solution to the key environmental and social issues we face and that assessing both our physical risks and resilience to the challenges posed by climate change, nature loss, and rising inequality helps us manage long-term risk.

- **Climate change**—As managers of timberland and farmland, our vast natural resource holdings leave us uniquely positioned in our sector to accelerate the use of nature-based solutions in the fight against climate change. To help realize the maximum potential of these nature-based solutions, we've adopted carbon principles to ensure that the management practices result in tangible climate benefits for the world and durable carbon value for our investors. In addition, our real estate assets are vital to reducing the built environment's carbon footprint, and investors will increasingly demand building efficiency improvements, fuel switching, and renewable technology that support carbon reduction goals.
- **Nature loss**—Protecting healthy ecosystems provides immense value to the vitality of communities and economies, but nature loss is consistently identified by business leaders as one of the top risks to global business. By working to reduce water

consumption and promote green environments across our real estate investments we're reducing the impacts of the built environment on nature. Investing in sustainable agricultural and timberland is at the forefront of available solutions: Managing sustainable forests produce wood products while providing clean water and protecting sensitive lands, and sustainable farming can restore nutrient deficiencies and reduce pest and disease vulnerability while increasing the soil's water-holding capacity.

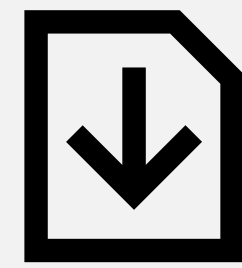
- **Risking inequality**—Many real assets are uniquely positioned to tackle socioeconomic challenges such as global climate change and food security that will have the most impact on those who are least equipped to deal with them. Real estate can provide community engagement and safe, healthy buildings, while farmland and timberland can provide raw materials to meet basic human needs (e.g., shelter, food), as well as rural employment opportunities, recreational open spaces, and clean water resources.

We'll continue to prioritize good stewardship by supporting our portfolio's property management teams and committing to integrating ESG analyses and transparency across our investment and operating activities to address the challenges ahead—the right thing for a responsible manager to do.

Brian Kernohan

Chief Sustainability Officer, Private Markets

Choose your asset class



Click below to read the timberland, agriculture, or real estate chapters.



Timberland 2022



A message from Tom Sarno

Globally—and for our business—2021 was a year of profound change. We wished our former CEO Bill Peressini well as he entered retirement and welcomed our Global Head of Real Assets Christoph Schumacher. We rebranded as Manulife Investment Management, bringing our 36-year track record as Hancock Natural Resource Group under the same banner as our other investment management capabilities. And after a six year hiatus, we reentered Brazil with two acquisitions for our clients.

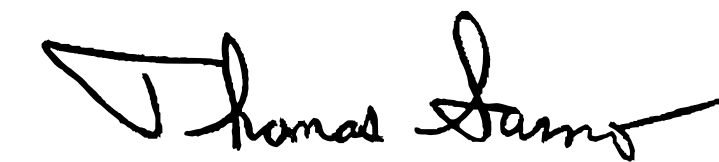
As the world shifts into a “new normal” post-COVID-19, we’ve seen many changes on the global scene that we expect to be positive and enduring. Corporate net-zero commitments have taken off exponentially, highlighting forests’ ability to offer natural climate solutions. We’re thrilled to support Manulife’s [Journey to Net Zero](#) and acquired nearly 90,000 acres of forest to be managed for climate impact and carbon value. Further afield, we’ve collaborated with forest sector colleagues in the World Business Council for Sustainable Development (WBCSD) to launch Phase I of the [Forest Sector Net Zero Roadmap](#).

The rise of natural capital is another trend we believe to be positive and enduring. Just as the [Dasgupta Report](#) has highlighted how we can manage biodiversity loss, natural capital is picking up steam as an investment consideration. While it’s not a new concept, the idea that it can be measured and monetized at scale is, and markets are beginning to pay attention. Witness last year’s announcement of the US\$10 billion Natural Capital Investment Alliance and the launch of Natural Asset Companies on the NYSE. As stewards of nearly 6 million acres brimming with

natural capital, we’re deeply engaged in the conversation on business and nature: We’ve helped lay out the [framework for the Task Force on Nature-related Financial Disclosures \(TNFD\)](#), putting forward [our approach to valuing biodiversity](#), and defining [how companies can be “nature-positive.”](#)

Yet the more things change, the more they stay the same. One thing that hasn’t changed is our unwavering commitment to sustainable timberland investment management for our clients, whether the objective is financial returns, carbon sequestration, ecosystem preservation, or a combination. Sustainability is core to our investment process and our property management, from harnessing our proprietary sustainability tool kit during transaction due diligence, to ensuring 100%¹ of our forests are globally certified as sustainable, to insisting on high-integrity carbon project development.

For us, good stewardship has always been, and still is, good business. As we continue to produce products essential to a growing population—sawlogs for the houses we live in and the furniture we sit on and pulpwood for the paper we read and the packaging and hygiene products we use—2022 promises to be a year to remember for forest carbon. We have exciting things in store and look forward to you joining us.



Tom Sarno

Global Head of Timberland Investments, CIO

¹ As of December 31, 2021. 100% of our forests were certified under either the Sustainable Forestry Initiative® (SFI®) (3.6 million acres in the United States and Canada) or the Forest Stewardship Council® (FSC®) (2.2 million acres in Australia, New Zealand, Brazil, and Chile). Most current data shown.

Where we invest

We manage forests around the globe in key institutional timberland investment regions



Our managed forests | Maps shown not to scale.

Category	USA	Canada	Australia	New Zealand	Chile	Brazil
Assets under management (USD million)	\$6,625	\$56	\$2,043	\$2,416	\$295	\$89
Acres (thousands)	3,579	49	1,376	527	180	163
Commercial species per region	Douglas fir, western hemlock, cedar, ponderosa pine, loblolly pine, longleaf pine, maple, cherry	Douglas fir, western hemlock, cedar	Radiata pine, Caribbean and slash pine, hoop pine, eucalyptus	Radiata pine	Eucalyptus, radiata pine	Eucalyptus

Source: Manulife Investment Management, 2021.

How we invest

Good stewardship is good business

When the investments you manage are living organisms and ecosystems, you see them differently. Our clients' financial success is directly dependent on the health of our forests. And those forests depend on, and are affected by, our management decisions. Our modern, science-based forest management decisions create resilient and healthy forest conditions across our global assets. From our investment process to our property management, sustainability is a core consideration that underpins everything we do.

The climate impact of an investment should be a core consideration. As the table below showing our 2021 timberland greenhouse gas (GHG) inventory illustrates, timberland investments can sequester far more CO₂ than the emissions they generate.

2021 timberland certification¹ and GHG inventory statistics

Category	USA	Canada	Australia	New Zealand	Chile	Brazil
Certification	100% (SFI)	100% (SFI)	100% (FSC, PEFC)	100% (FSC, PEFC)	100% (FSC)	100% (FSC)
Scope 1 emissions	21	0	58	1	0	N/A
Scope 3 emissions	104	1	28	55	8	N/A
Carbon sequestered	5,215	146	1,865	361	-1,429	N/A
Net carbon sequestration	5,090	145	1,779	305	-1,437	N/A

Source: Manulife Investment Management, 2021. SFI refers to the Sustainable Forestry Initiative; FSC refers to the Forest Stewardship Council; PEFC refers to the Programme for the Endorsement of Forest Certification. All GHG figures shown in thousand tCO₂e; carbon sequestered includes net forest carbon stock growth and long-term storage in harvested wood products. GHG profile for Chile will be available in 2023 after a full year of data is available. Scope 1 emissions are direct emissions from sources that we control. These include timberland emissions from fertilization and prescribed burns. Scope 3 emissions are indirect emissions in the value chain. Timber emissions associated with harvesting activity are classified as scope 3 as harvesting is conducted by contractors. Positive net carbon sequestration means removals exceed emissions; negative net carbon sequestration means emissions exceed removals.

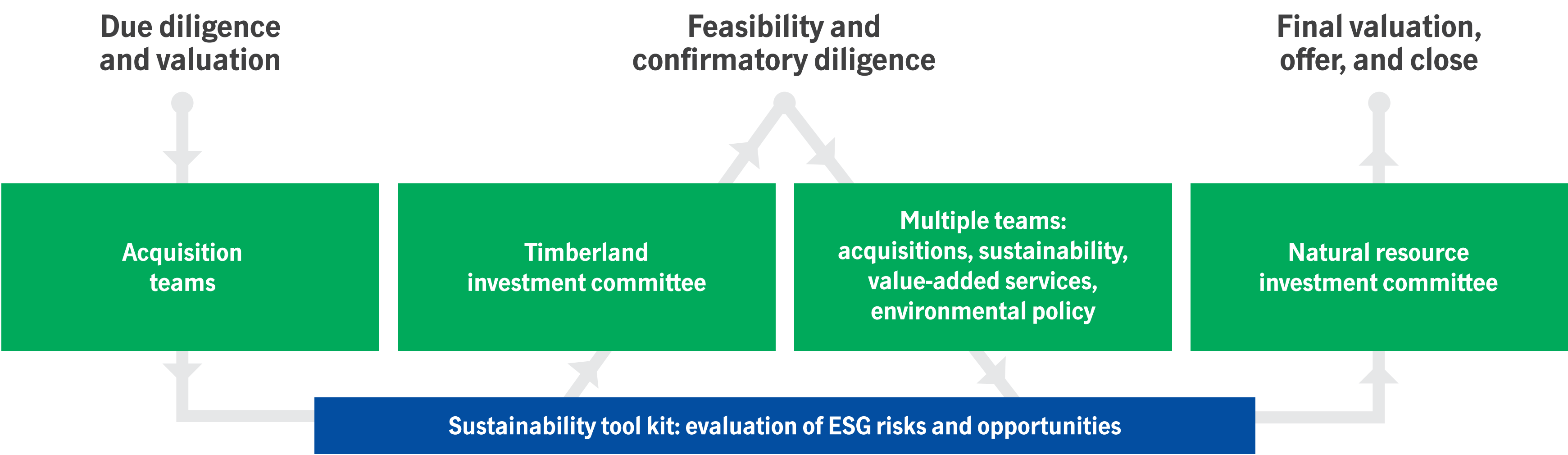


We manage the assets under our care to ensure their optimal health, both because it’s the right thing to do—and because *it's good business*.

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The investment process: using our sustainability tool kit

In our investment process, we use a proprietary question-based tool 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. Together with our zero-deforestation policy, carbon principles, and carbon tool kit, this approach helps to ensure that we can positively impact the environment and society through the investments we make.



SRI theme	Climate stability	Ecosystem resiliency	Watershed protection	People empowerment	Community prosperity
Risks and opportunities	<ul style="list-style-type: none">• Climate change impacts• Emissions• Deforestation• CO2 sequestration	<ul style="list-style-type: none">• Sensitive lands• Protected areas• Biodiversity• T&E species• Mitigation banking	<ul style="list-style-type: none">• Water quantity/quality• Flood, drought risk• Groundwater depletion• Water banking	<ul style="list-style-type: none">• Health and safety• Training and development• Labor practices• Human rights	<ul style="list-style-type: none">• Community relations• Indigenous peoples• Job creation• Research, internships

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



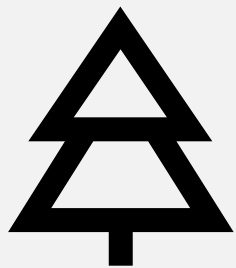
Asset management: leveraging third-party certification

In our asset management, we continue to manage 100%¹ of our global forests to achieve independent third-party sustainability certification under the Sustainable Forestry Initiative® (SFI®) and/or Forest Stewardship Council® (FSC®). Some of our forests in Australia and New Zealand carry dual FSC and PEFC (Programme for the Endorsement of Forest Certification). We've been managing our forests to these rigorous programs—which are essentially ESG standards for forest management—long before the concept of sustainable or ESG investing became mainstream. They continue to prove their relevance today, addressing considerations from biodiversity to water, forest health to conservation value, and indigenous peoples' rights to training and education.

What does *certified* mean?

When a forest is certified, it means that an independent third-party auditor has confirmed that the forest is being managed in a sustainable manner in alignment with the objectives and principles established by the certification program.

Typically, there are three parties involved: the standard-setting body (an independent nonprofit such as the SFI or the FSC), the certification body (an auditor that must be accredited, independent, objective, and qualified), and the program user (land manager). The auditor conducts a rigorous, on-the-ground assessment to evaluate the conformance of operations against the program standard. Forest certification programs were some of the first sector-specific ESG standards, and becoming certified entails demonstrating alignment with a comprehensive slate of ESG priorities, from mitigating climate change to preserving biodiversity to engaging with local communities.



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Climate



Climate stability

We seek to limit the impacts of climate change by responsibly using and managing land, creating carbon sequestration opportunities with our forests, and mitigating climate change through investing in renewables and energy efficiency.

Climate change presents both risks and opportunities for timberland investing. As a signatory to the TCFD, we believe it's essential to drive financial markets toward investments, activities, and products that help mitigate and adapt to climate change. We issued our [inaugural climate disclosure in 2020](#), detailing our governance, strategy, risk management, and metrics and targets when addressing climate change. Since then, our foundational approach hasn't changed, but our depth of understanding and level of commitment have—beginning with Manulife's 2021 announcement of [Our Journey to Net Zero](#).

While our timberland investments sequester far more carbon than they emit, we recognize that emission reductions are critical for society to meet the goals of the Paris Agreement. That's why we're developing a timberland investment decarbonization strategy that will help us play our part, both in reducing Manulife's scope 1 and scope 2 emissions by 35% by 2035 and in contributing to society's efforts to achieve net-zero climate goals.



What's in a climate disclosure?

Governance—The organization's governance around climate-related risks and opportunities. Read more on page 8.

Strategy—The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. An example can be found on page 10.

Risk management—The processes used by the organization to identify, assess, and manage climate-related risks. For more information, see our [2020 climate disclosure](#).

Metrics and targets—The metrics and targets used to assess and manage relevant climate-related risks and opportunities. Read more on page 14.

Source: [TCFD for real assets investors](#), PRI, April 27, 2021.

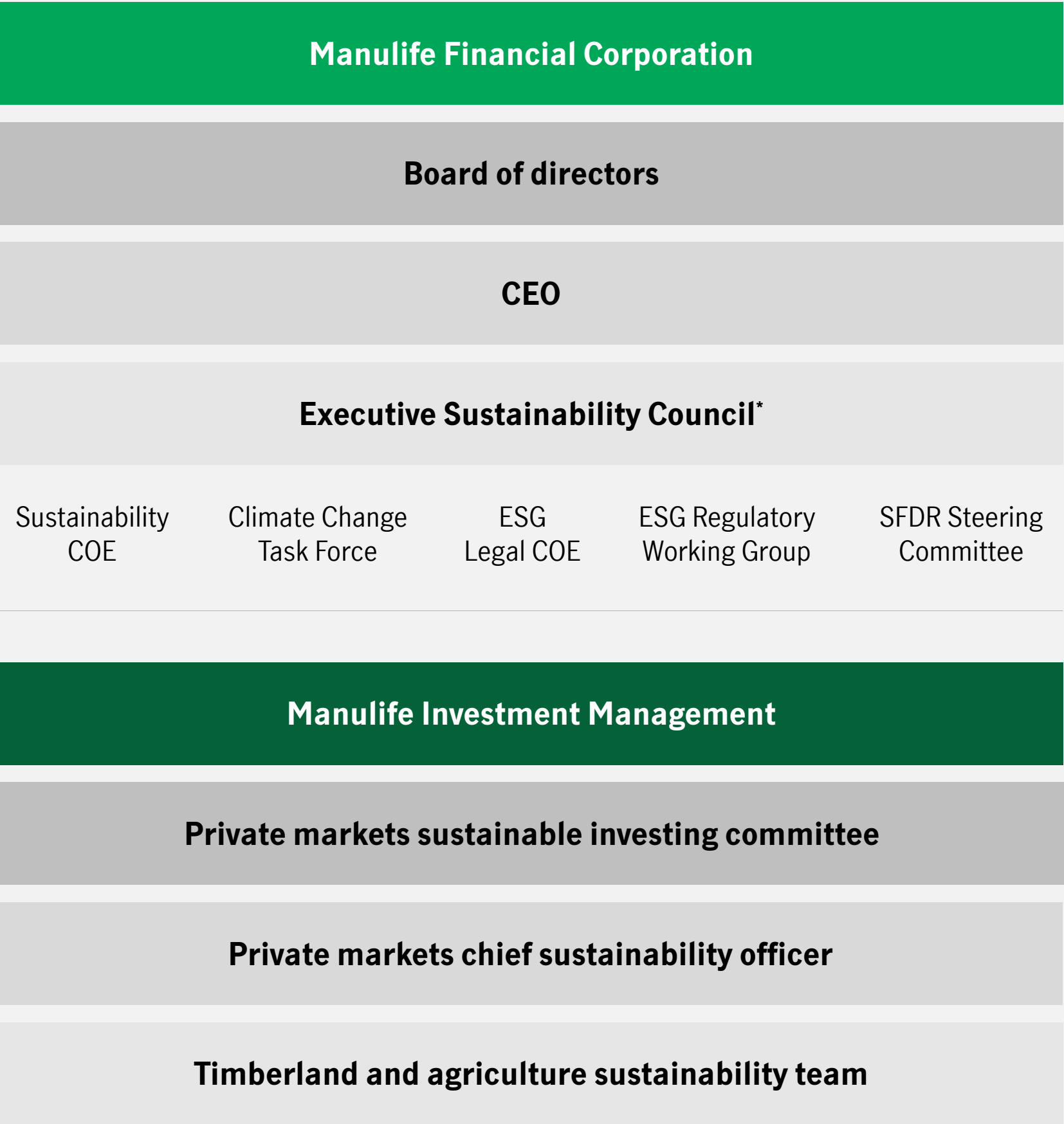
Governance: our organizational approach to sustainability

Alongside the rebranding of HNRG to Manulife Investment Management, we’ve strengthened our governance of climate change risks and opportunities through new linkages across the Manulife and Manulife Investment Management sustainability ecosystem.

