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**Combined report for the following two green bonds:**

- **Green Bond 1: 3.00% SG$500 million (Singapore dollars) subordinated debt due 21 November 2029, callable 21 November 2024**
- **Green Bond 2: 3.317% C$600 million (Canadian dollars) subordinated debt due 9 May 2028, callable 9 May 2023, redeemed 9 May 2023**

# Annual Green Bond Report

## Introduction

In 2017, Manulife became the first global life insurer to issue a green bond[1] with an inaugural issuance in Singapore of SG$500 million. Since then, we have issued green bonds in Canada (2018) of C$600 million and in the U.S. (2022) of US$750 million.

At Manulife, we recognize the threats posted by climate change to our business, public health and the livelihoods of the communities in which we operate. As a global financial services company, we are taking steps to reduce our environmental footprint, support the transition to a lower carbon economy, and invest in climate change mitigation and resilience. In May 2021, Manulife released its Climate Action Plan and our journey to net zero. We have achieved net zero in our operations, and are uniquely positioned due to the carbon removals from our substantial owned and operated forests and farmland outweighing our company-wide operational emissions. The Climate Action Plan includes our commitment to achieve net zero financed emissions by 2050, and our commitment to reduce our absolute scope 1 and 2 emissions by 40% by 2035. We are also taking a combined sector and asset class approach to develop and establish ambitious interim science-based decarbonization targets.

This report summarizes Manulife's Green Bond Framework (the "Framework") published in 2017, which governs the two green bonds, allocation of green bond proceeds to eligible assets, the associated environmental impacts, and project examples. Consistent with the Framework, we are committed to publishing annually to outline any changes to the proceeds allocation.

## Green Bond

**Manulife's Green Bond Framework**

The Framework is governed by Manulife's Green Bond Council. The Framework was published in November 2017 and was developed in line with the International Capital Market Association's Green Bond Principles 2017. The Framework sets out the following guidelines for issuances of green bonds:

1. **Use of proceeds:** Net proceeds from the green bonds are allocated towards assets that meet the eligibility criteria described in the Framework.
2. **Process for project evaluation and selection:** Manulife's Green Bond Council is responsible for the ultimate review and selection of assets that will qualify as eligible assets, to which the net proceeds will be allocated.
3. **Management of proceeds:** A Green Bond Register is established to record the allocation of the net proceeds, including relevant information of the eligible assets, and form the basis for the impact reporting.
4. **Reporting:** Commitment to publish an annual report highlighting the amount of proceeds allocated to each eligibility criteria, environmental indicators, and the remaining balance of unallocated proceeds, among other disclosures.

| Eligible Categories |
|---|
| **Green Bond Principles Categories** |
| Renewable energy |
| Green buildings |
| Environmentally sustainable management of natural resources and land use |
| Energy efficiency |
| Clean transportation |
| Sustainable water |
| Pollution prevention and control |

[1] Manulife's green bonds are fixed income instruments with an amount equal to the net proceeds allocated to new and/or existing Eligible Assets defined in the Manulife's Green Bond Framework, for example – renewable energy, energy efficiency, sustainably managed forests and other investments that advance ecosystem improvements.

## External Review

Sustainalytics, an independent provider of environmental, social and governance (ESG) research, ratings and data to institutional investors and companies, issued a second party opinion on the alignment of the Framework with the Green Bond Principles 2017. Sustainalytics has provided limited assurance on the management of the proceeds and compatibility of the selected eligible categories in accordance with the Framework.

The second party opinion on the alignment of the Framework with the Green Bond Principles 2017, as administered by the International Capital Market Association by Sustainalytics can be found on Manulife's website at www.manulife.com/en/investors/results-and-reports.

## GREEN BOND 1: 3.00% SG$500 million subordinated debt due 21 November 2029, callable 21 November 2024

### Use of Proceeds and Impact Indicators

| Eligible category | Original allocation of proceeds (SG$ millions) | Original allocation of proceeds (%) | Impact Indicators | Manulife's Share of Impact Indicators[1] |
|---|---|---|---|---|
| **Renewable Energy: Wind** | 219 | 44% | Renewable energy capacity installed (MWh) | 411,138 |
| | | | Avoided / reduced carbon emissions (MtCO2e) | 49,526 |
| **Renewable Energy: Solar** | 278 | 56% | Renewable energy capacity installed (MWh) | 67,157 |
| | | | Avoided / reduced carbon emissions (MtCO2e) | 12,189 |
| **Total** | $ 497[2] | 100% | | |

[1] Eligible assets were over-allocated to allow for amortization of debt investments over the course of the green bond term. Reported impact indicators are scaled to the net proceeds from the green bond issuance of SG$497 million.
[2] Represents net proceeds from the green bond issuance of SG$500 million.

