

Climate Action Implementation Plan

An update on Manulife's approach to climate transition

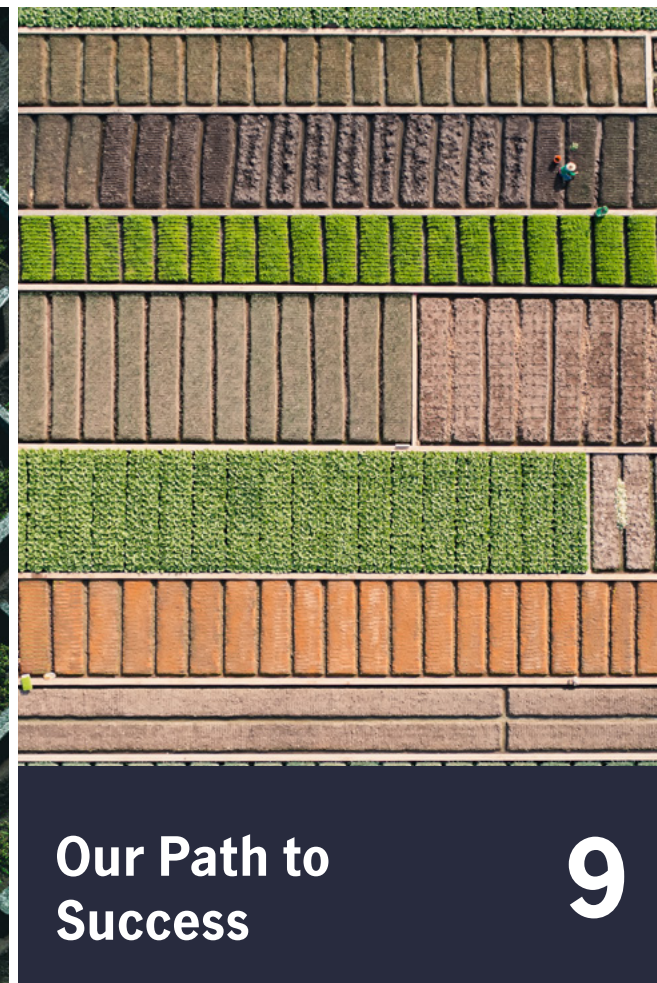
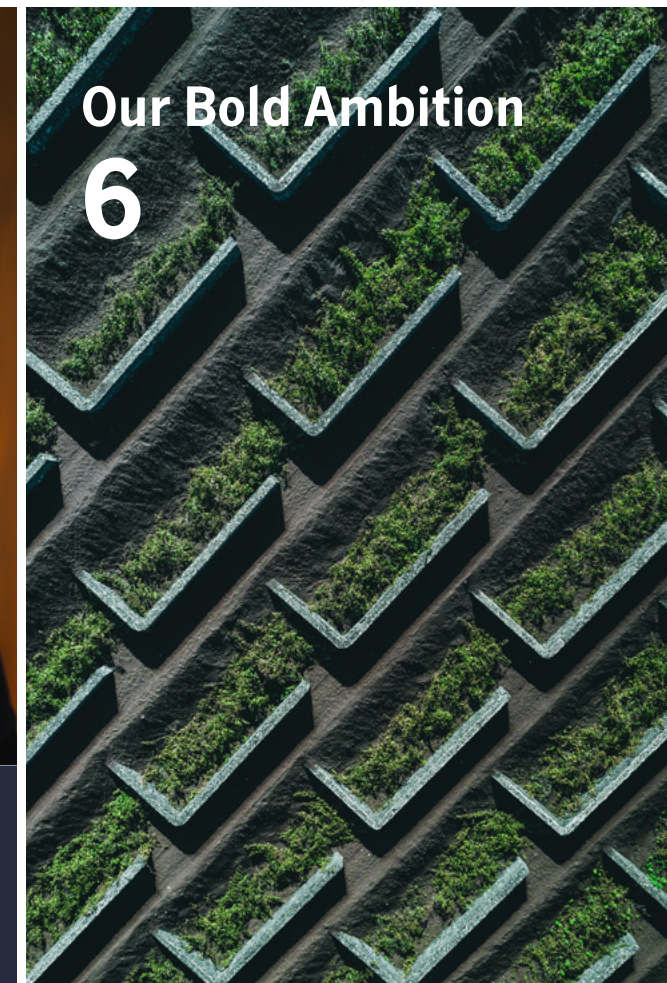
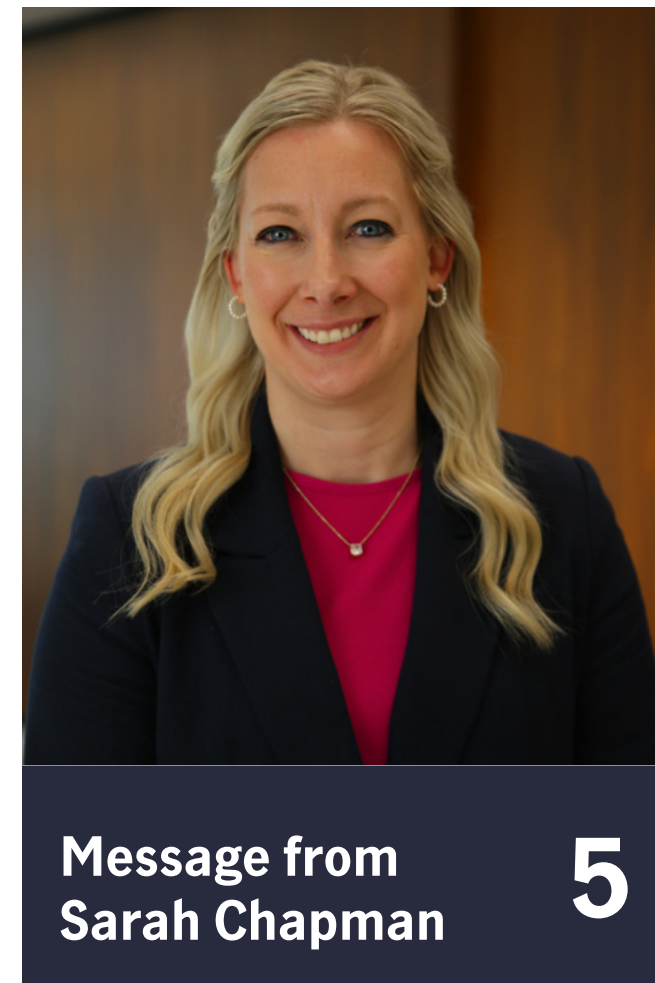
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Cautionary statement regarding the use of this report and forward-looking statements

This report contains forward-looking statements, which are made pursuant to the “safe harbour” provisions of Canadian provincial securities laws and the U.S. Private Securities Litigation Reform Act of 1995. The forward-looking statements in this report include statements with respect to our Climate Action Plan, and statements related to other sustainability-related strategies. Forward looking statements can generally be identified by the use of words such as “may”, “will”, “could”, “should”, “would”, “likely”, “suspect”, “outlook”, “expect”, “intend”, “estimate”, “anticipate”, “believe”, “plan”, “forecast”, “objective”, “seek”, “aim”, “continue”, “goal”, “restore”, “embark” and “endeavour” (or the negative thereof) and words and expressions of similar import, and include statements concerning possible or assumed future results. Although we believe the expectations reflected in such forward-looking statements are reasonable, such statements involve risks and uncertainties, and undue reliance should not be placed on such statements. Certain material factors or assumptions are applied in making forward-looking statements and actual results may differ materially from those expressed or implied in such statements.

The factors and assumptions which may impact the forward-looking statements in this report include limited availability of quality emissions and issuer data; variations in measurement methodologies; varying sector specific decarbonization efforts and our ability to implement decarbonization initiatives; shifting stakeholder and regulatory expectations; evolving economic conditions, technological advancements, and public policies; balancing sustainability commitments with an orderly transition across regions; and strategic, market, reputational, system and environmental risks.

In particular, we have relied on external methodologies to guide our emissions measurement and target setting approach for Manulife’s scope 1 and 2 greenhouse gas emissions target and scope 3 financed emissions targets. Our decarbonization approach described in this report relies on currently available climate science, and on assumptions and estimations based on publicly available information and internal data. We caution that there are inherent limitations and uncertainties with available climate data and scenarios, and with quantification methodologies, that may impact our underlying assumptions and estimations.

Within our General Account, interim targets support us in understanding how our investments can contribute to decarbonization of the real economy and provide guideposts against which to measure our progress towards our long-term commitments.

However, our targets, and our progress toward achieving them, may need to be revisited if the assumptions underlying net zero scenarios and pathways prove incorrect, or if regulatory, economic, technological and other external factors needed to enable such scenarios and pathways fail to evolve. Manulife’s commitment to achieve net zero financed emissions within our General Account’s investments by 2050 does not include investments of our third-party clients, which are managed by Manulife’s Global Wealth and Asset Management business.

Our reporting on progress towards achieving our short-term and long-term targets relies on various external frameworks, methodologies, taxonomies and other standards, which may change over time, resulting in changes to, or restatements of, our reporting processes and results. The availability of quality and reliable data is a notable factor in our ability to set targets, make effective decisions against, and report on our progress towards, our targets and strategic areas of focus for us. While we rely on third-party data sources, Manulife has not independently verified any third-party data, or underlying assumptions of such data, and cannot guarantee the quality of the data used. As a consequence of incomplete, inadequate, or unavailable data, our targets, and our progress toward achieving them, may need to be revisited.

Across all areas of our Climate Action Plan, we have assumed standard growth rates and changes to our business in the development of our targets and decarbonization approaches. Any changes to our business, including, our own investment, financing, underwriting and lending activities, may have a material effect on our ability to achieve our targets and to decarbonize.

Important information about risk factors that could cause actual results to differ materially from expectations and about material factors and assumptions applied in making our forward-looking statements may be found in our most recent Annual Report under “Risk Management and Risk Factors Update” and elsewhere in our filings with Canadian and U.S. securities regulators. The forward-looking statements in this report are, unless otherwise indicated, stated as of the date this report is issued and are presented for the purpose of assisting stakeholders in understanding how we intend to achieve our decarbonization commitments set out in our Climate Action Plan and may not be appropriate for other purposes. We do not undertake to update any forward-looking statements except as required by law.

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The purpose of this report is to outline our plan to implement decarbonization efforts set out in our Climate Action Plan for our operations, our General Account investments, and our products and services, and outline specific steps to achieve our targets.

While we continue to make progress in achieving our targets, our approach will be iterative and expanded over time as we continue to implement the transition activities outlined in this report.

We will also look to disclose our progress on our implementation in a transparent and timely manner.

We have leveraged external guiding frameworks, such as the Glasgow Financial Alliance for Net Zero (GFANZ) net zero transition plan guidance for financial institutions to inform our plan.

Updated as at December 2023

Message from Sarah Chapman, Manulife's Chief Sustainability Officer



Our journey to net zero builds on our mission for every one of the 34 million people we serve worldwide:

Decisions made *easier*. Lives made *better*.

Accelerating a sustainable future is an integral component of Manulife's sustainability strategy, and we remain committed to helping preserve the planet we all share. By working to address climate change, we move closer to fulfilling our mission and giving our customers the confidence to plan toward the future.

We continue to actively incorporate climate change considerations into three key aspects of our business: our operations, owned investments, and products and services.

I'm proud of our journey so far. Given our long-standing investments in timberland and agriculture, as an organization, we remove more carbon from the atmosphere than we emit in our operations. We have also developed science-based targets in support of our commitment to a net zero General Account investment portfolio by 2050 and increased our ambition to reduce operational emissions in line with global ambitions. Our efforts to advance sustainability have been recognized by leading institutions such as the Global Real Estate Sustainability Benchmark (GRESB), Corporate Knights, and the Dow Jones Sustainability Index.