Our commitment to sustainability involves leaders in all asset classes, as well as representatives from functional areas such as operations, legal, compliance, risk, and technology. As a result, governance bodies across Manulife Investment Management ensure that sustainability issues are embedded within our long-term business strategies and day-to-day work activities.

The graphic at right illustrates sustainability governance at Manulife, from the board of directors and CEO all the way through each business unit. In the case of timberland investing, key sustainability decisions related to business-wide policy and commitments are taken by the private markets sustainable investing committee, with direction from the private markets chief sustainability officer and support from the timberland and agriculture sustainability team. Sustainability decisions affecting particular areas of the business are taken collaboratively through the participation of sustainability team members in decision-making bodies (for example, through investment committees or strategy working groups).

Sustainability governance at Manulife



* Executive Sustainability Council includes Manulife chief executive officer, analytics officer, marketing officer, HR officer, sustainability officer, financial officer, operations officer, investment officer, and risk officer.
COE refers to Center of Expertise. SFDR refers to Sustainable Finance Disclosure Regulation.

Strategy: three pillars of our global Journey to Net Zero

Our vast natural resource holdings have enabled us to realize net-zero emissions in our operations, and we're uniquely positioned in our sector to accelerate the use of nature-based solutions in the fight against climate change.

Operations

Substantially reducing emissions to lessen our footprint

- We're proud to share we are net zero in our operations and uniquely positioned due to the carbon removals from our substantial owned and operated forests and farmland outweighing our scope 1 and scope 2 emissions.
- Manulife is committing to reduce absolute scope 1 and scope 2 emissions by 35% by 2035. We'll take steps such as enhanced efficiency measures, fuel switching, and use of on-site renewables in our buildings to achieve this target.



Investments

Actively investing for a sustainable future

- We're committed to steering our investment portfolio to be net zero by 2050.
- We'll continue to grow our CAD\$39.8 billion in green investments, such as renewable energy, energy-efficient real estate, timberland, and agriculture.
- Manulife has committed to the [Science Based Targets initiative](#), which will guide target setting, measurement, and progress reporting.



Products and services

Contributing to climate change mitigation and resilience

Through our capabilities in timberland and agriculture, we'll accelerate the development of investment strategies for those interested in nature-based solutions that capture even more carbon per dollar invested.





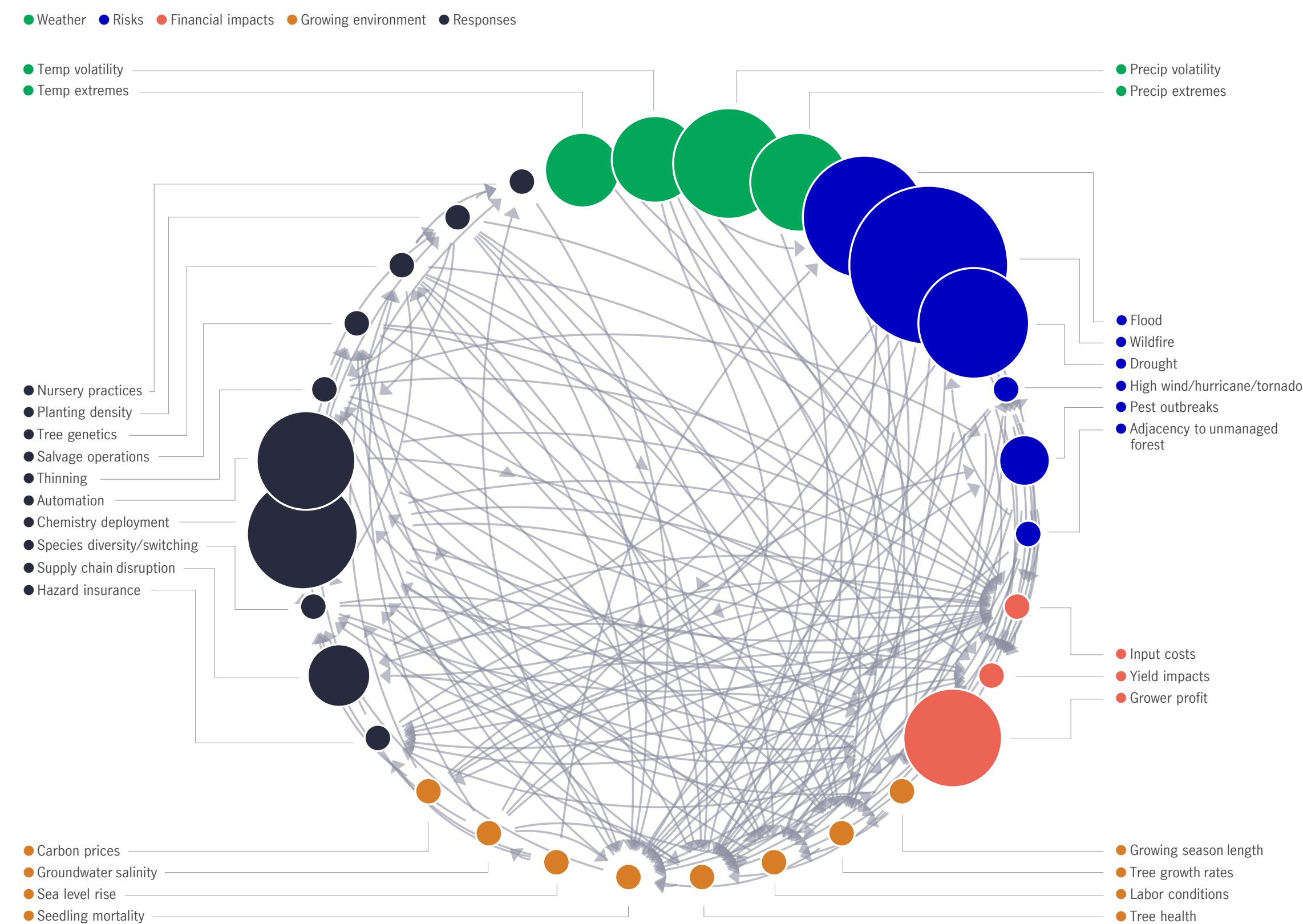
Strategy: scenario analysis

While climate change itself may be certain, the extent of its impacts is not. To ensure the resilience of a climate strategy given the multiple possible climate outcomes, companies conduct various scenario analyses. These are challenging exercises for many reasons, especially when considering biological assets, because of significant uncertainties around the ability of these assets to adapt to changing climate conditions. While standard scenarios and business responses exist in the energy industry for example, to date there's no equivalent for timberland.

Nevertheless, in 2020 we conducted a pilot scenario analysis of our New Zealand timberland that we reported in our climate-related financial disclosure. In 2021, we built on the pilot and extended the analysis across our entire platform, engaging our forest operations professionals from the United States, Chile, Brazil, Australia, and New Zealand in workshops to better gauge our ability to prepare for the realities of climate change.

While these workshops unveiled a treasure trove of information, our most important takeaway was how similar the types of risks were across forest types and geographies. While different in degree, the number of key risks is small, although they interact and influence each other in ways that simple linear cause-effect relationships don't accurately convey (see page 11). Climate change is a systems problem, and as we show on the next page, we've adapted our thinking about it to reflect that reality.

Strategy: scenario analysis



Source: Manulife Investment Management, March 31, 2022. For illustrative purposes only.

Climate and forests

Understanding climate impacts and dependencies

Climate change is complicated. As we seek to understand ways in which our timberland business will be affected by climate change, it's helpful to consider the relationship between climate and forests as a system in which different factors interact with one another. For example, extreme temperatures could lead to drought, which could lead to wildfire or increase the chance of pest outbreaks, both of which would result in financial loss. But extreme temperatures could also add urgency to the global policy agenda for implementation of carbon prices, which could lead to financial gains.

The important point is that these relationships are not linear but interacting. Through our scenario analysis workshops, we identified variables relating climate change to our business and then developed a way to illustrate the relationships between them. The graphic at left shows the different types of factors (color coded) as well as the extent to which they may influence other factors. The larger the circle, the more factors are influenced by it (illustrated by the arrows between factors).

As we progressively deepen our climate scenario analysis, it helps to have a framework that can account for the complexity of the interaction between forests and climate change.



Case study

Climate risks: silviculture research

In many ways, trees are like people. If they have enough food, water, light, and protection from the elements, they're usually healthy. If they're dehydrated, malnourished, starved of light, or exposed to extreme temperatures or winds, staying healthy is more difficult. The point is that while a changing climate can affect forest health, so can an experienced forester, and there are strategies for fostering an environment that are conducive to growing healthy and resilient trees. This is called silviculture, and fortunately, our team has some of the best silviculturists in the business.

Our silviculture approach is adaptive to both current and future climate-related risks—and opportunities. We belong to eight university cooperative research programs related to forest tree improvement, forest productivity, forest health, and growth and yield, all of which inform our management practices using the most current science. This enables us to tailor our species selection and management approach for each property in order to provide healthy forests, yielding the highest degree of adaptation and resilience. It also enables us to take advantage of the positive aspects of climate change: Evidence suggests that forests may benefit from higher CO₂ levels (carbon fertilization) and longer growing seasons.

Case study

Climate opportunities: Maine acquisition

In many ways, our most significant acquisition of 2021 was an 89,000-acre forest in the U.S. state of Maine. The property, named “Blueback” for the highly sought-after subspecies of Arctic char native to this region, is a contiguous block of timberlands with a diverse mix of naturally regenerated spruce fir and northern hardwood tree species. Blueback will be managed for Manulife’s general account as a carbon-focused investment underpinning its net-zero journey. The core of the investment thesis is centered on the timberlands being used primarily to store carbon and to generate high-quality, high-integrity carbon credits. Manulife reserves the option to sell the carbon credits as offsets or use the carbon removals as “insets” (applying the carbon credits generated by forests owned by the company in order to neutralize its own emissions) for the purpose of meeting the firm’s net-zero commitments. Additionally, the lands are subject to a working forest conservation easement and offer unique recreation opportunities given the scenic lakes, rivers, and ecological features of the region. A portion of the lands will also be used for sustainable stewardship practices as a working forest.

Metrics

Metrics can never tell the whole story, but they can certainly show part of it. This table tracks our climate progress to date.

Metric	2021	2020	GIIN
Properties managed	101	97	OI1674
Total standing forest carbon stock (tCO ₂ e)	615,204,003	607,912,905	N/A
Scope 1 GHG emissions (tCO ₂ e)	80,035	76,753	OI4112
of which: managed fire emissions (tCO ₂ e)	52,318	51,200	OI4112
of which: fertilizer (N ₂ O) emissions (tCO ₂ e)	24,838	22,411	OI4112
of which: fuel combustion emissions	2,879	3,142	OI4112
Scope 2 GHG emissions (tCO ₂ e)	0	0	OI9604
Scope 3 GHG emissions (tCO ₂ e) ¹	195,330	159,617	PD9427
Biogenic stock change (tCO ₂ ; + sequestration, - emission)	3,179,520	3,703,626	PI9878
Carbon stored in harvested wood products (tCO ₂ e)	2,979,656	2,917,609	PI9878
Net sequestration (tCO ₂ ; + sequestration, - emission)	5,883,811	6,384,865	PI9878
5-year average sequestration (tCO ₂ ; + sequestration, - emission)	2,747,187	2,522,044	PI9878
Number of tree species grown (plantation total) ²	15 63	N/A	PD9009
Percent net productive area	82.9	81.8	N/A
Percent of net productive area harvested	2.9	2.7	PI3468
Percent of net productive area planted	2.6	2.5	N/A
Percent of harvest to solid wood	59.2	62.4	PD8494
Percent of harvest to fiber	40.7	37.6	PD8494
Percent of harvest to biomass	0.0	0.0	PD8494
36-year history number of trees planted	1,253,935,422	1,198,756,740	N/A
36-year history number of houses built ³	2,406,465	2,282,001	N/A

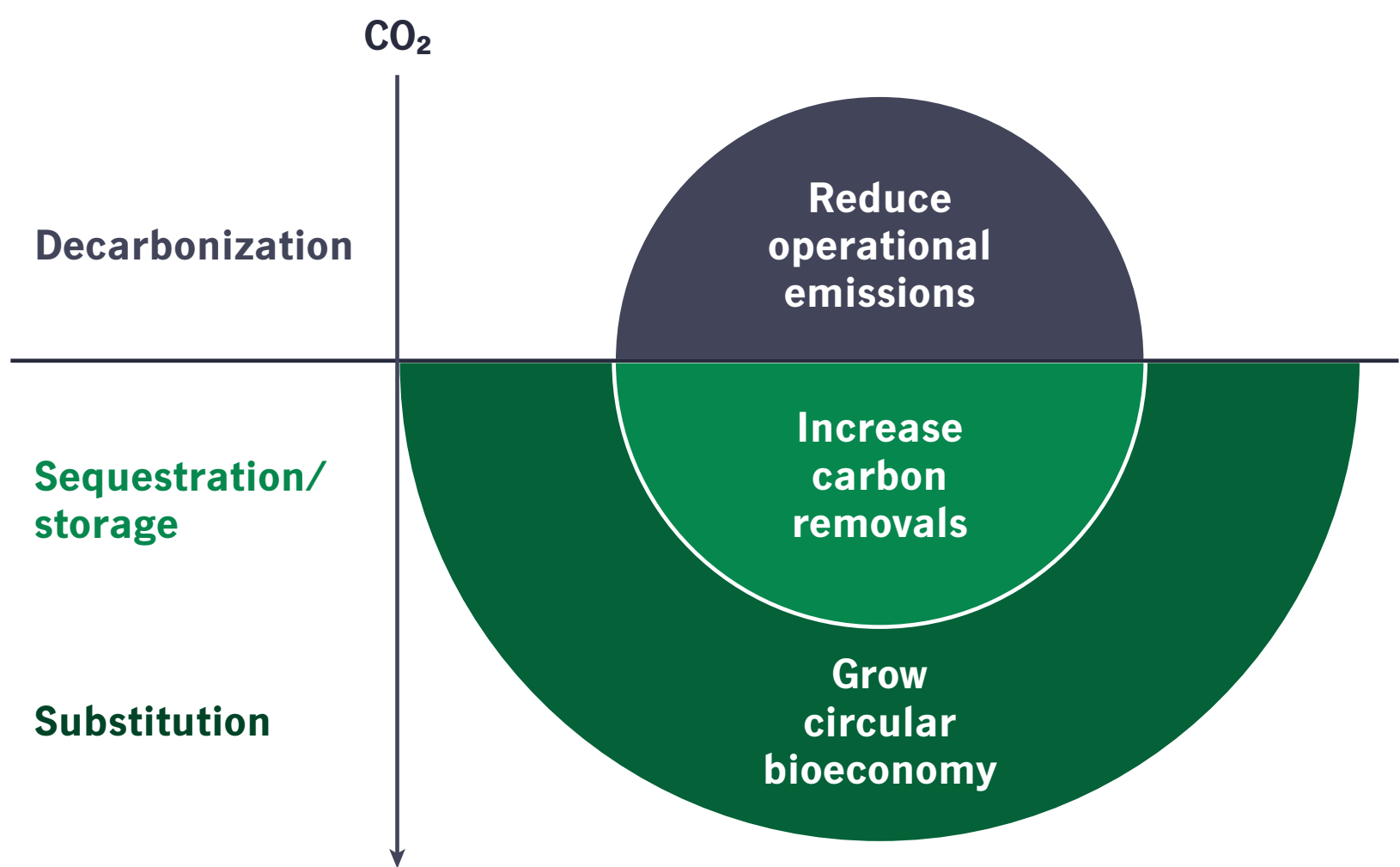
Source: Manulife Investment Management, 2021. GIIN refers to Global Impact Investing Network [IRIS+](#) metric codes.