## Examples of Projects

**Renewable Energy: Rivière-du-Moulins**

Manulife provided financing to the Rivière-du-Moulins wind energy facility, located in Quebec, Canada. The 350 MW wind farm is estimated to power 59,500 homes. The project is the largest wind energy facility in Canada under a single Power Purchase Agreement, a 20-year agreement with Hydro Quebec since construction in 2014.

**Renewable Energy: Grand Renewable**

Grand Renewable solar project is located in Ontario, Canada. The project has a capacity of 100 MW and, since 2015, has had a 20-year feed-in-tariff contract with HydroOne. The 800-acre farm incorporates approximately 450,000 solar panels, powering 17,000 homes.

## GREEN BOND 2: 3.317% C$600 million subordinated debt due 9 May 2028, callable 9 May 2023

### Use of Proceeds and Impact Indicators

| Eligible category | Original allocation of proceeds (C$ millions) | Original allocation of proceeds (%) | Impact Indicators | Manulife's Share of Impact Indicators[1] |
|---|---|---|---|---|
| **Renewable Energy: Wind** | 20 | 3% | Renewable energy capacity installed (MWh) | 31,820 |
| | | | Avoided / reduced carbon emissions (MtCO2e) | 153 |
| **Renewable Energy: Solar** | 333 | 56% | Renewable energy capacity installed (MWh) | 85,503 |
| | | | Avoided / reduced carbon emissions (MtCO2e) | 22,387 |
| **Energy Efficiency** | 172 | 29% | Annual energy savings (MWh) | 38,163 |
| | | | Avoided / reduced carbon emissions (MtCO2e)[2] | 52,044 |
| **Sustainably-Managed Forestry** | 73 | 12% | Sustainable certification | Sustainable Forestry Initiative® |
| | | | Certified area (acres) | 35,712 |
| | | | Removed / sequestered carbon emissions (MtCO2e) | -333,626 |
| **Total** | $ 598[3] | 100% | | |

[1] Eligible assets were over-allocated to allow for amortization of debt investments over the course of the green bond term. Reported impact indicators are scaled to the net proceeds from the green bond issuance of C$598 million.
[2] Carbon removals for sustainably-managed forestry assets are expected to fluctuate due to ongoing forest management activities. The year-over-year change in profile may be positive or negative. Refer to Methodology section for more details.
[3] Represents net proceeds from the green bond issuance of C$600 million.

### Examples of Projects

**Renewable Energy: Campo Palomas**

Manulife provided financing to support the Campo Palomas 70 MW wind farm, located in Uruguay. The wind farm has annual power generation of approximately 200,000 MWh, estimated to power approximately 13,000 households.

**Renewable Energy: Axium Infinity Solar**

Manulife provided financing to the Axium Infinity Solar project, located in Ontario, Canada. Axium Infinity Solar's portfolio includes eight solar facilities across Ontario, with a capacity of 76 MW.

**Energy Efficiency: Smithsonian Institution's National Zoological Park**

The Smithsonian Institution's National Zoological Park project, located in Washington D.C., United States, supports installation of high-efficiency air-cooled chillers, solar shades on skylights, a 625 KW solar plant, and LED lighting upgrades in 1,088,000 square feet of US Federal Government buildings, and 163 acres of parkland.

**Sustainably-Managed Forestry: Vinegar Bend**

Vinegar Bend is an 18,940-acre timberland property of pine and bottomland hardwood plantations, located in Alabama and Mississippi, United States. 100% of the property is certified to Programme for the Endorsement on Forest Certification. Merchantable timber totals approximately 690,000 tons, of which 70% is pine.

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## Methodology

**Renewable Energy:** Renewable energy capacities installed were provided by the project developers or estimated. Avoided emissions were calculated by multiplying the annual renewable energy project's production by the region and energy specific carbon dioxide emission avoidance factors as published by the International Renewable Energy Agency. To calculate the impact measures associated with the green bond, our share of loan was applied to each project's enterprise value.

**Energy Efficiency:** Annual energy savings and avoided emissions were provided directly by the project developer. To calculate the impact measures associated with the green bond, our share of loan was applied to each project's enterprise value.

**Sustainably Managed Forestry:** Carbon removals from timberland were estimated by our wholly owned subsidiary, Manulife Investment Management Timberland and Agriculture. Net carbon removals reflect the change in carbon stored in the forest carbon 'pools' over the year, as well as the carbon going into long-term storage within harvested wood products. Generally the net greenhouse gas profile includes change in carbon stock within standing forest inventory (biogenic growth), carbon stored in harvested wood products and nonbiological emissions from operations. The net greenhouse gas profile is expected to fluctuate due to ongoing forest management activities, such as fertilization, herbaceous weed control, and harvesting schedules. The year-over-year change in the profile may be positive or negative.

Change in carbon stored is calculated using standard industry timber inventory and appraisal approaches to estimate 'opening' and 'closing' growing stock volumes, and these volumes are then converted into amounts of carbon stored.



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