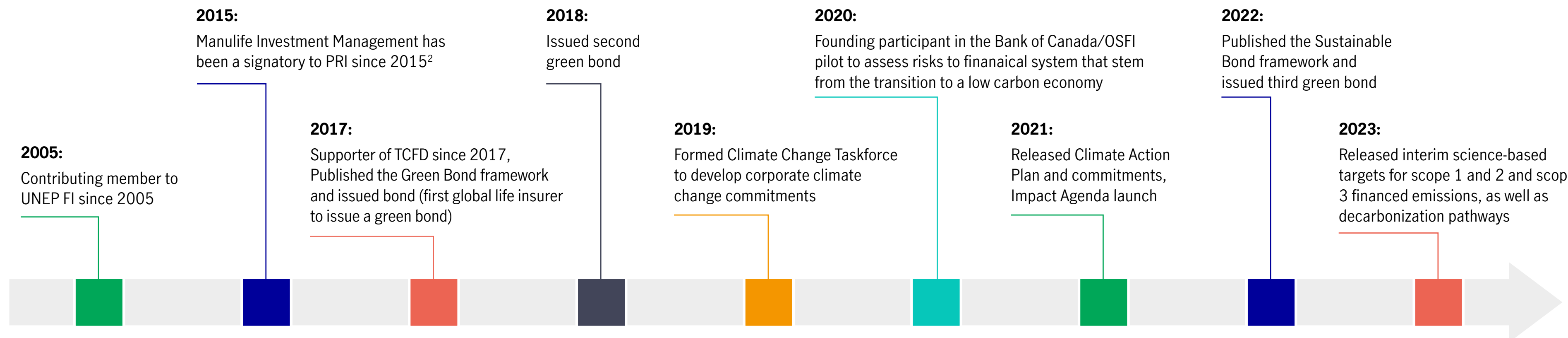
Our climate action journey is evolving as industry and science progresses, and our approach to decarbonization is no different. As we share this update on our Climate Action Implementation Plan, we remain in a pivotal decade for climate action.

Today, the global average surface temperature is already around 1.2°C above pre-industrial levels, prompting heatwaves and other extreme weather events, and greenhouse gas emissions have not yet peaked¹.

Manulife faces complex operational challenges, particularly in hard-to-abate sectors such as agriculture. Climate scenarios and models continue to evolve, as do the methodologies and frameworks that continue to guide our efforts.

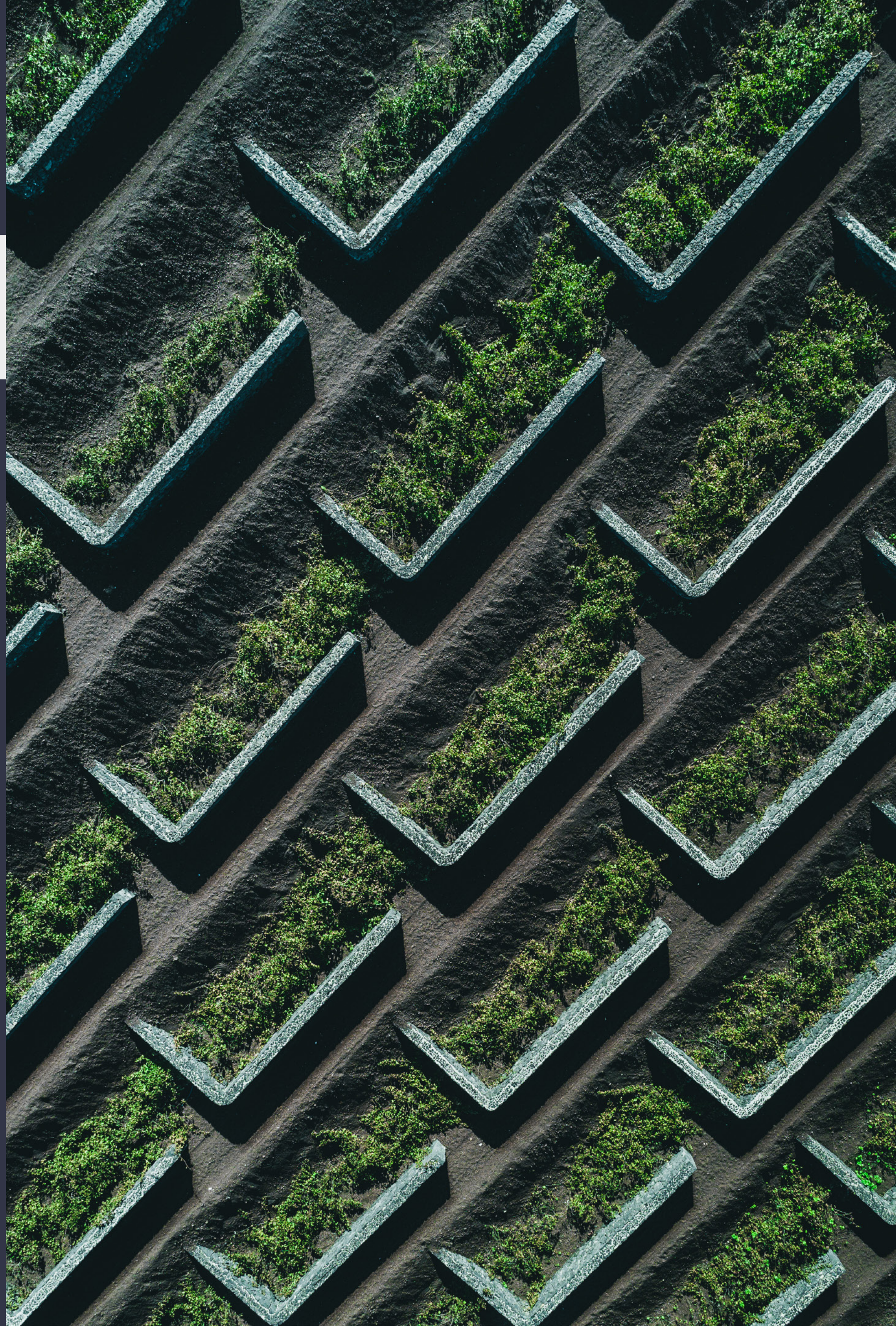
We are not alone on this journey. There are many stakeholders who, through individual and collective action, play a critical role in helping to define the state of our future, including our peer organizations, academics, and governments. A renewed effort including stronger international support will be vital to tackle the obstacles ahead.

As a long-term investor, life insurer, and asset manager, we seek to manage climate risk in our business lines and investments and capitalize on opportunities to participate in the just transition to a global low carbon economy.



Our Bold Ambition

Manulife's Climate Action Plan
The just transition imperative



Our Bold Ambition

As a business, we are stronger when people and the planet thrive. Manulife recognizes the threats posed by climate change to our business, public health, and the livelihoods of the communities in which we operate, and the urgent need to preserve the quality of our natural environment.

This includes how we manage our operations, how we make investment decisions, and how we develop and offer financial products and services.

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Manulife's Climate Action Plan

Our Commitments

In 2021, we released our first Climate Action Plan. Since then, we have made progress across all three pillars of our plan.

Our Operations³:

Reduce the emissions footprint of our operated assets

We are developing solutions to reduce absolute scope 1 and 2 emissions by 40% by 2035⁴, with an immediate focus on decarbonizing assets we both own and operate.

Our General Account Investments:

Invest in a sustainable future

We are mapping out a pathway to a net zero General Account investment portfolio by 2050 and working to achieve near-term science-based improvements in the carbon footprint of power generation project finance and listed debt and equity investments^{5,6}.

Power generation project finance:

- 72% in per Kilowatt-hour (kWh) reduction in emissions intensity from project financing activities by 2035 and/ or in line with a 2035 International Energy Agency (IEA) target intensity of 0.14 kgCO₂e/kWh.

Listed debt and equity, excluding sovereigns, in all other sectors:

- Reducing portfolio temperature from 2.9°C in 2019 to 2.5°C on a well-below 2°C pathway by 2027, based on issuer's total value chain activities (scope 1, 2, and 3 emissions).
- Reducing portfolio temperature from 2.7°C in 2019 to 2.3°C on a well-below 2°C pathway by 2027, based on issuer's operational activities (scope 1 and 2 emissions).

Our Products and Services:

Build solutions to climate challenges

We are creating investment products that solve investor needs and contribute to a more sustainable future. We are enhancing the resilience of our life and health insurance products in light of climate change and are evaluating necessary steps to better understand the impact of climate on morbidity and mortality.

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Despite the urgency of action on climate, the transition to net zero will not follow the same pathway in every sector, across every region, and in every economy⁷. Practical activities that are necessary to achieve meaningful reduction in emissions have impacts on the real economy.

In practice, managing these climate risks in the real economy may mean we make decisions that impact our emissions footprint negatively in the short-term, such as providing funding to emissions-intensive utilities to implement abatement technologies.

Transitions are never easy and in the short-term, can be inflationary, impacting everyday families in terms of jobs, bill payments, and costs of goods. We are aware of the risk of “short-termism” and collateral damage or counterintuitive impacts on climate, as financial institutions face increased pressure to do more.

At the same time, setting aside climate considerations, improvements in energy independence and security, enabled by technologies like solar photovoltaics (PVs), have significant long-term potential to reduce exposure to volatile commodity prices. A just transition seeks to minimize the impact on affordability and accessibility of energy and optimize social and economic opportunities.

It is imperative our decisions consider our presence in emerging markets, where we have a substantial and growing presence. The pace of change in emerging markets compared to Organisation for Economic Co-operation and Development (OECD) countries, the societal impact of a transition and its impact on consumers and labour, and existing inequities in financing are factors we consider as we work in these regions.

Our approach to transition considers our presence in emerging markets

Manulife's global footprint is growing. Beyond insurance, we support individuals and families across Asia in building and preserving wealth. Consideration of regional contexts in the achievement of our Climate Action Plan is necessary – as our business grows in Asia, the relatively high-emissions intensity of local grids and lower disclosure overall will have implications to our emissions, including the emissions of our investments. Expectations that are considered standard in North America and Europe may not translate into actionable change across our Asia footprint. Energy markets are unique, with typically higher levels of government ownership and control of key utilities and infrastructure, and assets are younger, meaning early retirement is more costly. Nonetheless, acting now to avoid the worst impacts of climate change is critical with countries most vulnerable to climate change-related risks and highly disaster prone.

Manulife is committed to exploring transition and climate resilience risks and opportunities in Asia markets and we are actively engaged with our local regulators on the matter. Many countries in Asia are already investing in cleaner power generation technologies. Renewable energy is becoming more cost competitive compared to fuels such as coal. More than half of the newly installed onshore wind and solar capacity globally comes from mainland China. In Singapore, the government has set a progressive schedule for carbon taxation, the proceeds of which will be used to support decarbonization efforts, the transition to a green economy and to minimize the impact on businesses and households. In Vietnam, Manulife supported as the anchor investor, deployment of Vietnam's first onshore green bond issued by a leading local financial institution. This investment brought the green bond concept into the Vietnam's financial sector, demonstrating how Environment, Social, Governance (ESG) integration and green investment work in the local emerging market.

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Front and center to all decision-making with respect to our climate objectives is the goal of “real-world” decarbonization. What does this mean? Simply put, the actions we take to manage emissions of our business should be reflected not just in improvements to our own emissions but be felt across the real economy. This approach focuses our decision-making towards better outcomes for our business at the same time as contributing to deployment of solutions across the economy.

We recognize the significance of the role we play and continue to evolve in alignment with the latest science. This implementation plan outlines significant steps forward in our journey to net zero, and our approach to decarbonization. That said, our implementation plan remains in progress and will evolve with iterative and incremental improvements. We will also look to disclose our progress on our implementation in a transparent and timely manner.

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Our Operations

Among many other activities, Manulife is a steward of real assets (real estate, timberland and agriculture assets), including assets owned by third-parties.

In the near-term, we are focused on targeted climate interventions in assets where we are able to exercise the greatest degree of influence – namely, the assets we directly own and operate, which are responsible for close to half of our real assets' scope 1 and 2 emissions. Taking this degree of influence approach, we are able to take effective actions to decarbonize our General Account portfolio of real assets. The decarbonization of these assets can be accelerated in our current decarbonization pathway.

Across our scope 1 and 2 emissions, our targeted climate interventions in assets will focus on the 47% of emissions in assets that we both own and operate⁸.

Whether through explicit contractual terms, such as the Sustainable Building Standards for our global real estate portfolio, or through corporate collaboration, we seek to be partners in helping decarbonize tenant-operated as well as third-party owned assets. We will continue to work to engage with clients to understand their own climate objectives and challenges. As we make progress on our decarbonization commitments, we plan to expand and iterate on our approach, and gradually address the full scope of our operational emissions, including those beyond our direct influence.