1 Scope 3 emissions currently accounted for include categories 1 (purchased goods and services such as contractor harvesting) and 12 (end of life treatment of used products such as emissions from short-lived harvested wood products, although these are conservatively treated as scope 1 emissions). They do not currently include upstream or downstream transportation of products, or processing and milling. **2** Total includes 48 naturally regenerating species. **3** Estimated number of houses that could be built with the volume of sawtimber we have harvested in our 36-year history.

Targets

2021 could justifiably be called the “year of net-zero commitments.” Manulife's Journey to Net Zero and our co-leadership of the WBCSD’s Forest Sector Net Zero Roadmap certainly inform our climate targets. We’re focused on all three of the key levers that the road map outlines for the forest sector to facilitate positive climate impact.

The forest sector’s three levers of impact



Source: [wbcsd.org](https://www.wbcsd.org), November 6, 2021.

Our climate targets

- 1

Decarbonization strategy launch—In 2022, we’ll develop a comprehensive strategy to reduce our operational emissions. Some sources are easier to reduce than others; for example, not using fertilizer or not prescribing controlled burns could have unintended negative climate impacts such as reducing tree growth rates or increasing vulnerability to wildfire. Approximately three-quarters of our emissions come from our value chain, highlighting the importance of partnering with our contractors.
- 2

Launch of forest strategy focused on carbon sequestration—While many timberland investments sequester carbon, far fewer make carbon sequestration the top priority. Our strategy, planned for launch in 2022, will do just that.
- 3

Net-zero commitment partnerships—Within our own business, we'll partner with our Australia and New Zealand timberland investment companies to support the net-zero commitments that all five of their boards made in 2021 on behalf of their investors. Further afield, we’re bolstering our research in mass timber economics, which offer the promise of longer-lived wood products to keep carbon out of the atmosphere for longer.

Nature



Ecosystem resiliency

Healthy ecosystems provide immense value to the vitality of communities and economies. To ensure this for generations to come, we operate in a way that responsibly manages land and protects sensitive lands* and biodiversity.



Watershed protection

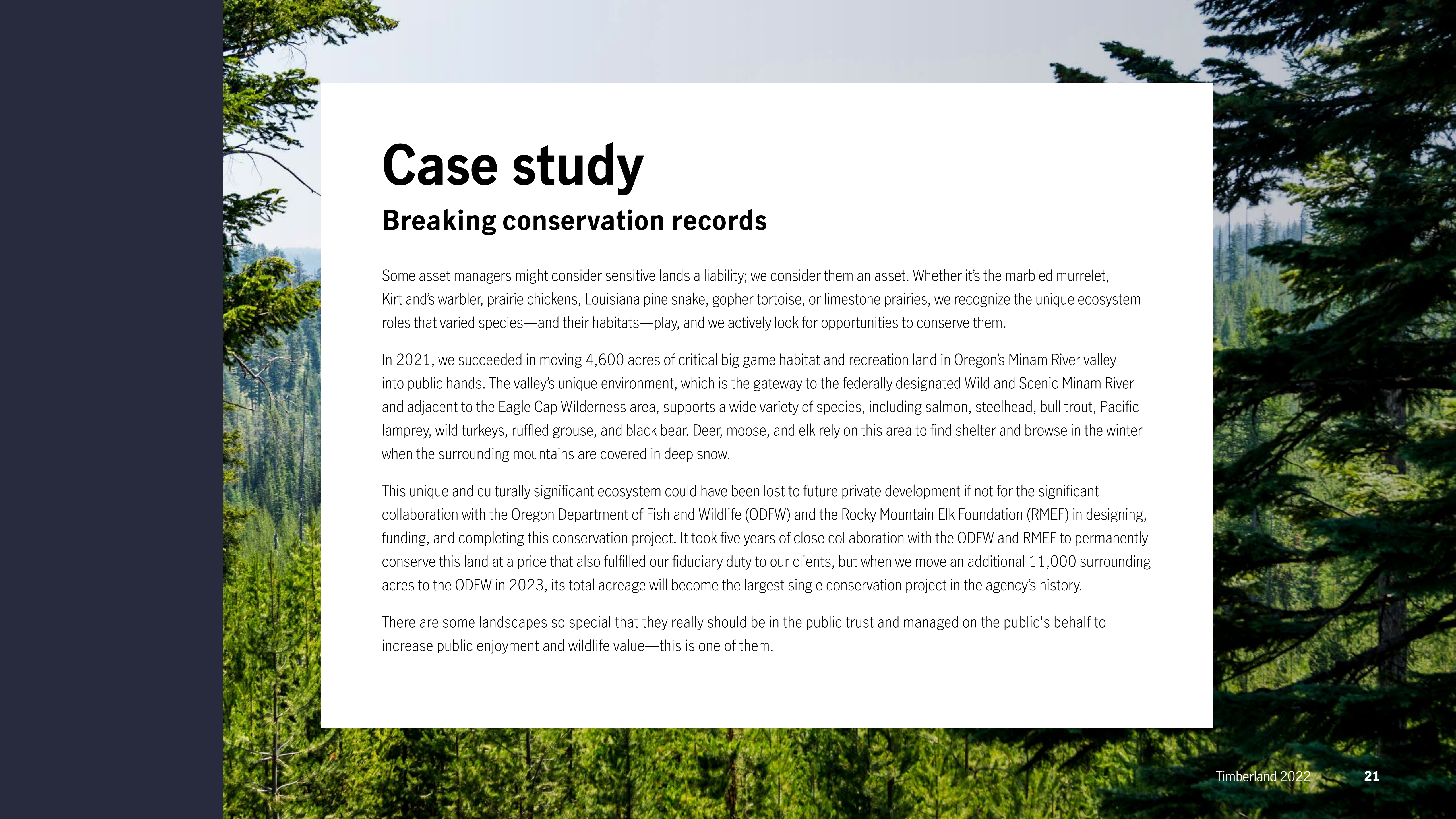
Protecting and improving watersheds is vital for the ecosystems and communities that depend on them. We do this by protecting sensitive lands,¹ adhering to strict water and land management policies and best practices, and supporting forest growth.

Nature is our business. Forests are ecosystems—environments full of living plants and animals engaged in a complex web of interactions. Our objective is to produce a healthy return for our clients by keeping these ecosystems healthy. These ecosystems are a form of capital—natural capital—and they provide services, both to us and our investors, in the form of timber that can be sold to make useful products, and to society, in the form of regulating services (such as carbon sequestration or water filtration) and cultural services (such as recreational opportunities or aesthetic values).

As biodiversity continues to fall precipitously on a global scale, forests are taking center stage in the nature conversation just as they are in the climate conversation, since approximately 80% of terrestrial species live in forests. Keeping these species healthy requires maintaining their habitats in good condition. That's why ecosystem resiliency is one of our key sustainability priorities and we've had policies and procedures in place for decades that protect and preserve the healthy functioning of ecosystems.

It's also why watershed protection is another one of our key sustainability priorities. As climate change threatens to increase water stress on a global scale, the role of forests in helping to provide clean water can't be overlooked. Many cities rely on forests for water filtration in addition to, or instead of, traditional water treatment infrastructure, and this is why forest best management practices and sustainability certifications focus significant attention on management activities close to watercourses.

¹ Sensitive lands are defined as lands with critical habitat for sensitive or endangered species, or lands with high scenic, historical, cultural, or recreational value.



Case study

Breaking conservation records

Some asset managers might consider sensitive lands a liability; we consider them an asset. Whether it's the marbled murrelet, Kirtland's warbler, prairie chickens, Louisiana pine snake, gopher tortoise, or limestone prairies, we recognize the unique ecosystem roles that varied species—and their habitats—play, and we actively look for opportunities to conserve them.

In 2021, we succeeded in moving 4,600 acres of critical big game habitat and recreation land in Oregon's Minam River valley into public hands. The valley's unique environment, which is the gateway to the federally designated Wild and Scenic Minam River and adjacent to the Eagle Cap Wilderness area, supports a wide variety of species, including salmon, steelhead, bull trout, Pacific lamprey, wild turkeys, ruffed grouse, and black bear. Deer, moose, and elk rely on this area to find shelter and browse in the winter when the surrounding mountains are covered in deep snow.

This unique and culturally significant ecosystem could have been lost to future private development if not for the significant collaboration with the Oregon Department of Fish and Wildlife (ODFW) and the Rocky Mountain Elk Foundation (RMEF) in designing, funding, and completing this conservation project. It took five years of close collaboration with the ODFW and RMEF to permanently conserve this land at a price that also fulfilled our fiduciary duty to our clients, but when we move an additional 11,000 surrounding acres to the ODFW in 2023, its total acreage will become the largest single conservation project in the agency's history.

There are some landscapes so special that they really should be in the public trust and managed on the public's behalf to increase public enjoyment and wildlife value—this is one of them.



Case study

Protecting koalas

Many koala populations throughout Australia are suffering from a “genetic bottleneck” after coming close to extinction and then rebounding through their reproduction by just a handful of remaining individuals. These weak gene pools have led to kidney failure and increased susceptibility to other diseases. Fortunately, not all koalas are affected by this bottleneck and those found in the Strzelecki Ranges and Kangaroo Island are known to be resistant to several diseases that affect koalas found throughout other parts of Australia.

One of our Australian managed entities, [Hancock Victorian Plantations](#), manages nearly 88,000 hectares of forest in Victoria, including some found within the Strzelecki Ranges. Through our work with leading conservation bodies and the Victorian and South Australian governments, we helped secure four male koalas from a genetically robust population and transported them to [Koala Life](#) at a wildlife park in South Australia. These males will help form a captive breeding program with 28 female koalas rescued from Kangaroo Island, South Australia, during the bushfire season of 2019/2020. The offspring from the program will be available to Australia to augment koala populations and reduce the effects of the genetic bottleneck.



Metrics

Nature is challenging to measure, but the metrics below provide some insight into how much we prioritize it.

Metric	2021	2020	GIIN
Percent of forest third-party certified as sustainably managed ¹	100%	100%	PI6796
Percent of forests with forest management plan	100%	100%	OI2622
Percent of forests with biodiversity assessment	100%	100%	OD0660
Percent of forests with conservation designation	20.0%	19.7%	PD9009
36-year history sensitive lands program acres conserved	479K	471K	PD9009
Number of stewardship projects conducted in our forests ²	15	6	N/A
Number of stream miles protected by BMPs	20.5K	19.4K	OD4108

Source: Manulife Investment Management, 2021. GIIN refers to Global Impact Investing Network [IRIS+](#) metric codes. BMP refers to best management practice.

1 As of December 31, 2021. 100% of our forests were certified under either the Sustainable Forestry Initiative® (SFI®) (3.6 million acres in the United States and Canada) or the Forest Stewardship Council® (FSC®) (2.2 million acres in Australia, New Zealand, Brazil, and Chile). Most current data shown. **2** Includes North America only.

Targets

Even as we practice good stewardship, demonstrating sustainable operations through third-party certification and participating in global conversations about what it means to be a nature-positive company, we're also focused on what concrete steps we can take today across our global timberland investment platform that enable our role in reversing nature loss. And we're focused on continuous improvement so that we plan for our performance, our ability to measure it, and our targets to change over time.

It's essential that we follow good stewardship practices, but it's also important to monitor their outcomes to ensure that our actions result in net-positive effects. That's challenging to measure and demonstrate but is no less important for nature and society.

What is nature positive?

Nature positive means halting and reversing the loss of nature at a planetary level, measured from a 2020 baseline. By 2030, the goal is to have regenerated and preserved nature through improvements in the health, abundance, diversity, and resilience of species, populations, and ecosystems.



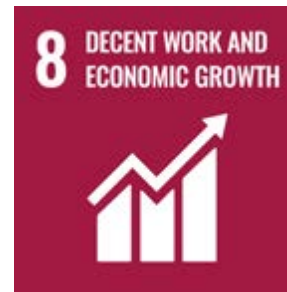
Our nature targets

As signatories to the [Finance for Biodiversity Pledge](#), we commit to the following:

- 1 Collaboration and knowledge sharing**—We'll collaborate and share knowledge on assessment methodologies, biodiversity-related metrics, targets, and financing approaches for positive impact.
- 2 Engaging with companies**—We'll incorporate criteria for biodiversity in our ESG policies while engaging with companies to reduce their negative and increase positive impacts on biodiversity.
- 3 Assessing impact**—We'll assess our financing activities and investments for significant positive and negative impacts on biodiversity and identify drivers of its loss.
- 4 Setting targets**—We'll set and disclose targets based on the best available science to increase significant positive and reduce significant negative impacts on biodiversity.
- 5 Reporting publicly**—We'll report annually and be transparent about the significant positive and negative contribution to global biodiversity goals linked to the financing activities and investments in our portfolios.

As pledge signatories, we've taken these commitments, which are verbatim from the pledge, as our own, and will adapt them as needed. For example, because the investments we manage are 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.

People



People empowerment

We value our people, employees, and contractors and work to ensure that we're offering not only safe and healthy working environments but the tools, training, and support they need to thrive.



Community prosperity

We're committed to supporting and strengthening the local and indigenous communities where we operate. We provide employment opportunities, public use of our land, engage with non-governmental organizations, and support local causes as part of our community stewardship.

Stewardship is as much about people as it is about the environment. It also applies as much to our own people—people empowerment—as it does to the communities where we operate—community prosperity.

Empowering our people means offering rewarding jobs and promoting a culture of excellence in a rewarding, safe, diverse, and inclusive environment.

Rewarding—In addition to competitive compensation, we offer all eligible full-time and part-time employees:

- **Generous parental leave**—We offer the opportunity to take up to 12 consecutive weeks of paid time off for the birth or adoption of a child
- **Extra personal time**—We offered five extra days of personal time in 2021, for the second straight year—in addition to existing vacation, family care, volunteer time, and personal time—in recognition of our employees' ongoing commitment despite the COVID-19 pandemic
- **Dedicated time for learning**—Every second Friday of the month, fuel-up Fridays give employees the opportunity to learn and grow their knowledge
- **Recognition**—Through Podium, a digital global recognition platform that enables us to express appreciation for our peers, leaders, and teams, anytime and anywhere.

Safe—Compared to the forest products industry safety benchmarks, our safety performance exceeds the standard by a wide margin. Depending on the country, our total injury frequency rates range from 30% to 90% below industry norms. We seek to uphold human rights and affirm the [UN Guiding Principles on Business and Human Rights](#) as well as national legislation prohibiting and seeking to eradicate modern slavery.



Diverse and inclusive—In 2021, we established a private markets diversity, equity, and inclusion (DEI) council to develop a strategy for DEI across private asset classes. The council includes representation from all private asset classes with a broad coverage of our major geographies and has four workstreams: DEI best practices and opportunities; education and initiatives; communications; and data and metrics. Through this activity, we’re seeking to create a culture that’s more inclusive, better engages every employee, and provides opportunities for advancement regardless of race, ethnicity, age, gender, sexual orientation, religion, ability, economic status, and other aspects of diversity.

Community prosperity means being good neighbors and contributing to the well-being of the communities in which we operate, whether to our contractors, indigenous communities, or the general public.

Contractors—In addition to our 900+ global employees, nearly 6,000 contractors work on our properties around the world. In some smaller rural communities, the scale of our operations makes us a key contributor to local economic activity. We prefer to buy local, maintaining a preferred vendor list and contracts with local companies wherever possible.

General public—We allow public access to nearly all of our global forest properties (with safety exceptions during active forest management operations), with opportunities for hunting, fishing, hiking, mountain biking, camping, and more. We extend hunting licenses to nearly 100 separate groups. We also maintain a special site protection program to safeguard areas of our property that are culturally, historically, or geologically unique.

Indigenous communities—We formally acknowledge the rights of indigenous peoples and employ many First Nation descendants as contractors in our operations. In our North American operations alone, over half of the forest properties we manage sit within 10 miles of a federally recognized tribal or First Nations landholding, and one in six intersects such landholdings. In some cases, indigenous communities contract with us to manage the forest on their behalf.



Case study

Contractor celebration recognizing safe and high-quality work in New Zealand

With a focus on delivering for our clients in a safe and environmentally positive way, the Manulife Forest Management New Zealand (MFM NZ) team works hard to build strong contractor relationships. A key part of this work is recognizing outstanding contractor performance.

The Enviromate and Safemate Awards are two initiatives where anyone working across the MFM NZ operation can be nominated for great environmental or safety work. The nominations are recognized either by a lunch delivery to contractors working in the forest or with gift certificates and letters of recognition sent to individuals.

An example of a recent Enviromate nomination was for Brown Logging Crew 53 in the MFM NZ central region. The crew was recognized for completing a difficult harvest while carefully managing activities around a waterway, a wahi tapu (sacred indigenous site), and a neighboring boundary with working farm operations.



Case study

Careers in conservation camp

We're often deeply engaged in the communities where we operate, both at a company level and as individuals.

In Texas, our foresters have been instrumental in working with a nearby university to create and execute a conservation careers summer camp for high school students. The camp exposes students to various career opportunities in natural resources, especially forestry, teaching them about the sector and encouraging them to pursue careers in the field.

These same foresters have also affected hundreds of students, teachers, and forestry professionals through assisting in numerous Project Learning Tree events—and planned an annual fun run and walk held in conjunction with the Texas Forestry Association annual meeting.

Metrics

Contributions to people empowerment and community prosperity can be difficult to measure, but this is how we're doing it right now.

Metric	2021	2020	GIIN
Number of employees (timber) ¹	721	719	N/A
Number of employees (total) ²	972	958	OI8869
Number of contractors (estimated) ³	4,542	4,113	N/A
Percent female	31%	30%	OI2444
Percent BIPOC (black, indigenous, and persons of color) ⁴	6%	5%	OI3236
Percent of executive team female	17%	33%	OI1571
Percent of executive team BIPOC	0%	0%	OI3862
Number new hires ⁵	50	54	OI5479
Percent attrition ⁶	12%	10%	OI1638
Total injury frequency rate ⁷	4.6	6.2	OI3757
Lost time injury frequency rate ⁷	2.9	4.4	OI3757
Percent employees responding to engagement survey ⁶	96%	90%	N/A
Percentile employee engagement survey score ⁶	57	58	N/A
Contributions to nonprofits ⁸	\$649K	\$613K	FP3774
Lands with public access (acres) ⁹	5,365,021	4,994,200	PD9009

Source: Manulife Investment Management, 2021.

1 Includes 111 (2020) and 93 (2021) employees with timberland and agriculture responsibility. **2** Includes 239 (2020) and 251 (2021) agriculture-only employees. **3** Timberland contractors only; full-time equivalent, not individuals. **4** Includes North America staff only. **5** Includes 10 (2020) and 9 (2021) employees with timberland and agriculture responsibility. **6** Combined result for timberland and agriculture. **7** Incidents per 1 million hours; 2020 is combined rate timberland and agriculture; 2021 is timberland only. **8** Combined result for timberland and agriculture; does not include Australia timberland operations or South America operations. **9** Public access—access of any type, including by permit, exclusive recreation lease, or unrestricted open public access.

Our people targets

1 Employee engagement—One sign of a great workplace is employee engagement. Our company currently performs at the 57th percentile globally in the Gallup employee engagement survey, with 96% of employees responding. We consider this positive, but significantly below where we'd like to be and are targeting top-quartile employee engagement in the near term.

2 Diversity—Forestry, agriculture, and finance are industries that have historically employed white men in most of the regions where we operate. The current makeup of our firm reflects that reality; however, we recognize the importance—culturally, ethically, competitively, and financially—of diversity and inclusion. That's why we're actively taking steps to become the firm we want to be by targeting the following:

- Increase black, indigenous, and persons of color (BIPOC) representation within our North American leadership by 60% by 2025 relative to 2021
- Achieve a sector-specific talent pool of 20% BIPOC hiring over the next four years (U.S. Agricultural and Natural Resources bachelor's degrees at 21% BIPOC)
- Increase the share of females in leadership roles to at least 20% in total by 2025

Looking ahead: natural capital comes into full view

Historically, the timber industry has been about producing the harvested wood products we all depend on in our daily lives. While we expect this to continue, we're also seeing growing appreciation for the other products forests can provide, whether it's carbon sequestration, water treatment, or wildlife habitat, to name a few.

These ecosystem services are more challenging to measure than harvested wood products. While that does not make them less valuable, it can inhibit agreement on what that value is, which in turn prevents markets for those services from developing.

This is changing as the development of technology for measuring nature and its benefits accelerates and economic methods for translating those measurements into value become more widely known and accepted. In particular, we expect natural capital accounting to take off, and with it, markets for ecosystem services.

Throughout our history, we've issued over 6 million carbon credits, and in early 2022, launched two new carbon projects. It's all part of our commitment to being a full-service timberland investment manager, creating value sustainably through products—and increasingly ecosystem services—for our clients and society. And we're confident that's just the beginning!



Agriculture 2022



A message from Oliver S. Williams IV, CFA

In a world that seems increasingly fragmented and divided, there may seem to be few things that unite us. Food is one of them. As the pandemic wore on and geopolitical tensions escalated, the agriculture sector wasn't immune to supply chain upheavals.

The United Nations and World Bank project that the world population will reach 9 billion to 10 billion people by 2050, and there's consensus that the only way to feed a population of that size is to grow more sustainably. We have to grow, transport, and deliver food to people in ways that preserve our ability to continue doing so.

What does that look like in practice? It'll vary by crop type, geography, market, and other factors. But there are some common themes. It means:

- Being responsible stewards of water. That's why we've grown our global water team from two to five professionals spanning the full range of water expertise.
- Understanding the likely effects of climate change That's why we conducted climate change scenario analysis operations workshops in our three major growing regions.
- Deliberately considering which markets to enter, or not, using a sustainability lens. We've built a market sustainability assessment tool to evaluate just that.
- Understanding the growing market for soil carbon sequestration. We've investigated 15 such programs and continue to review the rapidly developing space.
- Using regenerative farming techniques where they make sense environmentally and economically, which is why nearly two-thirds of our permanent crop and one-half of our row crop farms do so—and why we're seeking to do more.

- Incorporating sustainability considerations into our valuations. We're now using factors to flex hurdle rates based on a farm's anticipated sustainability performance.
- Recognizing the pivotal role sustainability plays in our strategic direction, which is why we've established the agriculture stewardship committee to make such decisions.

Last, but certainly not least, it's why our entire U.S. agriculture platform has been certified to the Leading Harvest Farmland Management Standard.¹ Leading Harvest demonstrates our commitment to sustainability, assuring our key stakeholders of sustainable practices, robust management, and continuous improvement. We manage our farmland according to the standard at all our operations globally and are participating in a pilot to formally launch it in Australia.

We can't singlehandedly feed the world, but we can contribute positively toward that goal by growing more with fewer inputs and less impact. That's good stewardship, which is good for the world, and as we've long said: good stewardship is good business.



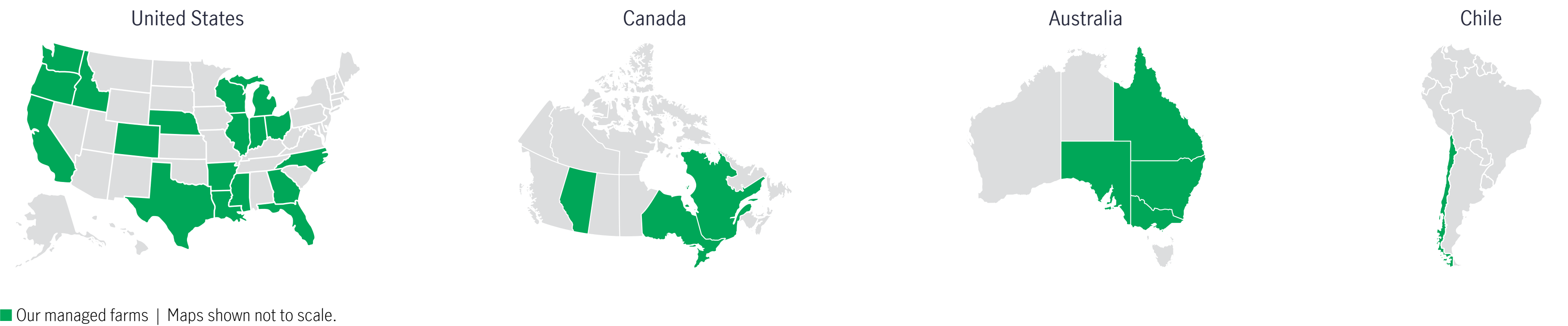
Oliver S. Williams IV, CFA

Global Head of Agriculture Investments, CIO

¹ Certification as of May 17, 2021, 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.

Where we invest

We manage farms around the globe in key institutional agriculture investment regions



Category	USA	Canada	Australia	Chile
Assets under management (USD million)	\$3,156	\$167	\$546	\$131
Gross acres	302,247	21,013	119,451	2,570
Asset type per region	Pistachios, almonds, corn, grapes, soy beans, apples, rice, potato, vegetables, cotton, cranberries, walnuts, alfalfa, wheat, canola, peanuts, citrus, olives, barley, cherries. Processing.		Almonds, cotton, grapes	Cherries, apples, pears, nectarines, kiwi, and blueberries. Processing.

Source: Manulife Investment Management, 2021.

How we invest

Agriculture is foundational for human life and well-being. While historically some types of agriculture have contributed to climate change and biodiversity loss, agriculture also holds great promise for mitigating climate change and restoring biodiversity.

The climate impact of an investment should be a core consideration. As the table below showing our 2021 agriculture greenhouse gas (GHG) inventory illustrates, agriculture investments are capable of sequestering more CO₂ than the emissions they generate.

2021 agriculture certification and GHG inventory statistics

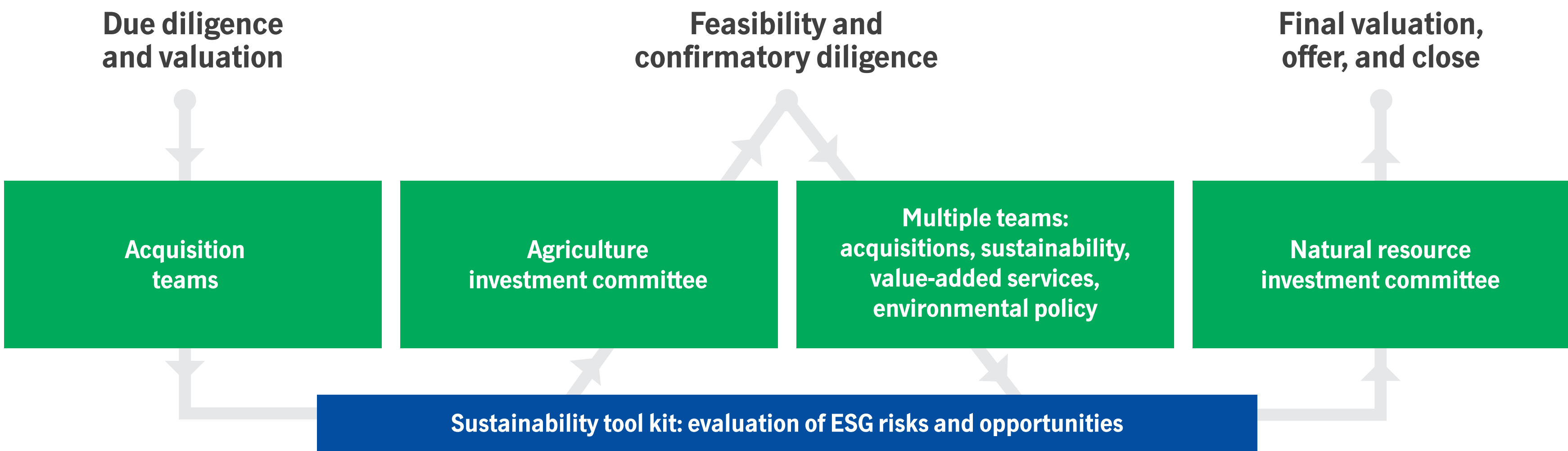
Category	USA	Canada	Australia	Chile
Certification	100% (Leading Harvest) ¹	N/A	Leading Harvest pilot	N/A
Scope 1 emissions	23	0	24	N/A
Scope 2 emissions	13	0	5	N/A
Scope 3 emissions	190	4	1	N/A
Carbon sequestered	247	8	38	N/A
Net carbon sequestration	21	4	8	N/A

Source: Manulife Investment Management, 2021. All figures shown in thousand tCO₂e; scope 1 and 2 emissions are calculated based on activity data provided by managers directly operating our farms. Scope 3 emissions are those from leased farms outside our operational control and are estimated using crop-specific emissions intensity data from publicly available research. Carbon sequestration is also estimated using crop-specific sequestration data. GHG profile for Chile will be available in 2023 after a full year of data is available.

¹ Certification as of May 17, 2021, 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.

The investment process: using our sustainability tool kit

In our investment process, we use a proprietary question-based tool 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. The tool kit considers a wide range of factors, including anticipated climate risks, adherence to our zero-deforestation policy, water availability, biodiversity, working conditions, renewable energy opportunities, and ability to positively affect surrounding communities.



SRI theme	Climate stability	Ecosystem resiliency	Watershed protection	People empowerment	Community prosperity
Risks and opportunities	<ul style="list-style-type: none"> Climate change impacts Emissions Deforestation CO₂ sequestration 	<ul style="list-style-type: none"> Sensitive lands Protected areas Biodiversity T&E species Mitigation banking 	<ul style="list-style-type: none"> Water quantity/quality Flood, drought risk Groundwater depletion Water banking 	<ul style="list-style-type: none"> Health and safety Training and development Labor practices Human rights 	<ul style="list-style-type: none"> Community relations Indigenous peoples Job creation Research, internships

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

Asset management: leveraging third-party certification

Last year, we built a similar tool to evaluate the sustainability of particular markets—to evaluate not only the “how” but also the “what.” This market sustainability tool has quickly become an important component of our agriculture investment strategy committee’s market suitability assessment. We ask approximately 30 questions covering the full breadth of social and environmental factors, both on the farm and within the value chain, to develop an overall aggregate score. This is paired with, and may even help to inform, our view of the market’s profitability.

“Last year, our agriculture business became the first to have our entire U.S. agriculture platform certified under the Leading Harvest Farmland Management Standard.”¹

Once we purchase an agriculture asset, we consistently manage it to credible third-party sustainability standards. Last year, our agriculture business became the first to have our entire U.S. agriculture platform certified under the Leading Harvest Farmland Management Standard. As Leading Harvest expands to other countries where we operate, we intend to seek certification in Australia, Canada, and Chile as well, addressing considerations from biodiversity to water, soil health to conservation value, and indigenous peoples’ rights to training and education.

¹ Certification as of May 17, 2021, 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.

Why Leading Harvest?