The following resources provide further details on our journey to date and on our approach to climate-related risks and opportunities management at Manulife and Manulife Investment Management:

- [Sustainability Strategy | Manulife](#)
- [Sustainable investing | Institutional | Manulife Investment Management](#)
- [Real Estate | Manulife Investment Management](#)
- [Timberland | Manulife Investment Management](#)
- [Agriculture | Manulife Investment Management](#)

Greening where we work

Manulife occupies a significant number of leased premises around the globe and rely on our landlords and property managers to support decarbonization efforts. For properties such as Manulife's Global headquarters at 200 Bloor Street East, which is owned by Manulife, operated by Manulife Investment Management, and for which day-to-day property management is supported by a third-party, partnership will be critical in developing and implementing asset specific decarbonization plans.

To address emissions associated with our broader rental footprint, where we may have less direct control over key operating decisions, we have begun utilizing green leases across the globe including in Canada, the United States, and the Philippines, in over 10% of office leases so far. These leases outline expectations including aspects such as green building certification, energy performance ratings, and sustainability programs.

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Thinking beyond emissions boundaries

The Greenhouse Gas (GHG) Protocol guides our emissions accounting inventory, in line with best practices. The inventory divides emissions based on a control approach – in our case, Manulife utilizes the operational control approach, which can include third-party owned assets.

While we may have operational control of third-party forests, farms, and buildings, as a trusted steward to our clients, we have a responsibility to consult with these asset owners on critical decisions impacting their portfolios. Decarbonization initiatives can come with near-term costs. Certainly, these costs can be complementary of long-term asset value appreciation, management of transition related risks, and have potential to improve the productivity of assets. The investment time horizons and objectives of our clients additionally determine their support for implementation of decarbonization initiatives.

We will be best positioned to achieve our commitment to emissions reductions by 2035 with the vital support of our clients. Decision making authority on assets we do not own resides with the owner – which can include third-party asset owners like institutional clients. Prioritizing the assets we have greatest influence over in the near-term comes with clear benefits to clients.

Lessons learned from decarbonization of our owned and operated real assets can support the establishment of partnerships and demonstrate the feasibility of early-stage climate solutions.

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Get to know the assets we operate

Timberland and Agriculture

Land assets under our operational control represent approximately 2.5 million hectares. The management of these assets involves over 600 operations professionals, including foresters, farmers, and property management staff. These are the individuals on whom the decarbonization of our assets depends. As a steward of a key component of the low-carbon transition – wood – unlocking further value for a low-carbon, renewable, recyclable building material is a priority. 100% of our managed forests are sustainably certified by third parties and in 2020, our U.S. agriculture portfolio became the first third-party certified farmland under the outcome-based sustainability standard Leading Harvest.

Scale of the challenge

Day to day timberland and agriculture operations vary based on many factors such as, type, scale, and environment. This results in a variety of emissions sources, including, prescribed burns, fertilizer use, fuel use, and electricity. Our timberland operations have de minimis scope 2 emissions, and the vast majority of scope 1 emissions are biological (fertilizer and controlled burns).

Our agriculture operations have substantial scope 1 emissions from fleet vehicle fuel combustion and fertilizer use. Scope 2 emissions in our agriculture operations are from electricity consumption.

Given the complexity of these operations and limited existing pathways upon which to build from, we will need to employ outside the box solutions.

“For us, the idea behind decarbonization is to use what we have, stay as local as possible, reduce as many extra inputs as possible, build healthy soil, and grow healthy trees that produce high-quality fruit while removing carbon.”

— Casey Vetsch, Agriculture Quality Assurance Specialist

Real Estate

Our global real estate portfolio operates across 10 geographies in 34 cities. Our managed portfolio of 73 million square feet includes office, industrial, multi-family, and retail assets that Manulife Investment Management actively manages, with a market value of C\$24 billion⁹. The majority of our global real estate portfolio is certified by leading bodies such as Leadership in Energy and Environmental Design (LEED), Building Owners and Managers Association (BOMA Best), Energy Star.

Scale of the challenge

Like timberland and agriculture assets, real estate emissions too vary by type, scale, and environment. For real estate, scope 2 emissions come from electricity, steam, and chilled water, while scope 1 emissions result from fossil fuels (i.e., natural gas, diesel) and fugitive emissions from refrigerant leaks.

As more electricity generation switches to renewable sources in regions with high grid emission factors, our real estate portfolio will benefit with corresponding reductions in scope 2 emissions.

While more immediate solutions to decarbonize real estate operations are available to us compared to our forest and farm operations, most combustion-based space heating and hot water equipment installed to date in North America could, under normal circumstances, remain in operation beyond 2035.

Replacing this equipment requires real estate businesses to tap into their capital expenditure allocations ahead of the projected replacement timelines in order to align electrification with current decarbonization pathways. These equipment operating cycles are often incompatible with climate goals.

“Our real estate Sustainable Building Standards define requirements and best practices for our third-party property managers and encourage improvement of attributes that help mitigate climate risks.”

—Scott Gordon, Head of Real Estate Asset Management, North America

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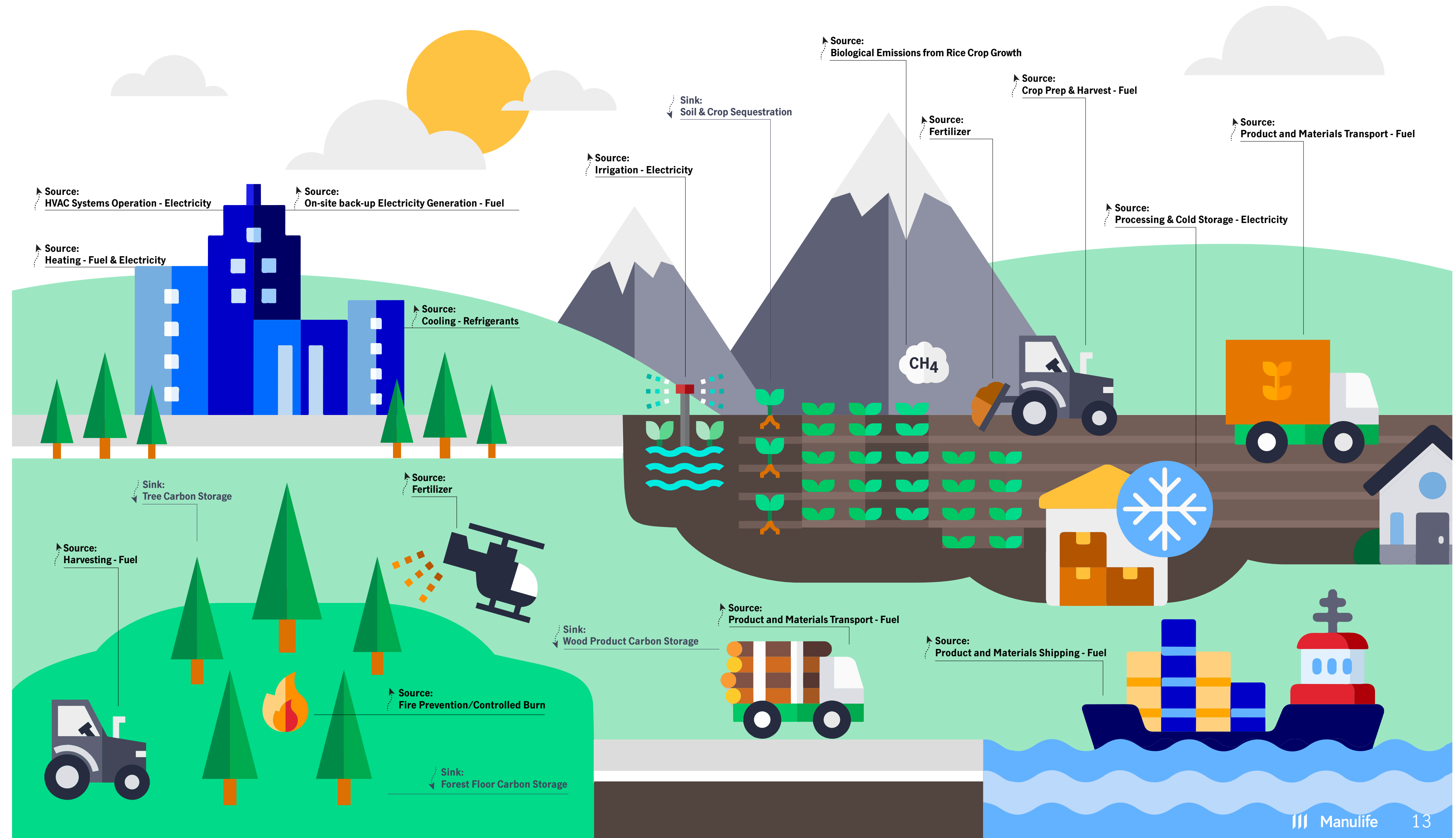
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GHG sources and sinks¹⁰



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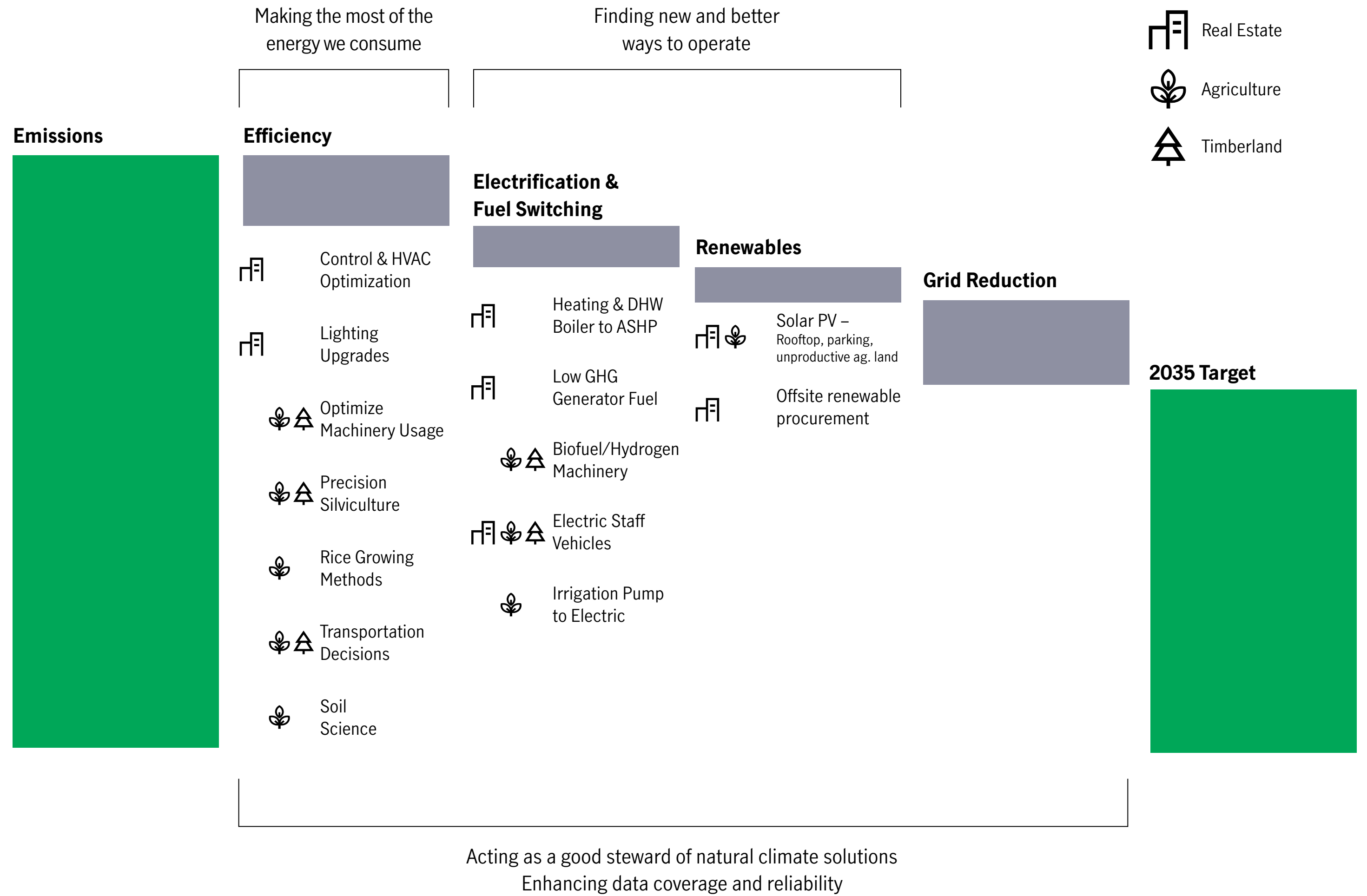
Decarbonization pathway and plan

In pursuit of emissions reductions in our real estate, timberland, and agriculture assets, we are focused on a suite of methods. Our primary levers of decarbonization include efficiency, electrification and fuel switching, and renewables, as well as advancing natural climate solutions, while we continue to prioritize enhancing our data quality. These opportunities have been identified and evaluated on the basis of relative cost and potential impact at the asset class level, and will inform asset-specific plans to support decision-making and ongoing progress monitoring.