We were an early mover in third-party forest certification and have managed third-party certified timberland investments for over two decades. Yet until recently, the agriculture sector lacked a sustainability standard that could work across different crop types, production systems, scales, and geographies. In 2017, we began collaborating with leading environmental organizations and farmland owners and managers to build such a standard. Five years later, the [Leading Harvest Farmland Management Standard](#) is growing rapidly.

The Leading Harvest principles begin by identifying the need to meaningfully assess the positive or negative impact farmland assets have on their local environments and communities, aiming to:

- Define materiality on a sector-specific basis
- Set out clear principles and objectives for operating in a sustainable manner that are relevant to that sector
- Identify a range of practices that could be employed to achieve those principles and objectives
- Evaluate the extent to which those practices are being followed
- Require an external auditing process that ensures rigor and verifiability of the sustainability claims being made

Learn more about [our work with Leading Harvest](#).



Climate



Climate stability

We seek to limit the impacts of climate change by responsibly using and managing land, creating carbon sequestration opportunities with our farms, and mitigating climate change through investing in renewables and energy efficiency.

Climate change presents both risks and opportunities for agriculture investing. As a signatory to the Task Force on Climate-related Financial Disclosures (TCFD), we believe it's essential to drive financial markets toward investments, activities, and products that help mitigate and adapt to climate change. We issued our [inaugural climate disclosure in 2020](#), detailing our governance, strategy, risk management, and metrics and targets when addressing climate change. Since then, our foundational approach hasn't changed, but our depth of understanding and level of commitment have—beginning with Manulife's 2021 announcement of [Our Journey to Net Zero](#).

While our agriculture investments sequester carbon in soils and can be part of the climate solution, they also currently represent one of the largest sources of Manulife's global operational emissions footprint. Our climate ambitions include playing our part to reduce Manulife's scope 1 and 2 emissions by 35% by 2035, and we're developing a decarbonization strategy that will help to get us there.

A key component of our efforts will be working with our tenants and value chain partners to reduce emissions and increase soil carbon sequestration.



What's in a climate disclosure?

Governance—The organization's governance around climate-related risks and opportunities. Read more on page 8.

Strategy—The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. An example can be found on page 10.

Risk management—The processes used by the organization to identify, assess, and manage climate-related risks. For more information, see our [2020 climate disclosure](#).

Metrics and targets—The metrics and targets used to assess and manage relevant climate-related risks and opportunities. Read more on page 13.

Source: [TCFD for real assets investors](#), PRI, April 27, 2021.

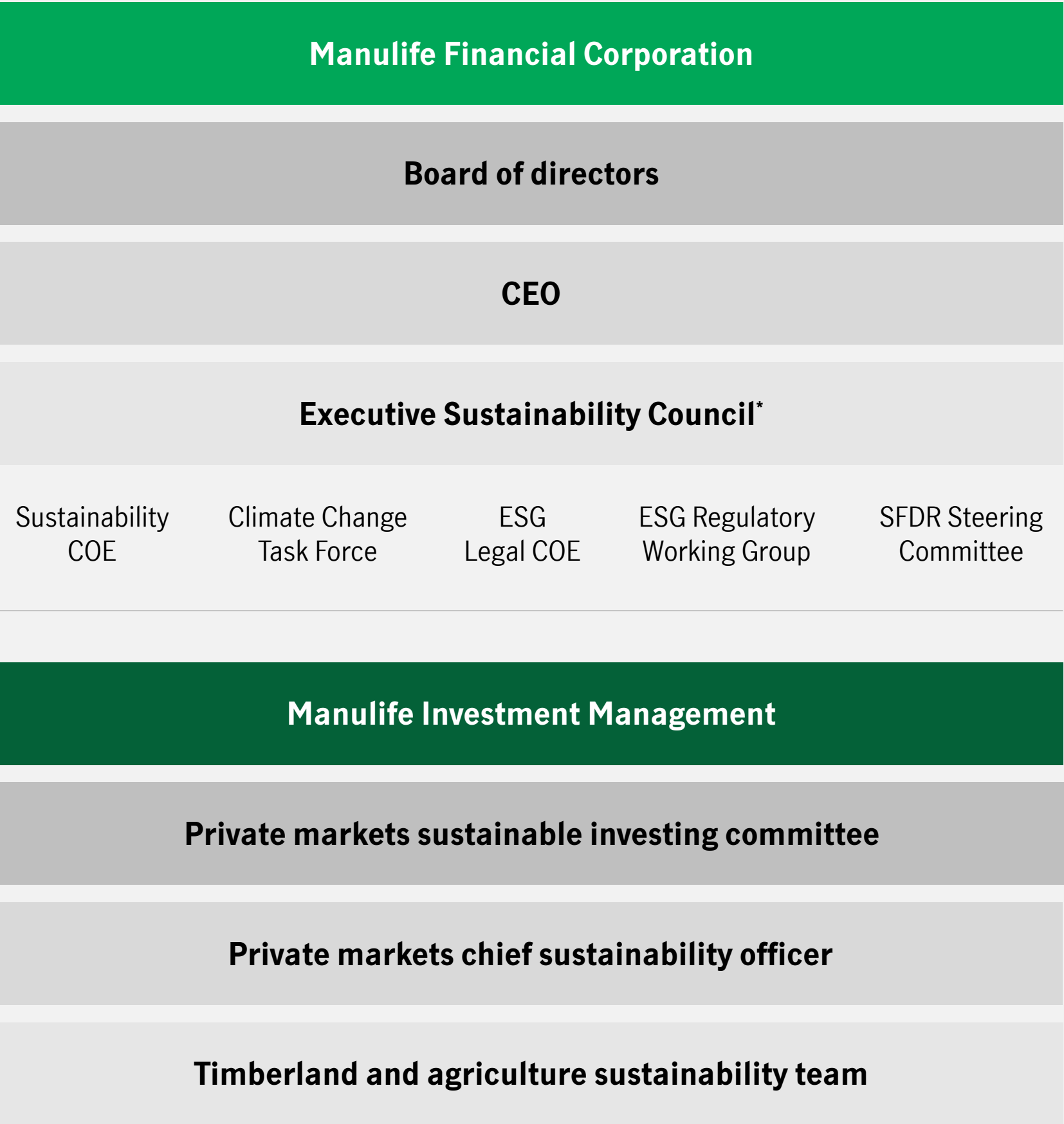
Governance: our organizational approach to sustainability

Alongside the rebranding of Hancock Natural Resource Group to Manulife Investment Management, we’ve strengthened our governance of climate change risks and opportunities through new linkages across the Manulife and Manulife Investment Management sustainability ecosystem.

Our commitment to sustainability involves leaders in all asset classes, as well as representatives from functional areas such as operations, legal, compliance, risk, and technology. As a result, governance bodies across Manulife Investment Management ensure that sustainability issues are embedded within our long-term business strategies and day-to-day work activities.

The graphic at right illustrates sustainability governance at Manulife, from the board of directors and CEO all the way through each business unit. In the case of agriculture investing, key sustainability decisions related to business-wide policy and commitments are taken by the private markets sustainable investing committee, with direction from the private markets chief sustainability officer and support from the timberland and agriculture sustainability team. Sustainability decisions affecting particular areas of the business are taken collaboratively through the participation of sustainability team members in decision-making bodies (for example, through investment committees or strategy working groups).

Sustainability governance at Manulife



* Executive Sustainability Council includes Manulife chief executive officer, analytics officer, marketing officer, HR officer, sustainability officer, financial officer, operations officer, investment officer, and risk officer.
COE refers to Center of Expertise. SFDR refers to Sustainable Finance Disclosure Regulation.

Strategy: three pillars of our global Journey to Net Zero

Our vast natural resource holdings have enabled us to realize net-zero emissions in our operations, and we're uniquely positioned in our sector to accelerate the use of nature-based solutions in the fight against climate change.

Operations

Substantially reducing emissions to lessen our footprint

- We're proud to share we're net zero in our operations, uniquely positioned due to the carbon removal from our substantial owned and operated forests and farmland outweighing our scope 1 and 2 emissions.
- Manulife is committing to reduce absolute scope 1 and scope 2 emissions by 35% by 2035. We'll take steps such as enhanced efficiency measures, fuel switching, and use of on-site renewables in our buildings to achieve this target.



Investments

Actively investing for a sustainable future

- We're committed to steering our investment portfolio to be net zero by 2050.
- We'll continue to grow our CAD\$39.8 billion in green investments, such as renewable energy, energy-efficient real estate, timberland, and agriculture.
- Manulife has committed to the Science Based Targets initiative (SBTi), which will guide target setting, measurement, and progress reporting.



Products and services

Contributing to climate change mitigation and resilience

Through our capabilities in timberland and agriculture, we'll accelerate the development of investment strategies for investors interested in nature-based solutions that capture even more carbon per dollar invested.





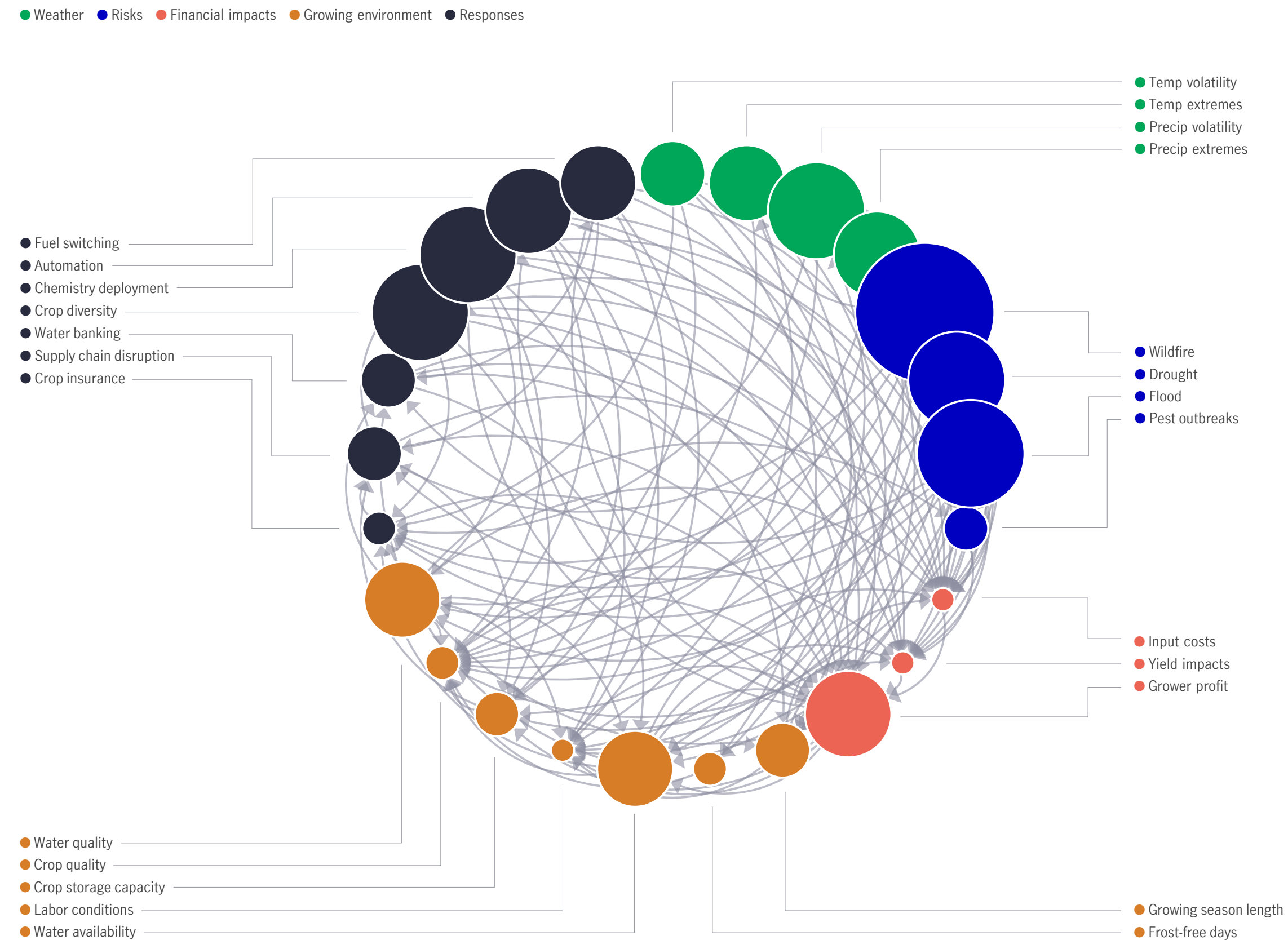
Strategy: scenario analysis

While we're developing plans to reduce our emissions, we're also keeping an eye on how a changing climate may affect agriculture going forward. Climate change itself is certain, but its effects on agriculture are less certain and will likely vary significantly across space and time. This is why—in keeping with the strategy recommendations of the TCFD—we conduct scenario analyses to help ensure that our climate strategy remains resilient amid various potential climate outcomes. These analyses can be challenging for any asset class, but especially for agriculture, given significant uncertainties around the ability of different crop types or varieties to adapt to changing climate conditions.

In 2020, we conducted a pilot climate scenario analysis for our California farmland and last year built on it to extend the analysis across our global platform. Through a series of workshops engaging our agriculture operations professionals from North America, Australia, and Chile, we're now better equipped to gauge our ability to prepare for the realities of climate change.

One key takeaway from these workshops was that while the magnitude of climate effects may vary significantly across space and time, the types of climate impacts are fairly constant, and this enables nimbler strategic responses to them. As with timberland, although different in degree, the number of key risks is small. Yet they interact and influence each other in ways that simple linear cause-effect relationships don't convey accurately (see page 11). Climate change is a systems problem, and we've adapted our thinking about it to reflect that reality.

Strategy: scenario analysis



Source: Manulife Investment Management, March 31, 2022. For illustrative purposes only.

Climate and agriculture

Understanding climate impacts and dependencies

Climate change is complicated. As we seek to understand ways in which our agriculture business will be affected by climate change, it's helpful to consider the relationship between climate and agriculture as a system in which different factors interact with one another. For example, precipitation extremes could result in flooding or drought and destroy crops. If these events increase in frequency, some growers may rely on crop insurance to protect against loss, but insurance would likely become more expensive for the same reasons. While changing climate patterns may make agriculture more challenging in some areas, it could create possibilities in others; for example, as the number of frost-free days might increase in higher latitudes or as crop researchers develop plant varieties more adaptive to changing climatic conditions.

The important point is that these relationships are not linear but interacting. Through our scenario analysis workshops, we identified variables relating climate change to our business and then developed a way to illustrate the relationships between them. The graphic at left shows the different types of factors (color coded) as well as the extent to which they may influence other factors. The larger the circle, the more factors are influenced by it (illustrated by the arrows between factors).

As we progressively deepen our climate scenario analysis, it helps to have a framework that can account for the complexity of the interaction between agriculture and climate change.

Case study

Climate risks: regenerative and organic almonds in California

Regenerative agriculture shows great promise for climate change mitigation and adaptation. Many of our farms use regenerative practices, but few of them have undertaken systematic studies to help determine and quantify the benefits of such practices in contrast to other farming regimes. That's what we're doing at Madera 7.

We've managed the almond orchard at our Madera 7 ranch in California for nearly 30 years. When we were replanting the orchard in 2019, we took advantage of the opportunity to conduct a large-scale experiment into the benefits of different types of farming systems. The practices we're currently testing include:

- **Orchard reincorporation**—grinding the old trees and reincorporating the wood chips/organic material back into the ground
- **Organic production**—no synthetic fertilizers or pesticides applied
- **Regenerative practices**—cover crops, reduced tillage, reduced usage of herbicides and pesticides, blending fertilizer with compost and green waste
- **Irrigation practices**—Different irrigation systems and wetting patterns

Over the next five years, we'll be closely tracking crop quality, yields, costs, water consumption, and pests, as well as all the materials used while cultivating each of the trial sites. We won't have definitive results for some time but similar previous exercises have already enabled us to reduce our pesticide and herbicide application by 20% to 30%, while reducing the number of passes required by mowers (therefore reducing GHG emissions).



Metrics

We aim for continuous improvement both in environmental performance and in data quality. We made multiple improvements to our data collection process in 2021 that resulted in capturing more emissions than we had in 2020. We anticipate reporting in alignment with the [GHG Protocol's](#) land sector guidance once it's complete, as well as recalculating our base year (2020) emissions to account for such methodological improvements and to enable a truer year-over-year emissions comparison.

Metrics can never tell the whole story, but they can certainly show part of it. Here's how we're tracking on climate.

Metric	2021	2020	GIIN
Properties managed	269	270	OI1674
Scope 1 GHG emissions (tCO ₂ e) ¹	47,072	36,634	OI4112
of which: fertilizer (N ₂ O) emissions (tCO ₂ e)	18,474	11,233	OI4112
of which: fuel combustion emissions	26,999	22,221	OI4112
Scope 2 GHG emissions (tCO ₂ e)	17,922	10,177	OI9604
Scope 3 GHG emissions (tCO ₂ e)	195,684	199,569	PD9427
Biogenic removals (tCO ₂)	293,046	330,288	PI9878
Net sequestration (tCO ₂ ; + sequestration, - emission)	32,368	83,908	PI9878
Number of crop types grown ²	25	23	N/A
Percent net productive area	88%	87%	N/A

Source: Manulife Investment Management, 2021. GIIN refers to Global Impact Investing Network [IRIS+](#) metric codes. **1** Scope 1 emissions include some small immaterial sources in addition to fertilizer and fuel. **2** Crop types include infrastructure and solar farms; new crops in 2021 include cherries and citrus.

Targets

Similar to our timberland business, we see three main avenues for increasing the contribution our agriculture platform can make to mitigating and adapting to climate change. We can 1) reduce emissions, 2) increase removals, and 3) partner with others to develop innovative ways of doing any of those within our value chain.

First, we need high-quality data that enables an accurate quantification of our existing emissions and removals since decarbonization plans and progress monitoring require measurement against a reliable baseline. Straightforward and scalable methods for calculating emissions—and especially soil carbon sequestration—have historically been lacking, so we’ve spent the past three years progressively improving our capabilities in this area, and it’s an essential supporting element of our decarbonization plan.

Source: [wbcsd.org](https://www.wbcsd.org), November 6, 2021. Whereas scope 1 and 2 emissions are calculated based on activity data provided by operations managers, scope 3 emissions are estimated. Effective monitoring of decarbonization progress relies on improved GHG quantification methods to establish a baseline.

Our climate targets

1

Improve GHG quantification methods—Working in tandem with the ongoing developments in the GHG Protocol and SBTi, we’re building and applying a scalable method for accurately quantifying our GHG emissions and removals—based on field data—for our entire global agriculture platform.

2

Launch our decarbonization strategy—In 2022, we’ll develop a comprehensive strategy to reduce our operational emissions. Over 75% of our agriculture emissions are scope 3 indirect emissions from our leased farmland, so our plan will need to focus heavily on working collaboratively with our tenants to help them find ways to reduce their emissions.

3

Scale regenerative agriculture—Building on the success of regenerative practices throughout our platform, as well as from the systematic pilot trials we’re conducting at Madera 7, we’re working toward being able to confidently identify the highest potential regenerative practices for our properties. For our leased farms, we aim to have discussions about regenerative practices with all of our 100+ tenants by the end of 2022.

4

Systematically understand climate risk—As the availability of high-quality climate projection tools increases, we plan to source climate risk data from an independent third-party provider for our entire agriculture platform, enabling us to understand the anticipated financial impacts of climate change more thoroughly.

Nature



Ecosystem resiliency

Healthy ecosystems provide immense value to the vitality of communities and economies. To ensure this for generations to come, we operate in a way that responsibly manages land and protects sensitive lands¹ and biodiversity.



Watershed protection

Protecting and improving watersheds is vital for the ecosystems and communities that depend on them. We do this by protecting sensitive lands,¹ and adhering to strict water and land management policies and best practices.

Farming requires healthy soils and good water, which is why ecosystem resiliency and watershed protection are our two key nature-related priorities. As managers of agricultural investments, the success of our clients' portfolios depends on access to reliable, affordable, and quality water resources, along with fertile soils well suited to the crops we grow. Consistent with our sustainable investment principles, we also have a responsibility to manage these resources in a way that promotes the health of the ecosystems and communities that depend on them.

Our approach to **ecosystem resiliency** begins early in the investment process. For each potential acquisition, we conduct a biodiversity risk assessment to determine the potential for threatened and endangered species to be present on each property. Using the resources provided by [NatureServe](#), our team of biologists identifies the number of critically imperiled species (as categorized by NatureServe as G1, imperiled (G2), and ESA-listed)—species listed as endangered or threatened under the ESA—and provides this information in the due diligence package for each property. Perhaps most importantly, we don't view these species as liabilities, but rather as assets, and we take advantage of these opportunities to help protect their habitats.

¹ Sensitive lands are defined as lands with critical habitat for sensitive or endangered species, or lands with high scenic, historical, cultural, or recreational value.



Our property managers recognize and appreciate natural environments, and we go out of our way to voluntarily preserve them for the species that call them home. One example is the century-year old mesquite tree at our Triangle T Ranch in California where owls nest. Instead of removing this historic tree (or planting much closer to it), we retained it, surrounding it with a generous buffer. Maintaining and creating habitats for these, and similar birds of prey, become a part of our integrated pest management since they help us keep pests in check using existing natural means; we've worked with many local school districts to construct bird and bat boxes for this very purpose.

Watershed protection (water resource management and investment) has become a key focus of our agricultural strategy and operations, enabling us to meet our fiduciary and environmental goals, values, and responsibilities. Given the key importance of water to agricultural investments, we've built a dedicated in-house global water team with expertise spanning all pillars of our agriculture business, from operations and policy to strategy and sustainability, over the last five years.

The team's goal is to manage our water resources effectively and responsibly for value protection, value generation, and risk management. This means maximizing the value per unit of water used—irrigating efficiently and precisely—while implementing state-of-the-art technologies to monitor and manage our water resources for our investments and the environment.

Case study

Monitoring evapotranspiration for precision agriculture

To grow a healthy crop and water responsibly, we need to give our crops the water they need—no more and no less. To do this, we need to know how much water a crop needs and how much water the environment is providing through precipitation by measuring evapotranspiration (ET)—how much water is transferred back into the atmosphere through evaporation from the soil and transpiration from plants. When we monitor precipitation and ET, we can then make up the difference through irrigation. Knowing how much water the plant has used as an output enables us to apply the precise amount of water needed as an input to keep the crops healthy.

Our global operations team uses satellite and fixed-wing aerial imagery, as well as ground-based calculations, to measure ET. In our California platform, we have weekly local ET updates to inform our irrigation schedules, helping to ensure our water application and use is precise and effective. In addition to demand-based irrigation, we've also invested in and installed flow meters on the majority of our water extraction points. In our Australian platform, we use weather-based irrigation scheduling, satellite imagery, and other in-field technologies (such as dendrometers) to determine the appropriate volumes of irrigation based on crop needs and prevailing climate. These technologies allow us to use water efficiently, ensure application of water is effective, and generate the highest value outcome possible for our water use.

An aerial photograph of a river system, likely the Murray-Darling Basin, showing a large sandbar in the center and waterfowl, possibly waterhens, gathered on the banks and in the water. The water is a deep blue, and the sandbar is a lighter, yellowish-brown color. The sky is a pale blue with some wispy clouds.

Case study

Environmental water and waterfowl in New South Wales

The Murray-Darling Basin is one of Australia's largest and most important river basins. It covers more than 14% of Australia's land mass and provides water resources for urban and rural communities, as well as industry and agriculture. It also has significant environmental importance for a variety of ecosystems, wetlands, forests, and cultural sites. Changing land use patterns have resulted in many creeks and wetlands in the region becoming disconnected from river systems and floodplains.

In response to this issue, we make our irrigation infrastructure available to deliver water to disconnected wetlands and priority environmental sites that adjoin our farms. Since 2019, we've worked with the New South Wales state government to deliver water to Bingera Creek, which adjoins our Goodnight almond orchard, wetting approximately 6.5 kilometers of channel and 50 hectares of wetlands, and providing recorded frog and waterfowl habitat.



Metrics

Nature is challenging to measure, but the metrics below provide some insight into how much we prioritize it.

Metric	2021	2020	GIIN
Percent of farmland third-party certified as sustainably managed ¹	78%	74%	PI6796
Number of nonconformances ²	0	0	OD4108
Number of opportunities for improvement ²	1	7	OD4108
Number of exceptional practices ²	7	10	OD4108
Percent of farms with farm management plan	100%	100%	PI6796
Percent of farms with soil health practices ³	55%	N/A	PD8494
Percent of farms with biodiversity assessment	100%	100%	PD8494
Number of acres of pollinator habitat	295	172	PD8494
Number of stewardship projects conducted in our farms ⁴	19	12	N/A
Number of stream miles protected by best management practices ⁵	0.6K	0.6K	OD4108
Percent of area using integrated pest management	100%	100%	PD8494
Percent of investments accounting for water risk and opportunity	100%	100%	N/A

Source: Manulife Investment Management, 2021. GIIN refers to Global Impact Investing Network [IRIS+](#) metric codes.

1 Certification as of May 17, 2021, 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](#). **2** Leading Harvest audit results. **3** 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. **4** Includes North America only. **5** Includes North America and Australia only.

Targets

Just as in our timberland investment platform, our agriculture investments have a role to play in contributing to a nature-positive world, and we're equally committed to supporting the [Finance for Biodiversity Pledge](#). As a global goal for nature develops, we have a responsibility to help halt and reverse nature loss. By 2030, the goal is to have regenerated and preserved nature through improvements in the health, abundance, diversity, and resilience of species, populations, and ecosystems.

As with other sectors, agriculture doesn't yet have a clear road map for this, but as a business that's ultimately reliant on "boots on the ground," we have some ideas. And we're also prominent in the discussion, contributing to the development of a nature-positive road map for the agriculture sector.

Our nature targets

1

Comprehensively map the location of our operations relative to sensitive lands or key biodiversity areas—

Most of our farmland is in fairly well-established markets where such land isn't likely to be identified, but we believe that greater public awareness of this information is important for contributing to a nature-positive world and we want to play our part in transparently providing it.

2

Implement a system for tracking how our agriculture operations affect biodiversity, land, and water—

We're building a system of natural capital accounts across our global operations through which we intend to capture, quantify, and potentially monetize the relationship between our operations and nature.

3

Apply a practical menu of opportunities for following the mitigation hierarchy—

In keeping with the World Business Council for Sustainable Development's [nature-positive building blocks](#) as well as the recommendations of the [Science-Based Targets for Nature](#), we aim to establish a straightforward method for implementing the mitigation hierarchy in our business: First avoiding harm, and then reducing and restoring whatever harm is unavoidable, establishing the ability of the ecosystem to regenerate and ultimately contribute to systems transformation.

People



People empowerment

We value our people, employees, and contractors and work to ensure that we're offering not only safe and healthy working environments but the tools, training, and support they need to thrive.



Community prosperity

We're committed to supporting and strengthening the local and indigenous communities where we operate. We provide employment opportunities, public use of our land, engage with nongovernmental organizations, and support local causes as part of our community stewardship.

Stewardship is as much about people as it is about the environment. It also applies as much to our own people—people empowerment—as it does to the communities where we operate—community prosperity.

Empowering our people means offering rewarding jobs and promoting a culture of excellence in a safe, diverse, and inclusive environment—just as in our timberland business and throughout Manulife Investment Management.

Rewarding—In addition to competitive compensation, we offer all eligible full-time and part-time employees:

- **Generous parental leave**—We offer the opportunity to take up to 12 consecutive weeks of paid time off for the birth or adoption of a child.
- **Extra personal time**—We offered five extra days of personal time in 2021 for the second straight year—in addition to existing vacation, family care, volunteer time, and personal time—in recognition of our employees' ongoing commitment despite the COVID-19 pandemic.
- **Dedicated time for learning**—Every second Friday of the month, fuel-up Fridays give employees the opportunity to learn and grow their knowledge.
- **Recognition**—Through Podium, a digital global recognition platform that enables us to express appreciation for our peers, leaders, and teams, anytime and anywhere.

Safe—Our safety record outperforms agriculture industry safety benchmarks. Yet we recognize that we still have room to improve, and that a culture of safety is always more important than safety statistics.



Diverse and inclusive—In 2021, we established a private markets diversity, equity, and inclusion (DEI) council to develop a strategy for DEI across private asset classes, including agriculture. The council includes representation from all private asset classes and geographies and has four workstreams: 1) DEI best practices and opportunities; 2) education and initiatives; 3) communications; and 4) data and metrics. Through this activity, we're seeking to create a culture that's more inclusive, better engages every employee, and provides opportunities for advancement regardless of race, ethnicity, age, gender, sexual orientation, religion, ability, economic status, and other aspects of diversity.

Community prosperity means being good neighbors and contributing to the well-being of the communities in which we operate, whether these are our tenants, contractors, or the general public.

Tenants—While we directly operate our permanent crop farms, we usually lease row crop farms to tenants. Some don't have the financial capital available to purchase significant quantities of farmland. Others may choose to use their available capital for equipment that enables them to farm larger areas rather than committing to a land purchase. In these cases, leasing farmland is mutually beneficial and provides a cost-effective method for these farmers to run their business.

Contractors—In addition to our 900+ global agriculture and timberland employees, nearly 6,000 contractors work on our worldwide properties, including almost 1,400 on our farms. In some smaller rural communities, the scale of our operations may make us a key contributor to local economic activity. We prefer to buy local, maintaining a preferred vendor list and contracts with local companies wherever possible.

General public—While agriculture is a fairly intensive land use that doesn't always allow for recreation on farmland, we do maintain recreational opportunities where possible. In the United States, we lease more than 70,000 acres of agriculture property for recreational use and maintain more than 150 acres of farm property in Wisconsin with open, unrestricted public access.

Case study

Cranberries, river views, and bike paths in Wisconsin

We're one of the largest producers of cranberries in the United States. Wisconsin produces more than double that of any other U.S. state, nearly 60% of the crop. Our Wisconsin team is proud of its work and community, which is why the team maintains a public bike path that runs adjacent to the cranberry property.

One of our cranberry marshes in Wisconsin runs through the town of Biron next to the Wisconsin River. The land offers incredible views of the river and hosts a variety of opportunities for those in surrounding communities to enjoy nature on recreational trails. When public groups made proposals for a public bike path that would run through the town and the Biron Marsh, it was an obvious decision to accept them, since community prosperity is a key priority for us. We therefore not only supported the bike path, but since inception, we've helped to maintain it. At nearly 20 miles long, it's the longest continuous path along the Wisconsin River and allows for several wildlife viewing opportunities, including the sharp-tailed grouse—a state species of greatest conservation need.

Metrics

Contributions to people empowerment and community prosperity can be difficult to measure, but this is how we're doing it right now.

Metric	2021	2020	GIIN
Number of employees (agriculture) ¹	344	350	N/A
Number of employees (total) ²	972	958	0I8869
Number of contractors (estimated) ³	1,389	1,719	N/A
Percent female	20%	20%	0I2444
Percent black, indigenous, and persons of color (BIPOC) ⁴	28%	29%	0I3236
Percent of executive team female	17%	33%	0I1571
Percent of executive team BIPOC	0%	0%	0I3862
Number new hires ⁵	52	61	0I5479
Percent attrition ⁶	12%	10%	0I1638
Total injury frequency rate ⁷	25.1	6.2	0I3757
Lost time injury frequency rate ⁷	20.8	4.4	0I3757
Percent employees responding to engagement survey ⁶	96%	90%	N/A
Percentile employee engagement survey score ⁶	57	58	N/A
Contributions to nonprofits ⁸	\$649K	\$613K	FP3774
Lands with public access (acres) ⁹	70,837	70,837	N/A

Source: Manulife Investment Management, 2021. **1** Includes 111 (2020) and 93 (2021) employees with agriculture and timberland. **2** Includes 608 (2020) and 628 (2021) timberland-only employees. **3** Agriculture contractors only; full-time equivalent, not individuals. **4** Includes North America staff only. **5** Includes 10 (2020) and 9 (2021) employees with agriculture and timberland responsibility. **6** Combined result for timberland and agriculture. **7** Incidents per 1 million hours; 2020 combines rate agriculture and timberland; 2021 is agriculture only. **8** Combined result for timberland and agriculture; does not include Australia timberland operations or South America operations. **9** Public access refers to access of any type, including by permit or unrestricted open public access.