In our forests and farms, we are focused on the efficiency of vehicles, heavy equipment, and irrigation; fertilizers and prescribed burning; and the soil science of regenerative farming and other sustainable agricultural practices, such as rice cultivation methods that emit less methane. As we plan trials for these pre-feasibility stage technologies, we expect to adjust our roadmaps in line with their gradual maturation.

In our buildings, we are focused on aligning equipment replacement cycles, including HVAC, lighting, and heating infrastructure, with the objective of finding low-carbon solutions. Manulife Investment Management now includes decarbonization metrics as part of our real estate platform's annual incentive plans and we have engaged partners to support our roadmap for the global decarbonization of our portfolio. Over half of our real estate emissions footprint—comprising 42% of our real estate assets under management (AUM)— have detailed decarbonization plans to guide asset managers' decision-making.

The following is illustrative of the relative scale of potential decarbonization levers across our real estate, timberland, and agriculture assets¹¹.



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i. Making the most of the energy we consume

Our efficiency efforts focus on continuing to reduce energy inputs through retrofits. Several aspects across real estate, timberland and agriculture offer solutions, including upgrading to energy efficient alternatives (such as LED lighting), integrating carbon into logging transportation decisions, and precision silviculture, amongst other opportunities.

We believe finding new and better ways to operate has potential benefits that extend beyond climate mitigation. Reducing consumption of energy can mitigate climate transition risk in the long-term, particularly in jurisdictions contemplating added costs on carbon.

ii. Finding new and better ways to operate

Reducing demand for fossil fuels is key to the net zero transition. Electrification and fuel switching will reduce our reliance on high-carbon fuels such as diesel and gasoline, with a preference for lower carbon alternatives. Technology plays an important enabling role. We intend to take advantage of proven technologies, such as heat pumps, particularly in real estate.

As “hard to abate” sectors, our forest and farm operations will also explore the cost-effectiveness of earlier-stage technologies, such as biofuel and hydrogen-based heavy equipment operations. We will also find better ways to optimize how we use fertilizer and undertake prescribed burns.

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 current science.

We will also look to invest in onsite renewable energy sources across our assets to further support decarbonization.

A key aspect of potential real estate decarbonization resides outside our direct control—in the decarbonization of the electric grid. Rapid upscaling of renewables by utilities in North America, are expected to benefit all users of electricity. In the United States, 45% of electricity generated is expected to be from zero carbon, renewable sources by 2030 and a reduction of nearly 40% in tCO_{2e} emissions from electricity is anticipated by 2030, relative to 2005 levels¹².

Our General Account is an active provider of capital to these utilities providers and is supporting ongoing grid decarbonization efforts.

Growing the good

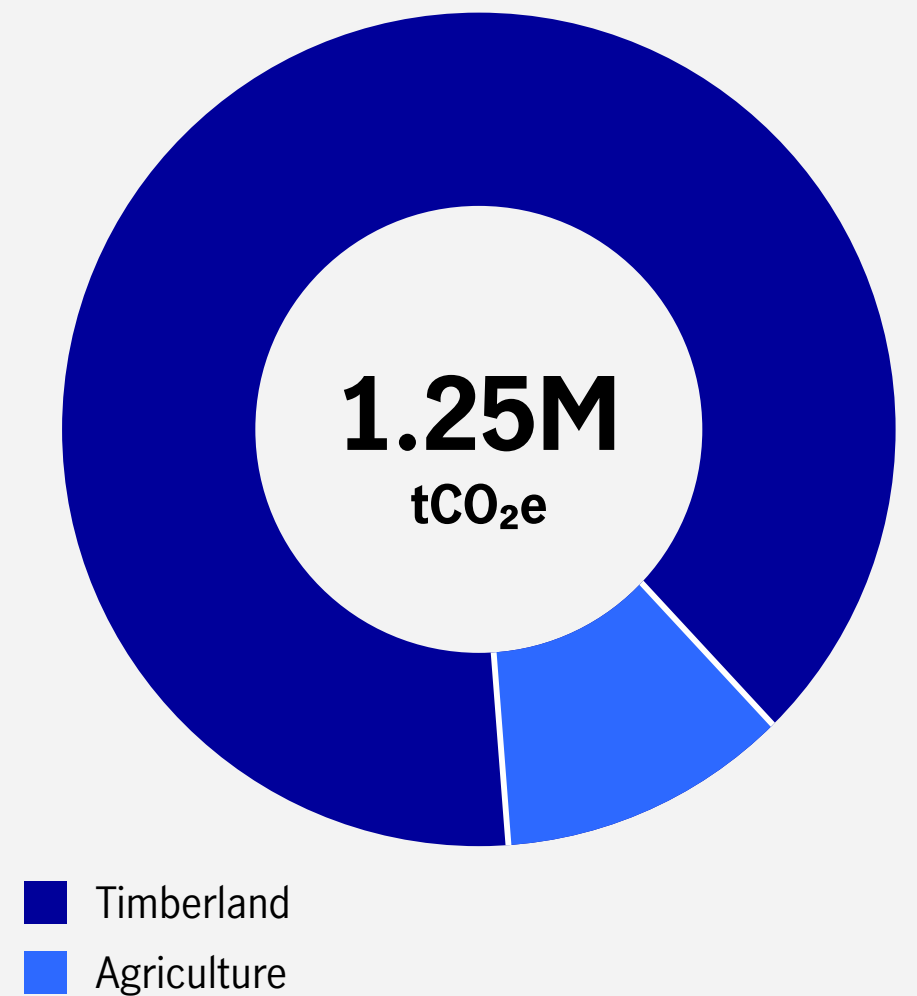
While absolute emissions reductions are an important aspect to addressing climate change, global net zero goals will not be achieved without emissions removals due to limited alternatives to decarbonization in some sectors.

Removals include direct air capture through technological and nature-based solutions. Plants and soils in terrestrial ecosystems currently absorb approximately 20% of human-derived GHG emissions¹³. Harnessing this capability represents 37% of the opportunity to cost-effectively sequester carbon, which is what is needed by 2030 to keep global warming below 2°C¹⁴.

Manulife’s sustainably managed timberland and agriculture assets are unique to many other financial services companies in their potential for GHG removals where carbon is stored in forests and soil. Removals do not count toward absolute emissions reductions and mitigation remains a key priority.

However, without consideration of emissions removals alongside reductions, the full story of Manulife’s climate action and impact would be incomplete, particularly in light of the important role of forests in preserving biodiversity and other natural capital services which support adaptation to changing climatic conditions.

Total Removals (5-year average)¹⁵



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iii. Acting as a good steward of natural climate solutions

Forestry and agriculture are recognized as natural climate solutions (NCS) for their ability to provide one-third of the cost-effective climate change mitigation required to achieve the Paris Agreement. The co-benefits of NCS to climate and nature are increasingly evident. In agriculture, regenerative practices such as growing cover vegetation that lead to healthier soils, are recognized as critical for capitalizing on agriculture’s potential not only to feed the world, but to combat climate change and nature loss. Most NCS pathways are focused on carbon removal and storage (e.g., reforestation, improved forest management). This is reflected in our business, which to date has issued over 6 million tonnes of carbon credits¹⁶.

We believe that carbon will become a more integrated value driver of timberland and agriculture in the transition to net zero. Measurement practices continue to evolve and demand for credible nature-based solutions is growing from investors and companies. The value of carbon removal and other ecosystem services is increasingly tangible. These factors are creating the opportunity for new timberland investment strategies that are focused on climate change with co-benefits and carbon value that build on sustainable management practices.

“The carbon removal potential of our forestry investments offers us an immense opportunity to contribute to climate action and the sustainability of our planet. But what makes me proud of our global operations team is that they are not satisfied to stop there because we know how important our role is here – they have accepted the challenge to reduce emissions with open arms, and they are getting really creative about how to do it.”

—Eduardo Hernandez, Global Head of Timberland Operations

Due to our management approach, many of the properties we manage have demonstrated the opportunity to develop carbon offsets and insets that can help clients meet climate goals and generate incremental revenue. Carbon credits generated from carbon projects such as improved forest management and afforestation, or reforestation, can be sold as carbon offsets into voluntary and certain compliance markets. Carbon credits can also be transferred directly to companies whose value chains include carbon projects and to investors in underlying assets included in carbon projects—these are carbon insets.

In our timberland operations, we continue to manage 100% of our global forests to achieve independent third-party sustainability certifications under the Sustainable Forestry Initiative® (SFI®) and/or Forest Stewardship Council® (FSC®). Within Australia and New Zealand, some of our forests carry dual FSC® and PEFC (Programme for the Endorsement of Forest Certification) certifications.

iv. Enhancing data coverage and reliability

We require reliable data to make good decisions in alignment with our decarbonization plan. Emissions accounting guidance for forests and farms continues to evolve and relies on our ability to collect data from operations that are not always well-equipped to provide accurate information. As these are biological rather than purely mechanical assets, relatively few of their constitutive chemical processes are metered. This requires us to focus on novel measurement methods, including advanced LiDAR (Light Detection and Ranging) and remote sensing technologies, as well as emerging solutions such as hydrogen-powered heavy equipment and nitrogen-inhibiting fertilizers that mitigate nitrogen loss and enhance soil health.

We are working to attain accurate property-level data for fuel use (diesel, gasoline, propane, and natural gas), which we currently collect at regional level and allocate pro-rata to individual properties. We are in the process of onboarding high-level agriculture operations management software that will enable us to consider emissions-relevant operational metrics at the property and individual field level. With field level data, we will monitor assets and build emissions inventories with greater precision, which we believe will allow for greater context and strategy in our decarbonization efforts in the future.

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Notable decarbonization components with timeline objectives

		'23 Actions	'24-'25 Actions	'26-'30 Actions
Data Coverage		Inventory portfolio opportunities and close data gaps		
Decarbonization plan coverage		55% real estate emissions with a decarbonization plan	80% real estate emissions with a decarbonization plan	100% real estate emissions with a decarbonization plan
Operational buy-in		Bi-weekly GHG working groups	Operations ownership of asset-specific plans	Operations leadership of new initiatives
Timberland carbon inventory		LiDAR upgrades (4/7 regions)	LiDAR upgrades (7/7 regions)	HWP-carbon optimization curve all assets
Efficiency		Continue to reduce inputs through retrofit and optimization		
Retro-Commissioning		20% of high consumption real estate assets with RCx	50% of high consumption real estate assets with RCx	100% of high consumption real estate assets with RCx
Optimize machinery use		Investigate opportunities for efficiencies	Trial efficiency opportunities at min. 5 assets	Efficiencies deployed portfolio-wide
Lower emissions shipping		Study of New Zealand shipping options	Trial low-emissions shipping	Transition to cost-effective low-emissions shipping
Electrification & Fuel switching		Conversion of fossil fuel-burning equipment to low carbon alternative & Fuel switching		
Natural gas boiler fuel switching		5% Natural gas emissions in capex plan to fuel switch	15% Natural gas emissions in capex plan to fuel switch	50% Natural gas emissions in capex plan to fuel switch
Biofuel/ hydrogen		Investigate opportunities with low carbon fuel	Trial low carbon fuels in machinery and generation	Portion of diesel converted to low carbon substitute
Electric machinery		Begin inventorying existing rolling stock	Trial with a percent of assets machinery	Deploy electric machinery wherever cost effective
Renewables		Invest into onsite renewable energy		
Solar PV implementation		Inventory existing renewables & scan opportunity	2MW+ of onsite renewable generation in capex	5MW+ of onsite renewable generation in operation

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We invest capital to achieve returns to support the operations of our business and ensure we meet the promises we make to our insurance customers worldwide. We invest in public and private markets that support developed and growing economies, create and sustain jobs, and contribute to improvements in quality of life globally.

Climate change will have a systemic impact on our global economy. As investors, we intend to seize the opportunity presented by the transition to a low-carbon economy.

At the same time, we believe that transition risks will increasingly create negative market conditions for unabated, carbon-intensive activities.