Our people targets

1 Employee engagement—One mark of a great workplace is its employee engagement. Our company currently performs at the 57th percentile globally in the Gallup employee engagement survey, with 96% of employees responding. We consider this positive, but significantly below where we'd like to be. Collectively with our timberland business, we're targeting top-quartile employee engagement in the near term.

2 Diversity—Agriculture, forestry, and finance are industries that have historically mostly employed white men in most of the regions where we operate. The current makeup of our firm reflects that reality; however, we recognize the importance—culturally, ethically, competitively, and financially—of being a diverse and inclusive firm. That's why we're actively taking steps to become the firm we want to be by targeting the following:

- By 2025, increase black, indigenous, and persons of color (BIPOC) representation within our North America leadership by 60% relative to 2021
- Achieve a sector-specific talent pool of 20% BIPOC hiring over the next four years (U.S. agricultural and natural resources bachelor's degrees at 21% BIPOC)
- Increase the share of females in leadership to at least 20% of total by 2025

Looking ahead: a regenerative future

If there's a theme that incorporates all aspects of what the agriculture industry of the future needs to look like in order for it to contribute to meeting the sustainable development goals, it's this: regenerative agriculture. Or, put another way, farming in a way that not only produces healthy food, but also contributes meaningfully to the well-being of those producing it—and to that of natural systems such as soil and water.

To borrow language from the [WBCSD's Scaling Positive Agriculture project](#) that we co-lead, agriculture must be three things: 1) climate-positive, 2) nature-positive, and 3) farmer-positive. Agriculture must shift from a net source to a net sink of GHG emissions, from being the main driver of nature loss to a regenerator of nature. And it must ensure resilient, productive livelihoods for farming and food-producing communities. Those three themes should sound familiar because they're our top three priorities—climate, nature, and people. Investing in agriculture is fundamentally about investing in natural capital, and as stewards of natural capital our goal is to ensure that the investments we manage provide a flow of services to the climate, nature, and society that go well beyond food production.

How can we know we're making progress against these priorities? Data. Yet historically, meaningful sustainability data for agriculture has been scarce. That's why many of our sustainability targets are relatively near term (one to three years), because we're investing in the ability to systematically capture and monitor the sustainability performance of our assets, which will enable us to document how our sustainability efforts are paying off. Equipped with that information, we'll be able to develop concrete longer-term targets. There's much more to come—watch this space!





 **Manulife** Investment Management

Real estate 2022

Message from Marc Feliciano

As a global real estate asset manager, we're committed to confronting sustainability challenges to make a positive impact on our environment and society. I'm pleased to present our 2022 Real Estate Sustainability Report as part of our commitment to transparency on our sustainable investing efforts.

In 2021, our global real estate portfolio was recognized as a GRESB Sector Leader¹ ranking first among its peer group for sustainability leadership. This is a significant achievement in a year where participation in the survey globally increased by 24%.

The strength of our assessment can be partly attributed to our ongoing focus on the health and well-being of our tenants, employees, and partners. We recognize the important role real estate managers can play in providing safer and healthier spaces. In 2021, we achieved the Fitwel® Viral Response Module certification with distinction for our North American real estate portfolio². As we move through the pandemic, the health and safety of our buildings remains a top priority.

We also worked to embed physical climate risk assessments and resilience across our practices and portfolios by developing our new proprietary Climate Change Resilience Building Standard. Our focus on awareness, evaluation, and integration supports our efforts to further protect our assets as we transition toward a low-carbon economy.

These achievements are in part why I joined Manulife Investment Management in early 2022. Sustainability isn't a solo journey, and these accomplishments reflect the passion and commitment of the sustainability team, led by Regan Smith, and everyone across our global real estate team. I'm proud to lead such a great group of real estate professionals.

As we move forward, we need to continue to think big to create value for our investors, grow our business, and make meaningful contributions to our sustainable future. We also need to focus on building a more diverse, equitable, and inclusive (DEI) workplace that fosters an environment of empowerment. I took this into great consideration when I selected members of the global real estate leadership team that will work alongside me in transforming our business. One initiative we've undertaken is to seek out partnerships with minority-led organizations. DEI is a matter close to my heart and I'm committed to taking it to the next level across our organization and our industry.

At Manulife Investment Management, we believe sustainability is a journey of continual improvement. We're taking what we're learning across the organization, the industry, and the world, and we're applying those lessons in our business each day. I'm confident we're heading in the right direction, and I thank you for coming along with us.

Marc Feliciano

Global Head of Real Estate Investments
Private Markets

1 Based on GRESB results released October 2021 cover the 2020 time period. GRESB Sector Leaders are the best performers by sector, region and nature of ownership from across the GRESB Assessments. The entity with the top score, as well as the entities with a score within 1 point of the top score in a category are recognized as Sector Leaders. Most current data shown. Manulife Investment Management paid a fee to be considered for the ranking. [gresb.com](https://www.gresb.com)

2 Certification achieved in 2021, for 2020-2021 efforts, by the Fitwel Viral Response Module for our efforts to ensure our properties are ready for a safe and healthy return to work. Certification is valid for 12 months. Please see fitwel.org/viral-response-module

Source: [gresb.com](https://www.gresb.com)

Q and A with Regan Smith

Regan Smith, Managing Director, Sustainable Investing, Real Estate Equity and Infrastructure

Q1 The healthy buildings movement seems to be gaining traction. Why now?

The pandemic brought to the forefront how interconnected buildings and human health are—both physical and mental. As real estate managers, we have an important duty to provide spaces that promote the well-being of our tenants, employees, partners.

In 2021, we partnered with Fitwel—a rigorous, third-party healthy building certification that sets the industry standard for evidence-based strategies to promote positive health outcomes for building occupants and communities. We’ve been working with our teams to ensure these science-based policies and procedures are implemented across our North American properties, and in 2021, we received certification for over 20 properties across our North American portfolio.¹

I’m pleased to see that the real estate industry has recognized the value that can be achieved by making decisions that prioritize people. Having a healthy building is no longer optional, it’s good practice management.

Q2 While many of us are conscious of the challenges that face our planet, how do we raise more awareness around climate change in the commercial real estate community?

Every job is evolving to be a climate job, and we all need to understand climate risk and opportunities. Addressing the issues requires collective effort and I believe education is a powerful tool to empower individuals to take positive action.

Climate change education is core to our stewardship values. We’re working on developing various initiatives to support positive organizational change through processes, tools, and training programs that are designed to arm our real estate teams with the knowledge to make better informed decisions. In 2021, for example, we held an educational webinar for our asset managers and property operations teams on greenhouse gases, which we called ‘GHG101’. Preserving and protecting nature is also key to addressing climate change. We invited several community partners that we work closely with to discuss how biodiversity loss is impacting our environment and what we can do to support nature together. This was both a lively and eye-opening discussion, and I’m looking forward to continuing the conversation on climate and nature with our partners in the community, our tenants, and our broader property management teams.

¹ Total rolling certifications since 2020, as of December 31, 2021, by the Fitwel Viral Response Module for our efforts to ensure our properties are ready for a safe and healthy return to work. Certification is valid for 12 months. Please see [fitwel.org](https://www.fitwel.org)

Q and A with Regan Smith

Regan Smith, Managing Director, Sustainable Investing, Real Estate Equity and Infrastructure

Q3 What nature actions are you undertaking to help ensure a resilient future for our communities?

As part of our stewardship journey, we're continuously evolving the ways in which the built environment can support local communities. For example, in Montreal we've partnered with an organization to create urban rooftop fruit and vegetable gardens where the harvest is donated to local groups. We've also partnered with an urban bee keeping company and host beehives across several of our North American properties.

More recently in 2021, we undertook a unique initiative right in our own backyard. Together with a community partner, we seeded an American elm tree growing at Manulife's global headquarters on Bloor Street in Toronto. The mother tree, which survived Dutch Elm disease, is a local historic and cultural landmark. From it we successfully custom grew 400 American elm seedlings, which we gave away to the local community in spring 2022.

Such initiatives can positively support the natural environment, and we'll be looking for more opportunities to contribute around the world, strengthening the connection between our global real estate portfolio and the communities it serves. I'm proud that we're doing our part to drive positive change.

Q4 Meeting the Paris Agreement will require collective action across governments, organizations, and individuals. How are you playing your part?

As a real estate owner and operator, we recognize we have an important role to play in helping the global transition to a low-carbon economy. With that in mind, we designed a strategy informed by climate science to reduce our carbon output across our real estate portfolio by 80% by 2050. As part of this greenhouse gas (GHG) reduction and low carbon transition plan, we established a process to advance property-level GHG reductions by leveraging our [Sustainable Building Standards](#) and by also creating a proprietary GHG workbook for properties to identify GHG reductions to include in operational and capital budgets.

We also must acknowledge the importance of addressing physical climate risk by [building climate resilience](#) within our real estate portfolios and across our real estate management practices. Resilience management is an ongoing initiative that continues to evolve rapidly. Our focus on awareness, evaluation, and integration supports us to further protect our assets as we transition toward a low-carbon economy and help the fight against climate change.



2021 *performance* highlights

We are pleased to report that we have been making excellent progress on advancing our five sustainability commitments.

1 Minimize our environmental impact

45,764 MWh of renewable energy. Purchased 45,764 MWh of renewable energy. Equivalent to removing 14,500 tCO₂e from the atmosphere.¹

32,126 MWh of energy saved. Equivalent to the energy used by approximately 1,200 Canadian homes.²

4,163 metric tonnes of waste diverted from landfill. Achieved an average portfolio waste diversion rate of 47%.

Buildings with a green building certification. Achieved an 82% global green building certification rate.³

2 Support health and wellness

Fitwel Viral Response Module (VRM). Achieved VRM certification with distinction for the North American real estate portfolio with over 20 properties achieving Viral Response Approval.⁴

3 Engage our stakeholders

Company-wide training. Hosted two training sessions for all property teams, focused on greenhouse gas (GHG) management and physical climate change resilience.

Employee recognition. Three teams were internally recognized as Innovation Sustainability Leaders for their contributions to driving innovative practices, improving sustainability performance, and exceeding expectations by going above and beyond to deliver engaging events for our tenants and communities.

Panel discussion on Nature and Biodiversity. Hosted a virtual panel with some of our closest sustainability partners to advance the discussion on nature and biodiversity. Featuring an all-female panel, we discussed the impacts that can be made in real estate, potential roadblocks to improving biodiversity across industries, and how we can continue the momentum to support nature-based solutions.

4 Promote responsible business practices

Sustainable development guidelines.

Established new guidelines to embed sustainability into our development process.

Continued industry engagement with Urban Land Institute (ULI) and Principles for Responsible Investment (PRI) working groups.

5 Be accountable for our performance

GRESB Sector Leader⁵ Ranked first among our peer group in the 'diversified - office/industrial' in the Americas category.

Data management. Improved data management systems in collaboration with our energy management partners.

Real estate climate disclosure. Launched inaugural TCFD-aligned Climate Risk disclosure for real estate.

¹ Source: www150.statcan.gc.ca ² Source: www150.statcan.gc.ca

³ Data is as of December 31, 2021. Based on square footage or building size of the gross floor area (GFA) of properties in the global portfolio. Totals from different certification standards do not sum as properties with multiple certifications are only counted once. Certifications are provided by LEED, Energy Star Certification or BOMA BEST, GBCA Greenstar, BCA Green Mark, NABERS, Casbee, BOMA360, Fitwel.

⁴ Total rolling certifications since 2020, as of December 31, 2021, by the Fitwel Viral Response Module for our efforts to ensure our properties are ready for a safe and healthy return to work. Certification is valid for 12 months. Please see fitwel.org/viral-response-module

⁵ Based on GRESB results released October 2021 cover the 2020 time period. GRESB Sector Leaders are the best performers by sector, region and nature of ownership from across the GRESB Assessments. The entity with the top score, as well as the entities with a score within 1 point of the top score in a category are recognized as Sector Leaders. Most current data shown. Manulife Investment Management paid a fee to be considered for the ranking. gresb.com

Objectives and progress

2021	Status
Advance low-carbon strategy across portfolio, including property GHG reduction plans, and initiate internal carbon management working group	Achieved
Develop sustainable development guidelines for new construction development	Achieved
Achieve Fitwel Viral Response Module certification at the entity level ¹	Achieved
Measure portfolio-wide social impact metrics to establish baseline	Achieved
Develop and launch two new Sustainable Building Standards: “Climate Change Management” and “Climate Risk and Resilience”, and meet Level 1 across portfolio	Achieved
Inventory biodiversity initiatives and explore how to integrate biodiversity into tenant engagement programs	Achieved

¹ Certification achieved in 2021, for 2020-2021 efforts, by the Fitwel Viral Response Module for our efforts to ensure our properties are ready for a safe and healthy return to work. Certification is valid for 12 months. Please see fitwel.org/viral-response-module

2022

1 Address Climate Risk through:

GHG management:
Build on our progress in 2021 to advance our greenhouse gas management strategy through:

- Completing property-level GHG workbooks and GHG reduction asset plans
 - Conducting a Scope 3 assessment
 - Preparing renewable energy credit guidance
- Increase the number of properties with climate resilience plans

2 Initiate a nature-positive strategy by:

Integrating nature into our investment due diligence and new developments

Revising our proprietary Sustainable Building Standards to include guidance on protecting nature

4 Advance reporting and ESG disclosures including launching a new ESG data management software platform

5 Develop sustainability training platform with educational modules for all employees

3 Develop Social Impact Framework that will include:

Integrating social impact factors into our investment due diligence, new development guidances, and asset management standards



Approach

Vision

Our vision is to drive leadership in sustainable real estate across our global organization. Our employees, in collaboration with our tenants and local communities, work to provide healthy and efficient properties—today and into the future.

Approach to sustainability and responsible investing

We incorporate environmental, social, and governance (ESG) considerations into all our investment management and operational practices across the real estate value chain, from construction and acquisition of an asset through all aspects of property management and leasing. These practices are supported by resources such as our Sustainability in Investment and Due Diligence tool, sustainability clauses in our standard lease, and our proprietary Sustainable Building Standards.

Our [Sustainable Real Estate Framework](#) outlines our five sustainability commitments and details our key areas of focus. We then validate practices and performance through public and investor reporting and industry benchmarking.

We aspire to advance our **five Sustainable Real Estate Commitments** in everything we do.

1
**Minimize
our
environmental
impact**

2
**Support
health
and
wellness**

3
**Promote
responsible
business
practices**

4
**Engage our
stakeholders
on
sustainability**

5
**Be
accountable
for our
performance**

Managing sustainability

We continue to advance sustainability initiatives for investments, operations, asset management, new developments, and leasing. To ensure that we are accountable to all stakeholders, we report on our performance using globally accepted standards and disclosure frameworks, including the Principles for Responsible Investment (PRI), CDP (formerly Carbon Disclosure Project), and GRESB Real Estate Assessment.

Due diligence and investment decision

We assess environmental risks such as contamination, natural hazards, health and safety, building sustainability performance, and climate risks.

ESG factors are reviewed by the investment team before closing.

Stewardship and portfolio monitoring

ESG factors such as environmental risks, energy and water consumption, waste diversion, and greenhouse gases are tracked for our investment selections and contribute to operational reduction targets in the properties we manage.

Reporting and collaboration

We produce an annual Real Estate Sustainability Report and communicate material ESG-related information to our investors in our quarterly reports.

We report to industry standards such as GRESB¹ and PRI² on an annual basis.

Sustainable Building Standards

Property operations make up the bulk of our environmental impact (energy, water, waste, and greenhouse gas emissions) and are the focus of our interaction with our employees, tenants, and community members. That’s why we developed a comprehensive list of Sustainable Building Standards. In 2021, we added two new Standards (greenhouse gas management and climate resilience) covering our material sustainability aspects.

Manulife Investment Management’s Sustainable Building Standards act as our guide to advancing sustainability within all buildings and regions. The Standards define requirements and best practices to property teams and encourage improvement.