Further, physical risks associated with a changing climate, such as increases in extreme weather, have potential negative impacts on our investees.

This combination of factors creates a complex landscape in which we need to balance the investment needs of our business and policyholders against an increasingly uncertain range of future outcomes.

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Get to know how we invest

Understanding how we invest is key to understanding the measurement tools and decarbonization levers available to us.

Diversification

Diversification is a central tenet of prudent investment – and our portfolio spans a wide range of asset classes, sectors, and regions.

Scale of the challenge

Each of these aspects, asset class, sector, and geographic location, introduces new variables to the decarbonization equation. As an example of the nuance involved, insurance products sold to consumers in some countries must be supported by investment in the same region, where investment-grade green and sustainable assets may be less prevalent. As we learn more about how these variables interconnect, we expect our plan to evolve with iterative and incremental improvements.

Ownership over the long-term

Our investments can span lifetimes. Effective management of the underlying liabilities of our insurance services is key to our success. We must carefully match the investments we make today, to the liabilities we might incur tomorrow, a decade or several decades from now.

Scale of the challenge

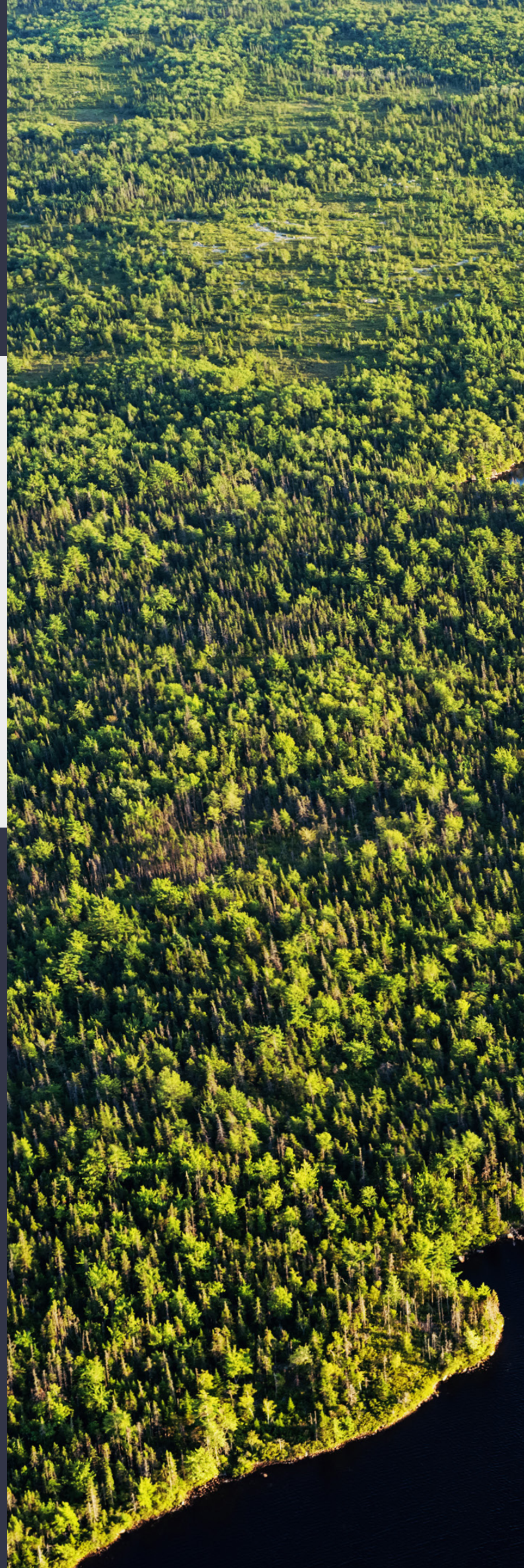
As a primarily buy-and-hold investor with an investing approach that contemplates staying invested through economic cycles, prudent due diligence that takes account of climate risk is essential to achieving positive investment outcomes. We believe efforts to decarbonize our portfolio are in alignment with prudent management of our long-term obligations. At the same time, the nature of our long-term liabilities and associated regulatory requirements reduces the real-world impacts of divestment and exclusionary strategies solely based on company or sectoral carbon emissions.

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Balance

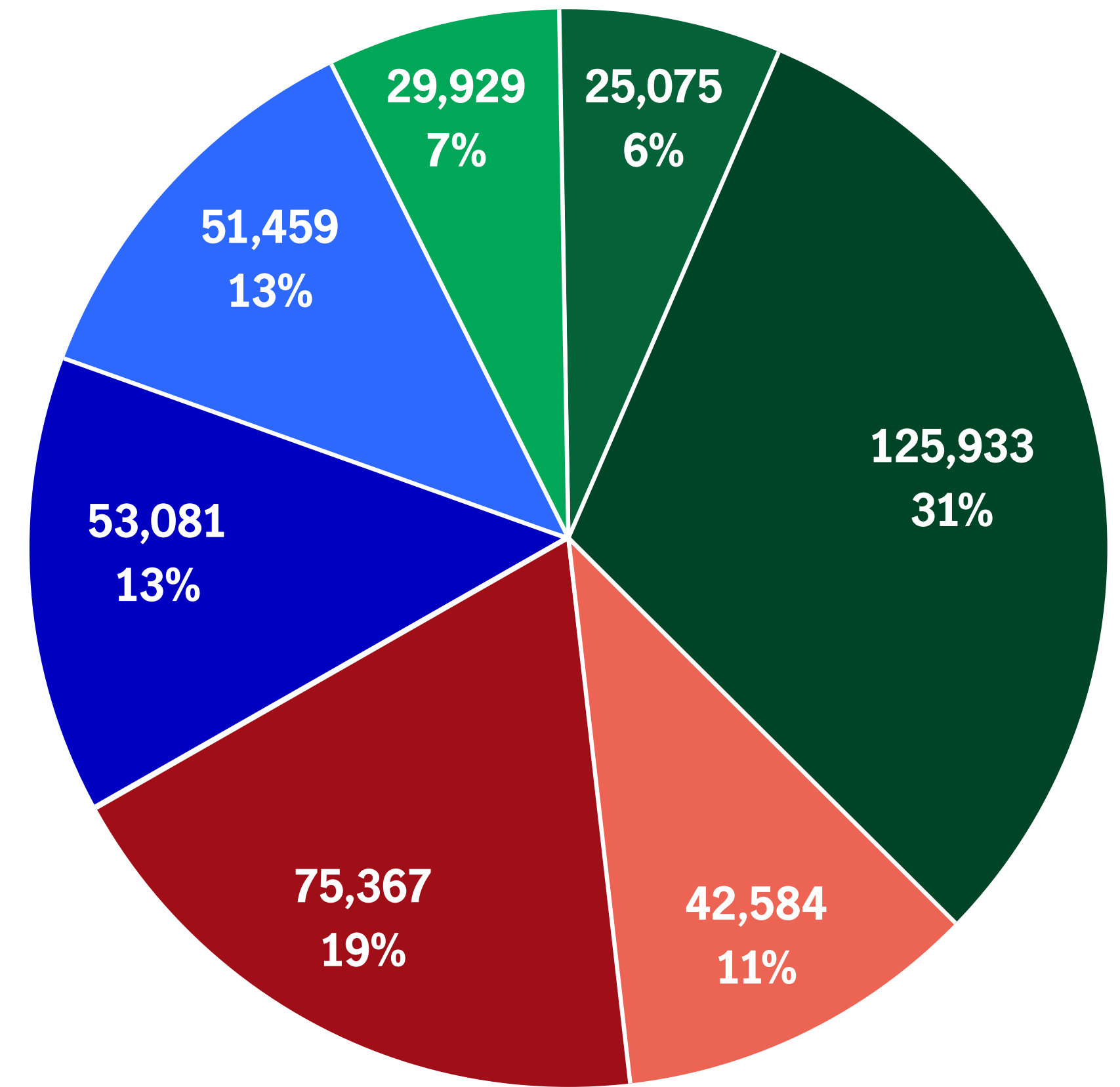
We operate in a highly regulated environment, and it is within our regulatory responsibilities that we determine our risk appetite for certain investments and strategies. We must carefully balance risk and return to maintain certain capital requirements and have limited appetite for aggressive, high risk, or speculative investment strategies. This dynamic leads to a portfolio concentrated in debt instruments, which constitute approximately 75% of the General Account's total investment portfolio¹⁷.

Scale of the challenge

The debt-weighted composition of our portfolio means that we face unique challenges relative to entities with a higher concentration of equity-related investments. For example, issuer-level information regarding emissions or decarbonization targets is often much more limited, and our direct ability to engage and influence management teams' actions is impacted by the fact that debt investments do not have voting rights typical for equity investors. That said, we seek to participate in an active dialogue with management teams regarding their decarbonization activities, especially for those in higher-emitting sectors. Additionally, despite the importance of financing early-stage investments in yet-to-scale technologies, our ability to participate in this area is highly limited, as the risk profile is not an appropriate fit for our business.

General Account invested assets

(CAD \$M, unaudited, as of June 30, 2023)



- Listed equity
- Sovereign & sub sovereign debt
- Alternative long duration
- Listed debt
- Private placement debt
- Mortgage
- Other

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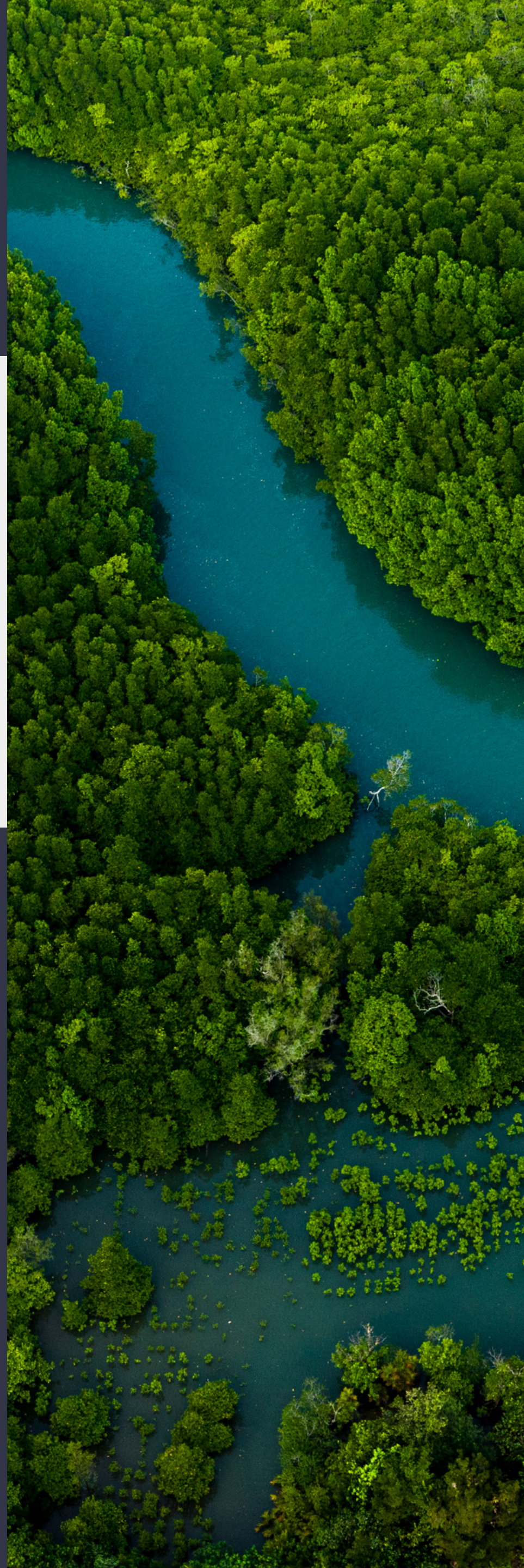
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Playing Our Part



Decarbonization pathway and plan

Three key performance indicators lay the groundwork for managing our portfolio in line with our climate commitments. We expect that not only these pathways, but also the best metrics against which to measure our alignment, may evolve over time.

To provide oversight of our evolving strategy, a General Account Sustainable Investments Committee was formed in 2023. It includes representatives including our Chief Investment Officer, Chief Sustainability Officer, and critical leaders across the General Account in Compliance, Credit Risk, Portfolio Management and Finance, and meets on a quarterly basis.

To inform incorporation of material ESG factors into ongoing investment analysis, including climate-related risk factors, the General Account maintains ESG Guidelines and incorporates internal ESG scores into Annual Review processes.

Measure	Why it matters	Target (if applicable)
<p>Sector exposure Our exposure to sectors most exposed to the transition risks and/or opportunities presented by the low carbon economy – including green investments (e.g., renewables, sustainable forests) and high-carbon sectors (e.g., coal).</p>	<p>Helps us understand access and ability to generate positive returns from opportunities created by the transition to a low carbon economy, so we may design better mechanisms to direct investment teams towards the best opportunities for Manulife’s diversified investment profile</p> <p>Indicates our relative exposure to sectors most exposed to climate transition risks, such as costs on carbon, enabling us to incorporate these risk factors in future deals (e.g., pricing, tenor)</p>	
<p>Financed emissions The actual emissions of the assets we own, as allocated based on our ownership percentage and guided by the accounting standards of the Partnership for Carbon Accounting Financials (PCAF) – these are estimated utilizing publicly available disclosures by issuers and industry averages where data does not exist and is not inclusive of all asset classes at this time.</p>	<p>Provides insights on scale and scope of issuers. Tracked over time, this enables the identification of leading and lagging performers on carbon</p> <p>Focuses efforts on most material sources of emissions</p>	<p>Net zero financed emissions by 2050</p> <p>72% reduction in emissions intensity per kWh of power generation project finance activities or maintenance of portfolio intensity in line with 2035 IEA target intensity of 0.14 kgCO₂e/kWh¹⁸</p>
<p>Portfolio temperature score The projected trajectory of emissions for the assets we own, converted into a temperature score – this score is developed in line with science-based methodologies and based on the forward-looking emissions targets of our issuers and reflects their alignment to possible warming scenarios.</p>	<p>Indicates exposure to issuers failing to act on climate change now, so we may more closely monitor their progress and where appropriate, seek to engage and/or modify the investment approach</p> <p>Provides insights into the long-term alignment of portfolio to global goals, such as the Paris Agreement, using a metric that is forward-looking and comparable across sectors.</p> <p>Enables decision-making at a portfolio level that is truly meaningful in the context of climate change</p>	<p>16% reduction in listed debt and equity portfolio temperature (°C) by 2027, targeting 2.3°C (scope 1 + 2) and 2.5°C (all emissions scopes)¹⁹</p>

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Data quality and reliability continues to be a significant barrier to appropriate integration of climate factors in investment decision making and limits our ability to accurately project future emissions trajectories of our portfolio over the long-term. We anticipate new and future regulations on emissions disclosure will improve access to reliable issuer emissions data but expect that it will take time for these improvements to be reflected in reliable, verified, and comparable data from our investees.

Where emissions data is not available for investees, we rely on third-party estimated GICs (Global Industry Classification Standard) industry averages. At this time, nearly all scope 3 investee emissions from listed equity and debt are based on data modelled by third-party data providers on the basis of revenue, further limiting data reliability, particularly for commodity companies where revenue is highly variable to market factors unrelated to emissions.

In part due to data reliability and availability challenges, we will need to address known gaps in coverage of our targets and decarbonization plans going forward. As an example, acceptable target setting methodologies for sovereign bonds remain outstanding and accounting methodologies for this asset class are pending GHG Protocol review and approval. Sovereign bonds made up 19% of our baseline portfolio of invested assets and were estimated to contribute up to 50% of our baseline emissions footprint²⁰.

Further, we are primarily focused on the appropriate management of the largest constituents of our investment portfolio and its financed emissions. We have deprioritized some asset classes to enable us to focus our time and attention on the highest impact areas of our portfolio. As an example, despite making up 13% of our AUM, commercial mortgages made up less than 1% of our baseline emissions footprint, with limited strategies immediately available to us at this time for investor engagement.

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i. Financing the development and scaling of real-world decarbonization solutions

In practice, this means dedicating and deploying capital to encourage the expansion of low-emitting technologies and services, to replace high-emitting ones, facilitate emissions removals from the atmosphere and ultimately, accelerate the net zero transition. Given the large and growing pool of such potential investments, these opportunities can often be at varying stages in terms of scale, scope, and risk.

We will continue to grow our C\$45 billion portfolio of green investments²¹.

Manulife's General Account has a long history of financing key infrastructure and power generation projects in North America, Asia, and Europe. This includes C\$1.1 billion in financing to renewable, zero-carbon energy projects, such as wind and solar.

We have established an initial C\$690 million commitment of funds dedicated to deploying capital to transition-related equity investments, with a focus on solutions for high-emitting sectors.

We remain in the early stages of the transition to net zero, with interventions in the energy sector, such as hydrogen or carbon capture and storage projects at early stages of commercialization. We are pursuing scalable opportunities with attractive risk-adjusted returns provide an appropriate match to our liabilities. Our investment officers are rapidly advancing their ability to assess these investments through due diligence and engagement in real energy transition opportunities.

To date, we have screened over 150 potential investments and anticipate our commitment to grow alongside our knowledge and experience.

We finance power generation projects to keep our portfolio in line with IEA targets for emissions intensity per kWh.

The power generation sector is a critical and central enabler of the decarbonization of any consumers of energy. With increased electrification of aspects such as road transport, demands on our electrical grids are expected to grow substantially in the transition to a low carbon economy. Electricity is generated by a diverse mix of energy sources, and geography and technology play important roles in defining the conditions for financial viability of projects utilizing cleaner energy sources. Projects can range from conversions of thermal coal facilities to natural gas to development of new wind farms.

The power generation sector, and project financing activities in particular, are a primary area of focus for immediate decarbonization. As a long-term investor, the sector is a significant target for investment and, as a result, influenced by life and health insurers like Manulife. We remain focused on projects that displace lower efficiency energy sources like coal that best match the long-term liabilities of our business model.

New growth in energy transition

As we have scaled back private equity investment in oil and gas, we are reallocating time and resources to sustainable solutions.

Our investment teams are applying their existing expertise and relationships in the energy sector to finance critical energy transition solutions such as hydrogen, battery storage, and pure-play carbon capture and storage. We are actively screening opportunities across several asset classes, from funds to co-investment to private equity, to drive new growth in energy transition investments.

This work is paying off. Building on existing relationships with partners in the United States and Canada, Manulife is investing in what will be the largest green hydrogen platform in the world upon completion, the ACES Delta hub - taking advantage of local renewable energy resources to split water into hydrogen and oxygen, resulting in zero-carbon hydrogen which will be stored for future use on demand.

Hydrogen as a fuel can play a vital role in companies' emissions reductions plans, including in our timberland and agriculture operations and will be essential in meeting the current intermittency challenge of renewables by providing "on demand" zero carbon options for existing power facilities.

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ii. Aligning portfolio management decisions to credible climate pathways in the real economy (“SBTs”)

Science-based targets, in line with the ambition of the Science-based Targets Initiative (SBTi), have been developed for 42% of our invested assets, covering just under half of our estimated baseline financed emissions footprint. To achieve these targets for our listed debt and equity investments, the largest portion of our portfolio, we need to invest in companies that are already well-aligned to net zero, either by virtue of setting their own ambitious decarbonization commitments or already operating as low carbon emitters. Further, as we prepare to manage long-term transition risks, we seek to tilt our portfolio towards companies that are committed to implementing their own strategies to achieve emissions reductions in alignment with credible decarbonization pathways.

We incorporate emissions reductions commitments of issuers into investment decision-making.

In practice, aligning to credible climate pathways for well-below 2 degrees of warming means management of our portfolio with consideration of the forward-looking decarbonization trajectories of our investees. We are prioritizing investment in companies with trajectories for forward-looking emissions that reflect sufficiently ambitious and achievable reductions in absolute emissions for the scope and scale of their operations.

This approach means we seek to invest in companies that are best positioned for the transition to the low-carbon economy, including management of potential transition risks associated with costs on carbon.

We favour companies which disclose targets that result in absolute emissions reductions, tailored to their sector and operations, and implement appropriate changes in their business to deliver against these targets over time. Disclosure of emissions, in line with global standards, also remains a paramount expectation.

In the net zero transition, all companies and issuances are not equal. We are more heavily focused on high-emitters of scope 1 and 2 emissions in the real economy, with lower emphasis on lower-emitters, such as services companies.

Additionally, we are in the early stages of incorporating assessments of value chain emissions into our investment decision-making processes and anticipate that improvements stemming from new disclosure requirements out of North America, Asia, and Europe will strengthen our ability to effectively assess company emissions for incorporation into future iterations of our transition plan.

iii. Accelerating the transition of high-emitting assets

Targeted efforts to reduce GHG emissions through the accelerated retirement of high-emitting physical assets will be a key area of focus in the next decade. Manulife is supportive of targeted strategies that assist in the managed phaseout of high-emitting assets. We also acknowledge the need for supportive enabling conditions to facilitate investment to transition toward a lower-carbon global economy, such as a sufficiently accommodating and stable policy environment, and the availability of cost-effective alternatives and financial mechanisms. We will continue to evaluate our investment approach toward higher-emitting sectors such as power generation and fossil fuels on an ongoing basis.

We continue to phase down investment in thermal coal, where local contexts enable us to do so.

Unabated thermal coal power generation is the largest single source of GHG emissions globally²², and represents the “lowest hanging fruit” for decarbonization globally. In 2023, for the first time ever, there were no new coal projects under consideration anywhere in either North America or the European Union, and no new coal plants have entered into construction across the OECD/EU since 2019.

We are a source of public and private lending to the utility sector across the globe, with many utility names continuing to earn revenue from coal-fired power generation. This past year we implemented a targeted restrictions policy that limits new investment in the sector. This is with the recognition that all viable science-based pathways depend on abatement of

emissions from thermal coal and a move towards fuels with lower emission intensities. We continue to support companies with credible plans to reduce emissions and track records of decarbonizing their operations in North America and Europe.

Regions which are not currently on track to meet IEA timeframes for a phase out of coal include many Asian markets. With a blossoming middle class and the energy demands of industrial growth, Asia plays a critical role in the carbon transition. India, China, and Indonesia are the only countries to have seen their coal power project pipeline grow in recent years, with the role of coal power long-term likely becoming limited to fill specific grid capacity needs, such as peaking capacity to support high renewables penetration, under relatively stable economic conditions.

At the same time, the relatively short operating age of plants in the region compared to OECD countries necessitates the use of policy and market incentives to retire coal-fired assets early. Manulife is participating in consultations by bodies such as GFANZ on viable pathways for investment and is chair of the Energy Transition Working Group, an initiative of the Asia Investor Group on Climate Change.

We currently do not directly lend to, or have equity in, new projects for thermal coal mining or coal-fired power generation and have no appetite for future investment in new unabated projects in this area. In line with our focus on real world decarbonization, we have the ability to make specific exceptions for projects that are intended to reduce or replace coal consumption.

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We are evolving our underwriting assessment of fossil fuel investments in light of climate change.

The energy transition will take time and is currently taking a disorderly path, despite the urgency of action on climate. In today's environment, fossil fuels, particularly natural gas, continue to play a role in energy diversification efforts of many countries, to bridge the expansion of renewable and zero carbon (i.e., nuclear) energy sources.

We look to only invest with high-quality companies using industry environmental best-practices that are well-positioned to navigate the transition to a net zero carbon economy. We expect oil and gas sector participants across the value chain to adequately address scope 1 and 2 emissions through appropriate decarbonization and abatement strategies for their operations, with a particular focus on methane, for which emissions reductions have an immediate and measurable impact on reducing long-term warming trends. We encourage the sector to improve disclosure of targets beyond emissions intensity reductions to real absolute emissions reduction commitments.

As providers of energy, scope 3 downstream emissions of oil and gas issuers are significant. At this time, there remains continued demand and a need for fossil-based fuels in some regions and sectors. Our efforts are currently focused on downstream users of oil and gas, given the immediate impact in the real economy of reducing reliance on fossil fuel in sectors such as power generation and investment opportunities presented in doing so.

In line with efforts to manage long-term investment risk in the sector associated with the net zero transition, if and when deemed appropriate, we recommend changes to investment limits and/or the investment duration of fossil fuel sector participants. Climate scenario analysis will be an important tool to inform appropriate adjustments to our approach. For example, under current policies, the IEA estimates peaking of fossil fuel consumption by 2030, with relatively stable consumption of oil and natural gas projected longer-term.