Our standards allow us to:

- Meet industry expectations
- Drive leadership across our five Sustainable Real Estate Commitments
- Build a consistent sustainability experience for tenants, employees, and visitors
- Enable benchmarking of sustainability performance and understanding of business outcomes across our global portfolio
- Provide tools and resources for property teams

We continue to review and update our Standards to adapt to industry changes and ensure continuous improvement across our global portfolio.

¹ For more information on GRESB, please visit: [gresb.com](https://www.gresb.com) ² For more information on PRI, please visit: unpri.org

Diversity, equity, *and* inclusion

In 2020, our parent company, Manulife, announced that we would invest more than \$3.5 million over the next two years to promote DEI in the workplace and our communities. Over \$2 million has been allocated as of December 2021, to various diverse and underrepresented groups in supporting talent growth, hiring, and community support.¹

The goals of these investments include increasing the representation of diverse talent at all levels within the organization; creating greater inclusion across the company through enhanced training; and supporting organizations that help Black, Indigenous, and People of Color (BIPOC) communities.

Along with these initiatives and in addition to already existing gender targets, Manulife has set additional leadership and recruitment goals:

- Achieve 32% female representation at the VP+ level
- Annually hire at least 25% BIPOC talent in our graduate program
- Increase BIPOC representation in leadership roles by 30% by 2025

Within Real Estate, we’ve been working hard to understand our role in providing a diverse and equitable workplace. Together, we are committed to being transparent about our DEI challenges and taking steps to address them. We acknowledge that measuring the support of our DEI efforts is challenging, but we’re working on ways to improve this.

Metric²

Number of total employees	398
Percent female	35%
Percent BIPOC (North America only)	17%
Percent AVP female	17%
Percent AVP BIPOC (North America only)	14%

While we have made progress in some areas, we know we have more work to do and are committed to addressing the needs of our employees, ultimately fostering a culture of inclusivity within all communities where we operate.



¹ As of December 31, 2021, [manulife.com](https://www.manulife.com) ² As of February 2022.

Case study #1

Expanding our Sustainable Building Standards: Integrating climate change and resilience¹

Climate change is one of the greatest challenges we face today. For our buildings and our communities, it poses both physical and transitional risks.

To help guard against these risks, in 2021, we developed two new Sustainable Building Standards: Climate Change Resilience and GHG Management and Planning.

Climate Change Resilience

To develop the Climate Change Resilience Standard, we used forward-looking, third-party climate risk data to evaluate our global portfolio's exposure to climate and extreme weather risks. These risks include floods, sea-level rise, extreme windstorms, wildfire, heat stress, water stress, and earthquakes. We also inventoried our entire portfolio for property resilience—the presence of features and practices such as risk awareness, resilience management, emergency management, business continuity, and building attributes that help mitigate climate risks.

The resulting Climate Change Resilience Sustainable Building Standard incorporates risk and resilience practices into property operations. It enhances property resilience through a range of initiatives, including education, emergency planning, and resilience assessments and improvements. To support our property teams with education and implementation of this new Standard, we provided company-wide training and a Property Resilience Toolkit. The Toolkit helps teams screen and prioritize resilience improvements based on their climate risk exposure and existing resilience measures and practices.

GHG Management and Planning

Reducing our carbon footprint is critical to the global transition to a low carbon economy and to our long-term success.

Our internally-created Carbon Management Working Group developed the GHG Management and Planning Standard to help asset management and property operations teams to create emissions reduction plans. These asset-level plans aim to support meeting our long-term GHG emissions reductions target.

Integrating education, opportunity identification, and emissions reduction planning into operations allows our property and asset management teams to reassess the practical and financial implications of reduction pathways. In 2022, we plan to globally roll out expert guidance and proprietary tools to help each asset build their decarbonization plan and budget.

¹ 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 hundreds of 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 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.](#)

Case study #2

From the ground up: Integrating ESG into developments

As a long-term owner, we know it's critical to manage ESG throughout the lifecycle of our assets. In 2021, we formalized our approach to ESG integration into new developments in recognition that our development pipeline presents one of the earliest opportunities to manage risk and capitalize on opportunity.

Our approach integrates ESG considerations throughout the entire development process, from early planning and design stages, through to construction and eventual handover of the completed building. Integrating ESG from the start of a new development helps us:

- Get ahead of increasingly stringent regulations
- Ensure completed buildings meet tenant and investor expectations
- Position assets to contribute to ESG goals and performance of our standing portfolio
- Apply a forward-looking lens to building design and performance so our assets can positively contribute to the broader society

Integrating ESG into developments also compels us to consider the construction sector's role in the transition to a low-carbon economy and to more fully appreciate the importance that indirect impacts, such as embodied carbon from building materials, can have on the climate.

To enable our team to apply our approach, we have created a suite of proprietary tools. These include design requirements that address minimum energy performance, consideration for net-zero design, embodied carbon assessments and contributions to de-carbonized transportation, biodiversity, and health and well-being. The tools also focus on our development activities, such as working with like-minded development and construction partners, considering the environmental impacts of site selection, ensuring a safe construction site, and gathering and addressing input from local communities. We're currently gathering market feedback from development partners and other stakeholders so we can continue to fine tune our minimum design requirements.

We're excited by the positive feedback we've received so far from the industry. It's clear there's enthusiasm to collaborate on our ambitious low-carbon goals.

Case study #3

Sector leadership: GRESB ranks global real estate portfolio first in peer group¹

In 2021, we achieved a new milestone: We were recognized by GRESB as a Sector Leader, ranking first in our peer group for our global real estate portfolio.¹

GRESB is the global standard for assessing the ESG performance of real estate companies and funds. By scoring and benchmarking a collection of standardized data, GRESB provides investors with transparency on how well companies and funds are managing material ESG issues, such as energy consumption, greenhouse gas emissions, corporate governance, and employee and tenant satisfaction and well-being.

In 2021, over 1,500 entities participated in the GRESB assessment. This represents nearly 117,000 individual assets with a total value of \$5.7 trillion USD². Sector Leaders are the best performers across the entire GRESB assessment, categorized by sector, region, and nature of ownership.

Our global portfolio covers our direct real estate investments around the world, including all funds and our General Account. GRESB evaluates our management of these assets through formal ESG policies, processes, and programs we have in place. Furthermore, GRESB rates our assets' actual ESG performance to determine the impact of our efforts and initiatives.

Our 2021 results highlight the strength of our ESG integration practices. Contributing to this top ranking were our portfolio-wide reductions in greenhouse gas emissions, energy and water consumption, as well as improvements in waste output and diversion.

Manulife Investment Management has participated in GRESB since 2018. The annual assessment is a crucial part of our ESG strategy. It provides on-going transparency to our investors, allows us to better understand our strengths, and helps identify areas where we can continue to improve. We look forward to continued participation in 2022.

1 Based on GRESB results released October 2021 cover the 2020 time period. GRESB Sector Leaders are the best performers by sector, region and nature of ownership from across the GRESB Assessments. The entity with the top score, as well as the entities with a score within 1 point of the top score in a category are recognized as Sector Leaders. Most current data shown. Manulife Investment Management paid a fee to be considered for the ranking. [gresb.com](https://www.gresb.com)

2 Please see: [gresb.com](https://www.gresb.com)

Case study #4

Fitwel Viral Response Module Certification

In 2021, we secured the Fitwel Viral Response Module (VRM) certification with distinction at the entity-level.¹ This achievement is part of our commitment to furthering sustainability efforts across our real estate portfolio and the focus on the ongoing health and well-being of our tenants, employees, and partners.

Fitwel is the world's leading certification system committed to "Building Health for All®." Originally created by the U.S. Centers for Disease Control and Prevention (CDC) and U.S. General Services Administration, Fitwel is a rigorous, third-party healthy building certification that sets the industry standard for evidence-based strategies to promote positive health outcomes for building occupants and communities.

Receiving entity-level certification signifies Manulife Investment Management's consistent wellness, design, development, and operation policies across our North American portfolio. These rigorously reviewed policies and procedures for safe and healthy infrastructure will be implemented across our 58.5 million square foot North American real estate portfolio.

In 2021, over 20 properties achieved Fitwel Viral Response approval in North America² (which signifies that a property has aligned with the specified practices and policies detailed in Manulife Investment Management's Viral Response Module certification). We're proud of our achievements and look forward to the continued implementation across our North American real estate portfolio.

¹ Certification achieved in 2021, for 2020-2021 efforts, by the Fitwel Viral Response Module for our efforts to ensure our properties are ready for a safe and healthy return to work. Certification is valid for 12 months. Please see fitwel.org/viral-response-module

² Total rolling certifications since 2020, as of December 31, 2021, by the Fitwel Viral Response Module for our efforts to ensure our properties are ready for a safe and healthy return to work. Certification is valid for 12 months. Please see fitwel.org/viral-response-module

Case study #5

Requirements for our third-party real estate managers

In 2021, we made the strategic decision to migrate our US real estate platform to third-party property managers to oversee the operation of our buildings.

To ensure our standards and reporting requirements are upheld in the highest manner, we developed a rigorous selection process for third-party property managers which specifically take into account sustainability considerations in accordance with the Manulife Real Estate Sustainable Procurement Guidelines.

Our property management agreements act as a roadmap for implementation of our sustainability practices. We closely oversee third-party property managers and require them to adhere to our proprietary sustainability policies, to provide updates twice per year according to our own Sustainable Building Standards, to provide utility bills on a monthly basis and to provide requested metrics for information on, for example, waste audits and diversion reports, energy audits, refrigerant or diesel consumption, tenant engagement activities, and occupancy counts.

We also provide third-party property managers with the Sustainability in Asset Management Checklist to use in developing annual property reviews, budgets and capital plans. The Checklist does not prescribe specific practices but provides a structured means of addressing sustainability risks and opportunities and ensures sustainability budget items are not overlooked. We've also developed an annual third-party property manager scorecard to rate compliance with property management agreements, including a qualitative assessment on delivery against our expectations.

The migration to third-party property managers will help us achieve a significant business objective—to grow our geographical footprint across the United States. Simultaneously, liaising with property managers, who interact with other real estate investment managers, promotes industry collaboration and alignment on best sustainability practices.

Performance

COVID-19 continued to impact our environmental performance in 2021. We saw pandemic restrictions lift and get reinstated throughout the year impacting our energy and water consumption, greenhouse gas emissions, and waste generation. Regardless, we worked to sharpen our focus and engage across the business and stakeholders to deliver strong environmental results.

Energy¹

	2021	2020	2019	2018	2017
Absolute energy use (eMWh)	686,478	733,304	803,261	837,145	798,323
Normalized energy use intensity (ekWh/sf) ²	18.4	19.8	23.3	23.8	23.7

Buildings consume substantial amounts of energy and water and generate approximately 40% of greenhouse gas emissions, globally. As building owners and managers, we seek to minimize our environmental impact by investing in resource efficiency and look to embed conservation practices into our operations.

In 2021, our total energy consumption was 684,478 eMWh. Comparing our like-for-like portfolio, our energy decreased 4.8%, equivalent to the energy required to power 1,200 Canadian homes.

Across our global portfolio, we decreased normalized energy use intensity to 18.4 ekWh per square foot, a reduction of 7.1% and 22.4% compared to 2020 and 2017, respectively. Our 2021 performance surpasses our five-year 10% energy target, however COVID-19 related occupancy changes in 2021 continue to make target progress monitoring complex. Next year, we will assess our 2022 target performance and determine our approach to future target setting.

Water³

	2021	2020	2019	2018	2017
Absolute water use (m ³)	2,343,638	2,287,139	2,520,652	2,579,437	2,564,789
Normalized water use intensity (L/sf) ⁴	58.2	53.4	62.0	65.8	67.3

In 2021, our water consumption increased due in part to the re-opening of our buildings, resulting in a 0.4% increase in like-for-like consumption. Our normalized water use intensity also increased between 2020 and 2021 to 58.2 litres per square foot. Although our consumption increased in 2021, we are still 13.4% lower than our 2017 base year and are on track to meet our 5 year reduction target of 7.5%.

1 Energy data includes electricity, natural gas, heating oil and steam consumption. **2** 2017-2019 Energy intensity is normalized for weather, occupancy (where data is available) and extraordinary use. 2020 and 2021 Energy intensity is only normalized for weather and extraordinary use due to the impact of COVID-19 on occupancy normalization. 2020-2017 values restated due to data updates. **3** 2020-2017 values restated due to data updates. **4** 2017-2019 water intensity is normalized for occupancy (where data is available) and extraordinary use. 2020 and 2021 water intensity is only normalized for extraordinary use due to the impact of COVID-19 on occupancy normalization.

Performance

Waste

	2021	2020	2019	2018	2017
Recycled waste (tonnes)	4,163	5,889	8,448	9,395	9,037
Waste to landfill (tonnes)	4,695	6,013	8,137	8,140	7,504
Waste diversion rate (%)	47	48	46	47	48

Our total waste generation decreased by 3,000 metric tonnes. Our average diversion rate for 2021 was 47%, a 1% decrease from 2020. Looking forward, we will continue to make waste management a priority and look for opportunities to increase diversion and reduce waste generation across our portfolio.

Greenhouse gas emissions¹

	2021	2020	2019	2018	2017
Scope 1 emissions (tCO ₂ e) ²	36,571	37,772	39,606	37,086	32,468
Scope 2 emissions (tCO ₂ e) ³	103,180	115,153	129,585	160,642	156,642
GHG intensity (kgCO ₂ e/sf)	3.8	3.9	4.6	4.9	5.0

To help mitigate the impacts of climate change, Manulife is committed to reducing our greenhouse gas emissions and transitioning toward low-carbon energy sources. In 2021, our total greenhouse gas (GHG) emissions were 139,752 tCO₂e, a reduction of 13,173 tCO₂e compared to 2020. In addition, we purchased more than 45,500 MWh of renewable energy, across our portfolio.

To drive GHG reductions and support meeting our 80% reduction target by 2050, we integrated GHG management and reduction into our Sustainable Building Standard program. This aims to facilitate education, opportunity identification and emissions reduction planning to help property and asset management teams assess reduction pathways and financial implications to create realistic emissions reduction plans. We also developed an associated GHG Management Workbook which we piloted in 2021 and plan to roll-out in 2022.

¹ Location based emissions. 2020-2017 values restated due to data revisions and operational control updates. ² Scope 1 includes emissions from natural gas, diesel and refrigerant emissions. Refrigerant and diesel emissions are only included in 2021-2019. ³ Scope 2 includes emissions from purchased electricity and steam.

Looking *ahead*

Real estate's role in supporting climate resilience and positive social change

Real estate has a vital role to play in climate change mitigation; almost 40% of greenhouse gas emissions are driven by the sector.¹ This isn't an issue that'll be resolved overnight; the need to address climate change will be a key focus for the real estate industry over the next two decades, and it presents both a challenge and opportunity. Many real estate organizations are investing a lot of effort to reduce their GHG emissions, however doing so in an efficient manner requires significant capital expenditure and human resources. It's no longer enough to simply believe an organization is playing their part, investors need to undertake due diligence to truly understand what organizations are doing before allocating capital. In the coming years, this area is where we will be spending time, capacity and resources to efficiently reduce greenhouse gases across our portfolio.

¹ Source: [worldgbc.org](https://www.worldgbc.org)

Looking ahead, we're excited to be advancing the conversation and finding meaningful opportunities to quantify the 'S' in ESG — our social responsibility. While we've been committed to positively impacting the health and wellbeing of the properties we own and manage, and our impact on the communities we operate, there's more that can be done. Diverse procurement practices and sustainable human capital are some ideas that we're exploring. While it's early days, we're excited about furthering developing our social impact strategy. Real estate provides an asset class that has the ability to leverage the transition to a low carbon economy, provide shelter from physical climate risk, provide healthy spaces and host biodiversity. We are looking forward to the opportunities ahead. We hope you are too.



Learn more about our policies and disclosures:

Real Estate

[Real estate sustainability framework](#)

[Real estate climate disclosure](#)

Manulife Investment Management

[Stewardship report](#)

[SRI report](#)

[Climate-related financial disclosure](#)

[Sustainable investing and sustainability risk statement](#)

[Climate change statement](#)

[Responsible contracting statement](#)

manulifeim.com/realestate/en/sustainability/approach-and-highlights

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manulifeim.com/institutional/global/en/sustainability

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Manulife Investment Management

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