We are taking steps, in line with our goal of achieving strong risk adjusted returns, to refine our approach to fossil fuel investments:

- Adjusting tenor restrictions for select issuers and sub-sectors, including those exposed to immediate transition risks, such as changes in local construction ordinances
- Substantially reducing new investment in oil and gas private equity opportunities, where stranded asset risk is greatest
- Proactively investing in energy transition opportunities alongside responsible producers, participating in significant projects that will support direct emissions reductions in the energy value chain, such as investing in projects to sequester carbon or develop low- or no carbon fuels like hydrogen
- Limiting exposure to upstream exploration and production activities, when pricing is not in alignment with the increased transition and stranded asset risks associated with these investments

De-risking early coal retirement

Countries across the world are driving forward towards the milestone of “no new coal” power plants. But what about existing plants?

Early retirement of high-emitting coal fired power plants remains a challenge, particularly for newer plants constructed past 1980. Energy affordability and reliability are concerns, and costs to transition to new fuel sources are often passed through to ratepayers.

Meeting the needs of early asset retirement requires unique financing mechanisms. One such mechanism is securitized debt issuance. We are a user of this mechanism as a provider of debt to electric utilities for the specific purpose of supporting retirement of coal-fired assets.

Debt is uniquely structured to facilitate the near-term retirement of assets in a manner that protects the interests of both customers and service providers, supporting the continued operations of electric utility providers.

Through this structure, Manulife recently facilitated the early retirement of two coal power plants in the northeastern United States. Beyond baseline energy needs, this is an area which faces moderate heat stress as a result of a changing climate, adaptation to which may place further demands on the grid.

With debt funds in place supporting long-term financial stability in light of accelerated asset retirements, the utility can continue to make capital investments to transform a predominantly coal-fired power generation fleet into a more balanced portfolio of low carbon fuel and renewable technologies.

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We believe that the transition to a low-carbon economy is underway, and we expect our portfolio footprint to benefit from decarbonization trends evident across all sectors. To achieve our targets in line with real world decarbonization objectives and at the lowest possible cost, we envision an “all of the above” approach which combines the following strategies:

Allocate

Pursue new investment opportunities that tilt investments towards lower emission intensity, green or transition factors.

We are specifically dedicating funds to investments in this area to complement our existing lending activities in renewables, hydrogen fuels, energy efficiency improvements, and solar ground leases

Further, to drive integration of climate factors into portfolio management decision-making, we are aligning our compensation structure with incentives and pricing mechanisms to support rebalancing of the portfolio towards better performers or away from poorer ones alongside other investment objectives. To this end, we are working to integrate specific climate-related targets into the General Account as a portion of overall investment team compensation, to support these objectives in practice.

Engage and influence

Proactively and constructively providing feedback and supporting portfolio companies to encourage transition, with enhanced minimum due diligence expectations.

We expect portfolio companies to work towards improvement in disclosure of their carbon footprint, starting with scope 1 and 2 emissions, and for issuers with material impacts, to set targets to achieve absolute emissions reductions in the real economy.

10% of issuers were responsible for 90% of measurable scope 1 and 2 emissions in our listed debt and equity holdings in 2022. Going forward, we intend to engage directly on an annual basis with our top 10 portfolio emitters, utilizing an escalating engagement strategy. Engagement will focus on communication of Manulife’s climate objectives and metrics, company historical performance against relevant benchmarks, barriers to transition and importantly, avenues for investment in decarbonization efforts.

Making engagement work for us

As a primarily fixed income-oriented investor, our engagement with management teams and opportunities may differ from that which is typical for public equity holders who have direct ownership stakes in a company.

In some cases, Manulife may be a passive investor, utilizing indexing strategies that optimize our risk adjusted returns. In these instances, our ability to influence investment decisions may be limited and we typically abstain from taking specific proxy positions as a result.

For emission-intensive sectors, our analysts question management teams on several ESG factors, including emissions policies and decarbonization efforts, when provided the opportunity at industry conferences and on calls or meetings with management.

We also encourage the use of standard ESG questionnaires in private placement transactions, to support more efficient, and ultimately more effective, communication with issuers.

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Advocate

Directly and/or indirectly advocating for policies that are supportive of net zero investment objectives.

This includes engagement with industry peers, such as support for the development and implementation of a Private Placements Industry Association questionnaire on ESG and regular participation in peer working groups, including United States and Canadian insurance peers.

Divest

Alignment of portfolio companies or sectors to our risk appetite.

We are a long-term oriented, buy-and-hold investor. Manulife may divest where significantly and/or irreversibly investments are misaligned to our investment goals and risk appetite. However, we believe divestment as an immediate strategy is not the most effective approach to reducing emissions in the real economy and have seen limited academic and real-world evidence to support divestment as a primary tool for climate impact. Investment gives us the right and ability to raise concerns directly with companies' management, either through ownership as an equity investor or in due diligence and monitoring as a fixed income investor.

Divestment does not appear to encourage companies to improve their practices and in fact, can cause companies to move away from commitments – this is particularly borne out by prominent examples of GHG emissions increases from real assets after they have been sold²³.

For fixed income investors in particular, divestment introduces risks related to portfolio diversification and involves costs that could put our ability to meet our long-term promises to our policyholders and shareholders at risk. Finally, divestment transfers emissions from one investor's balance sheet to another and does not necessarily produce emissions reductions in the real economy.

Offset

Own carbon offsets or net negative carbon assets (e.g., sustainably managed timberland) and invest in projects that generate credible offsets in hard to abate sectors.

The General Account is a significant owner of Manulife Investment Management managed Timberland and Agriculture, offering potential natural climate solutions long-term. We continue to monitor the emergence of frameworks for financial institutions' net zero strategies as they relate to offsetting our produced or financed emissions.

That said, we prefer that issuers in which we invest prioritize emissions mitigation strategies where feasible and that they disclose instances where they employ credible and verified offsets for hard-to-abate emissions categories.

Finally, we expect to benefit from “**natural decarbonization**”. Over time, our portfolio could benefit from the maturation and roll-off of investments in high-emitting sectors and from the tailwinds emerging from societal shifts in attitude towards energy consumption, supportive government policies, and evolving economic factors, that are taking place globally.

	Allocate – Tilt investments towards lower emissions intensity, green or transition factors
	Engage and influence – Proactively and constructively provide feedback and support portfolio companies to encourage transition and enhance minimum due diligence expectations
	Advocate – Sell or avoid specific portfolio companies based on criteria such as target achievements, emissions performance and sector exposure
	Divest – Directly and/or indirectly lobby and advocate for policies that are supportive of net zero
	Offset – Own carbon offsets or net negative carbon assets (e.g., forests) and invest in project
	Take advantage of natural decarbonization in the real economy and through the inertia of portfolio roll off

Informed by Net Zero Investor Playbook, GFANZ, SBTi, and UNPRI guidance

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In our wealth and asset management business, we draw on more than a century of financial stewardship to serve individuals, institutions, and retirement plan members worldwide. We continue to believe that unmitigated climate-related risks present a systemic threat to societal, environmental, and financial stability—and therefore to our businesses and our clients’ financial objectives—over the coming decades.

To understand the impact of climate change on investment decisions, we believe asset managers should assess the transition risk, physical risk, and opportunities posed by climate change to the companies and assets in which they invest. We may take a variety of actions toward managing climate-related risks and opportunities across our businesses and investments to appropriately price climate risk. Broadly summarized, our available actions as asset managers relate to asset allocation and selection, investment analysis and research, proxy voting, mitigating direct GHG emissions, deploying robust sustainability management practices for operated assets, and participating in collaborative industry climate initiatives. In general, our preferred position is to engage directly with companies to encourage effective implementation of climate risk mitigation and adaptation strategies, reserving the right to divest from any investment.

In our role as investment managers, we believe it's important to encourage robust standards and regularly provide feedback to regulators, standards setters, and data providers on climate matters. Strengthening the policy, standard, and regulatory enabling environment on climate has a potential to protect investments over the long term for our clients.

In addition to prudent integration of climate-related risk management, our clients are becoming increasingly aware of the tangible opportunities presented by the transition to a net zero economy. We have designed dedicated strategies to meet this demand. These strategies can help to enable decarbonization of the real economy and empower customers to make their own sustainable choices and support their resilience in the face of a changing climate.

In our life and health insurance business, our focus is on research and data collection to inform products, product pricing, underwriting, claims, and actuaries as we learn more about the impact of physical climate-related risks on morbidity and mortality rates.

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Climate solutions in investment strategies

A range of products are designed for clients to help meet their own climate objectives, alongside financial goals. They include both ESG integration and dedicated thematic investment products in private and public markets.

In climate-thematic strategies, the aim is to combine the pursuit of attractive risk-adjusted returns with the effort to attain positive environmental attributes across a portfolio, such as lower portfolio temperature, lower carbon intensity, and higher clean technology revenues, among other attributes, and to align capital with those companies best positioned to be successful in the face of climate change²⁴. Unique to Manulife, our forest climate strategy offers qualified investors the ability to participate in natural climate solution markets, amplifying their potential benefits.

Examples of our climate-themed strategies²⁵

Select climate-themed strategies offered to institutions and individual investors

Strategy name	Thematic and strategic focus
Forest Climate Strategy	Promoting climate change mitigation through sustainably managed forests where carbon sequestration is prioritized over timber production.
Global Climate Equity	Using the Paris Agreement and science-based targets (SBTs) as a framework for stock selection, investing in companies that are making positive contributions to climate change.
Global Climate Bond	Investing primarily in global fixed-income securities of issuers that are making positive contributions to climate change, either through low emissions, committing to reduction targets, through the products and services they offer, or by use of proceeds for climate-themed bonds.
Sustainable Asia Bond	Investing primarily in fixed-income securities issued by Asia governments, agencies, supranationals and corporate issuers that demonstrate strong or improving sustainability attributes.
Sustainable Asia Equity	Investing in a diversified equity portfolio of Asia companies that have been identified as demonstrating strong or improving sustainability attributes, including companies involved in cleantech, technology driven social innovation, and sound governance promotion.

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Get to know our climate-related products and services

Playing Our Part



Climate resilience in insurance product design

Climate events are complex, interrelated, and present a dynamic puzzle for insurance underwriting. The cost of acute events in life and health may be minimal in comparison to what we see in property and casualty, leading some to conclude it is not material.

Countries exposed to the most severe consequences of climate change are often made up of under- or uninsured populations. The complexity of chronic and transition-related risks as they relate to morbidity and mortality remains an important area of academic study.

In the midst of these challenges, we have developed a process to understand potential variations of associated climate-related risks within specific countries in which we operate. This analysis is further supported by future projection tools to help us understand short and long impacts, based on various climate scenarios.

We continue to evaluate how climate risk may influence product design and pricing in a manner that best supports our customers. Claims data remains a limitation to quantifying the financial impact of acute and chronic climate-related events on the industry. A pilot program at Manulife is under feasibility assessment, with the goal of studying the impact climate-related risks on claims.

Integrity in natural climate solutions

We seek to generate the highest-integrity carbon sequestration and value for both investors and the environment.

To this end, our Timberland and Agriculture group has established a carbon standard working group with expertise from across our organization and with external input from leading conservation nonprofits.

Our Manulife Investment Management principles are aligned with The Integrity Council for the Voluntary Carbon Market's (IC-VCM) core carbon principles (CCPs) and include key tenets of additionality, permanence, leakage and accurate monitoring, reporting, and verification, among others.

We continue to evolve our principles as international best practices like the CCPs evolve. We have also participated directly and through industry alliances, including the National Alliance of Forest Owners and the World Business Council for Sustainable Development, in public consultations for standards from groups including IC-VCM and Voluntary Carbon Markets Integrity (VCMI) initiative to help shape these standards in line with the best available science.

Introduction

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Playing Our Part

Going beyond emissions reductions
Net zero takes everyone



Playing Our Part

Governments play a vital role in this transition by enacting policies, regulations, and mechanisms that encourage emissions reductions. Developing public policies geared towards high carbon and hard to abate sectors, along with necessary funding mechanisms to expedite the deployments of clean energy technologies can promote the acceleration of the transition. In emerging markets, multilateral development banks and similar institutions support further de-risking of investment and can enable investors like Manulife to more effectively deploy capital where it is needed most.

We are actively engaged in conversation with national governments and regulators as they seek feedback on climate-related policies and regulation, including in Singapore, the United States, and Canada. Given the capital requirements of insurers, we are broadly supportive of modernizing capital requirements in line with the low carbon economy, however the core role of maintaining financial stability and regulatory independence from policymaking should not be put at risk.

Playing Our Part

Going beyond emissions reductions

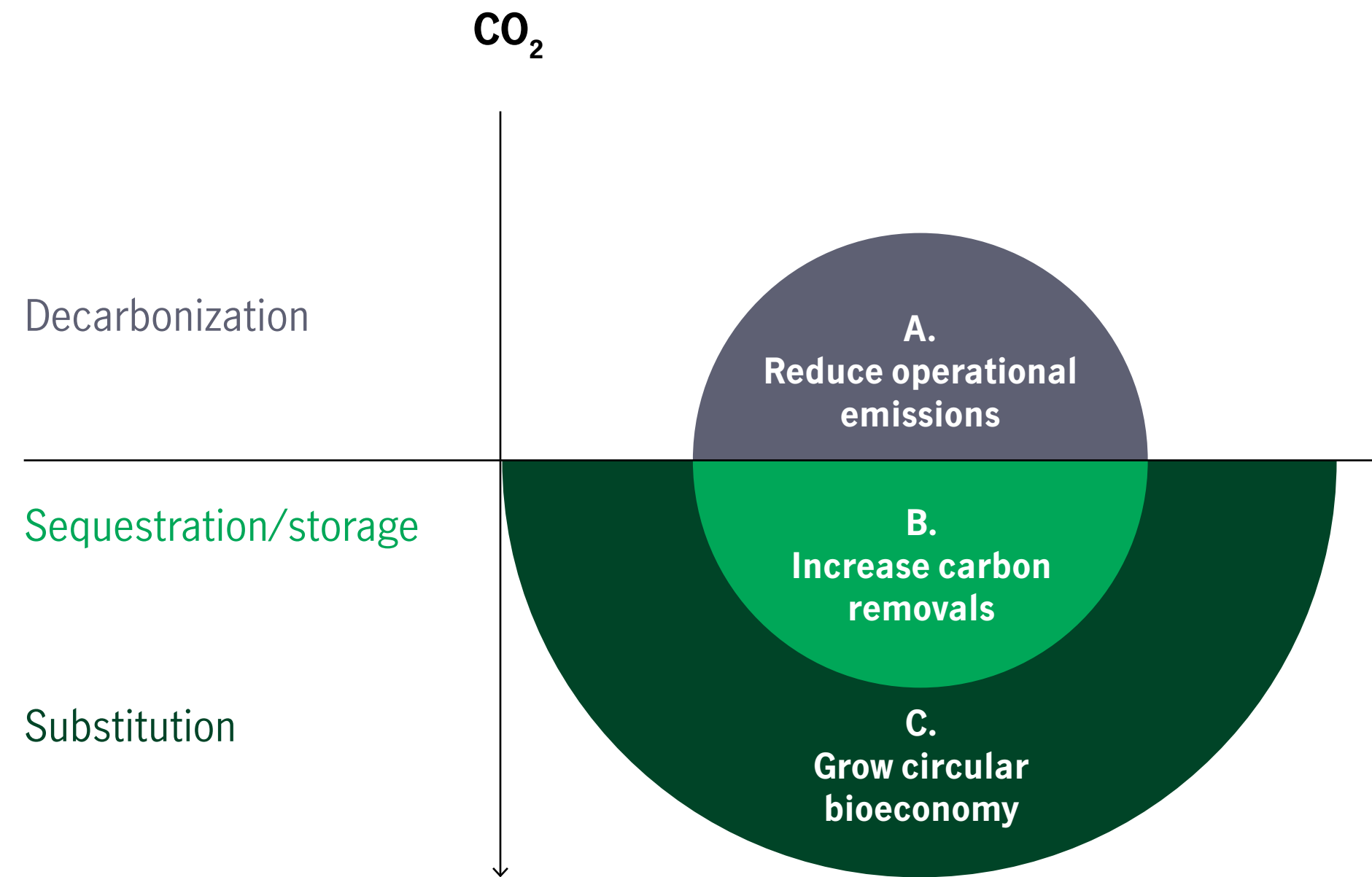
Net zero takes everyone

Going beyond emissions reductions

Emissions reductions are just the start. If companies are only encouraged to reduce inventory (induced) emissions, instead of also transforming into low- and zero-emissions solution providers, the shared goal of achieving global net zero by 2050 will fall out of reach.

The World Business Council for Sustainable Development (WBCSD) determines that assessing a company’s compatibility with a low-carbon economy requires the monitoring of three levers – induced emissions, carbon removal and avoided emissions. In this plan, we have outlined our approach to induced emissions and discussed our role in carbon removal.

We are actively seeking to better understand our contributions – and opportunities to further them – to avoided emissions in our operations and investments, guidance around which has recently been developed by the WBCSD. We will follow available best practices and ensure appropriate safeguards are in place to develop solutions and disclosure in a transparent manner.



The Net Zero Institute determines that assessing a company’s compatibility with a low-carbon economy requires the monitoring of three levers:

- **Induced emissions (A)** - a company’s carbon footprint, occurring across the full value chain of the company (including scope 3 emissions).
- **Carbon removals (B)** - The carbon sinks linked to a company’s activity.

- **Avoided emissions (C)** - the benefits – if any – that a company provides through its products and services compared to a reference scenario, otherwise known as Substitution.

Action on all levers will require successfully navigating land-use tensions, as well as understanding trade-offs that might occur between the three levers. Reductions around operational emissions and improving removals should remain the primary strategy²⁶.

Investing in new technologies

We are piloting decarbonization technologies in select markets in pursuit of our emissions reduction goals:

- **Timberland:** Joint project in New Zealand to trial a hydrogen-powered truck transporting logs from forest to port. The electricity required to produce ‘green’ hydrogen is generated from renewables, which comprise 80% of New Zealand’s power generation. Hydrogen is seen as more appropriate fuel source for heavy machinery than electric, as batteries would make loaded trucks too heavy for many roads in New Zealand. We believe that as this technology matures, we could significantly reduce the scope 1 & 3 emissions associated with the management of our timberland operations.
- **Agriculture:** The incorporation of biochar (carbon-rich material remaining after burning biomass in absence of oxygen) into the soils of fruit orchards in the Pacific Northwest is gaining traction commercially and may enable permanent carbon storage in soils and improve soil health and moisture. This technology could potentially reduce the need for fertilizers and pesticides, as well as the emissions associated with their manufacture and application. Biochar’s emissions reduction potential is poorly understood but may be significant, and we aim to understand its benefits through this trial project.



Net zero takes everyone

The scientific basis of global pathways to limit warming requires an unprecedented scale of cooperation and collaboration among actors. It requires fundamental shifts in how governments, organizations and communities function.

The financial sector acts as a catalyst in the path to decarbonization through ways such as investing in and providing products targeted towards greening our economy. However, we do not act alone.

First and foremost, we rely on the ability of policymakers and technological innovators to drive significant and transformative interventions in the real economy. Secondly, we need access to reliable, credible, and timely information and data from our operating partners and investees on key metrics of decarbonization. To this end, we are a member of several global sustainability networks, including the Sustainable Finance Action Council, ESG Data Convergence Initiative and the WBCSD. Finally, we depend on the support of Manulife investors, clients, peers, and regulators, who understand the urgency of global climate efforts and encourage a sustained focus on our Climate Action Plan.

We remain committed to our climate targets, in both our operational emissions and investments, developed in line with the guidance of the SBTi for relevant asset classes.

Unless and until Manulife is able to validate asset owner targets separate from discretionary assets managed on behalf of third-parties, we are stepping back from the pursuit of formal validation by the initiative at this time.

Going forward, we believe our time is best spent focusing on the work of achieving our targets. We will continue to assess the feasibility of third-party verification in the future and continue to engage with standard setters, including SBTi.

Achieving the scale of corporate ambition required to align with fixed pathways for global decarbonization remains a challenge, with financial institutions representing just 1% of companies with SBTi validated targets and high-emitting sectors such as chemicals, transportation, and electric utilities representing just 6% of companies with SBTi validated targets. It is our belief that the SBTi guidance for high-emitting sectors can continue to inform the credibility of investee companies' commitments, given the sector pathways are grounded in IEA and Intergovernmental Panel on Climate Change (IPCC) models. We are keen to see progress against emissions targets in the decade ahead and it is of utmost importance to focus resources and efforts on these productive emissions reductions efforts.



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- 1 International Energy Agency, 2023
- 2 Originally signed as Manulife Asset Management in 2015.
- 3 At Manulife and Manulife Investment Management, we define our organizational boundary using the operational control approach for scope 1 and scope 2 emissions, per the Greenhouse Gas (GHG) Protocol. Under the operational control approach, a company accounts for 100% of the GHG emissions from operations over which it has operational control, regardless of financial ownership of the entity. It does not account for GHG emissions from operations in which the company owns an interest but has no operational control.
- 4 Relative to a 2019 baseline. Our 2019 baseline year reflects a typical year for our operations. The COVID-19 pandemic resulted in a remote work scenario across our operations, as such our 2020 emissions are not representative of a typical year.
- 5 Project finance is defined in accordance with Science Based Target Initiatives (SBTi's) Financial Institution guidance, as an on-balance sheet loan or equity (private) with known use of proceeds that are designated for a clearly defined activity or set of activities, such as the construction of a gas-fired power plant, a wind or solar project, or energy efficiency projects.
- 6 Relative to a 2019 baseline estimate. Near-term targets include interim targets for 2035 and 2027.
- 7 Our view on the just transition is informed by the International Labour Organization definition, "greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind."
- 8 The remaining 53% of scope 1 and 2 emissions are of assets operated by Manulife Investment Management, and owned by Manulife Investment Management clients.
- 9 As of September 30, 2023.
- 10 This depiction is for illustrative purposes only and actual emissions characteristics of specific assets will vary depending upon different factors and circumstances.
- 11 The projections are illustrative of the projected scale of emissions reductions anticipated in our directly owned and operated assets based on our current emissions inventory, with known limitations. Manulife receives third-party assurance on real estate, timberland, and agriculture emissions. Projections are based on guidance from the World Resources Institute / World Business Council for Sustainable Development (WRI/WBCSD) GHG Protocol Corporate Accounting and Reporting Standard, WRI GHG Protocol Agricultural Guidance, ISO 14064-1, and IPCC Guidelines for National Greenhouse Gas Inventories 2019 Refinement. Manulife expects the inventory to evolve as enhanced data coverage and reliability objectives are achieved specific to agriculture. Please refer to our cautionary statement regarding the use of this report and forward-looking statements.
- 12 International Energy Agency 2023 World Outlook
- 13 <https://www.pnas.org/doi/10.1073/pnas.1710465114>
- 14 <https://www.wbcsd.org/Imperatives/Nature-Action/Nature-based-Solutions>
- 15 Average net removal per year over the last five years. Of this -0.11 tCO₂e removals are from agriculture and -1.14 tCO₂e removals are from timberland. Five years as of December 31, 2022. Annual CO₂ removals include annual increase in carbon stock within standing forest inventory (biogenic growth), plus carbon store in wood products harvested during that year. Due to year-on-year variation introduced by forest inventory estimation methodologies as well as harvesting schedules, we report a five-year average of carbon removals. CO₂ removals may fluctuate over time due to planting and harvesting cycles and the use of a 5-year average moves. As demand for harvested wood products has strengthened relative to supply over the past half-decade in response to housing shortages and pandemic-related needs, harvesting has increased to take advantage of stronger wood markets.
- 16 As of December 31, 2022
- 17 Debt instruments includes sovereign activities, public markets activities, private market activities and mortgage activities.
- 18 As of 2019
- 19 As of 2019
- 20 Manulife conducted an initial baseline financed emissions estimation activity in 2019. Due to a lack of third-party reported data across all asset classes, a significant margin of error is noted for this baseline activity. Manulife continues to enhance financed emissions accounting processes in line with the best available standards and information.
- 21 Green investments include General Account investments as determined by Manulife's Sustainable Bond Framework (green assets only) and the International Capital Market Association's Green Bond Principles (2017). Value as of 2022.
- 22 International Energy Agency, 2022
- 23 GFANZ and the Environmental Defense Fund, GFANZ Framework for Net Zero Transition for Financial Institutions, 2022
- 24 Impact varies by strategy and is unique to its own designed structure. There is no guarantee of financial performance or returns on investments.
- 25 Not all investments are available to all investors in all jurisdictions.
- 26 Visualization adopted from the World Business Council for Sustainable Development: <https://www.wbcsd.org/Sector-Projects/Forest-Solutions-Group/Resources/Forest-Sector-Net-Zero-Roadmap>