

**Independent Opinion
on the Statements of
Manulife Investment Management**

Relative to Its

**Agricultural Greenhouse Gas Emissions
Inventory and Energy Consumption for 2023**

Opinion Date: 2024-05-06

To the Management of:	Manulife Investment Management Timberland and Agriculture 197 Clarendon St., C-08-99 Boston MA 02116
Independent Verification Opinion of:	Futurepast: Inc. 4250 Fairfax Drive, Suite 600 Arlington, Virginia 22203 USA
Subject Matter:	2023 Agricultural Greenhouse Gas Emissions Inventory and Energy Consumption
For the Period:	January 1, 2023 – December 31, 2023

Details Pertaining to the Statements

Statement of Responsibility: It was the responsibility of Manulife Investment Management (“Manulife”) to prepare its greenhouse gas (GHG) inventory and energy consumption statement in accordance with the WRI/WBCSD GHG Protocol Corporate Accounting and Reporting Standard. This responsibility included designing, implementing, and maintaining a data management system adequate for the preparation and fair presentation of the statements. Manulife was responsible for the fair presentation of its data and information and ensuring that these are free from material misstatements.

Based on the work we performed, it was the responsibility of Futurepast to express an opinion as to whether the GHG emissions and energy consumption as stated by Manulife were presented fairly in accordance with the agreed criteria.

Intended User and Limitation of Liability

Intended User: This opinion has been prepared for the management of Manulife for internal management purposes and for public disclosure.

Limitation of Liability: Manulife was solely responsible for the preparation and presentation of the information it has submitted to Futurepast for verification. Our role was limited to expressing a conclusion as to whether the greenhouse gas emissions and energy

consumption as stated by Manulife were presented fairly in accordance with the WRI/WBCSD GHG Protocol Corporate Accounting and Reporting Standard. In doing so, we do not assume any duty, liability, or responsibility of Manulife or of any third party. Our duties in relation to the opinions expressed are owed solely to Manulife. As such, we do not accept any responsibility for any loss allegedly occasioned by any third party acting or refraining from action because of our expressed opinions.

Details Pertaining to the Validation/Verification Body

Futurepast's Role: Futurepast is an impartial third-party validation/verification body.

Declaration of Impartiality

Evaluation of Actual or Potential Conflicts-of-Interest Futurepast, and the verification team members and independent reviewer, have evaluated their potential for compromised impartiality and found no actual or potential threats to impartiality with respect to the performance of this engagement.

Details Pertaining to the Verification Team and Independent Reviewer

Verification Team Leader: This verification was led by Stephen Boles.

Independent Reviewer: This verification was independently reviewed by John Shideler.

Details Pertaining to the [Verification/Validation]

Type(s) of Engagement: This engagement included the following types of activities:

- Verification
- Validation
- Agreed-upon procedures

Objectives of the Verification: To provide limited assurance to Manulife that Futurepast has found no evidence that the GHG and energy consumption Statement made by Manulife are not materially correct and are not in conformance with the stated criteria.

Scope of the Verification:

This opinion pertains to the verification of GHG emissions and energy consumption from the following:

- agricultural properties within the Manulife Investment Management Timberland and Agriculture (MIMTA) business unit

GHG emissions and removals from the following sources are not included in this verification opinion:

- timberland properties within Manulife Investment Management Timberland and Agriculture (MIMTA) business unit¹

Types of greenhouse gases	Manulife’s GHG inventory calculates and reports CO ₂ , CH ₄ , N ₂ O, and HFC emissions.
Time period	January 1, 2023 – December 31, 2023
GHG sources, sinks, and reservoirs	See table below
Facilities, physical infrastructure, activities, technologies, and processes	GHG emissions from Manulife’s network of agricultural properties (directly-operated and leased) in the USA, Canada, Chile, and Australia. A wide range of crop types are farmed in the Manulife portfolio, including almonds, pistachios, rice, cotton, corn, soybeans, grapes, cranberries, and more.

GHG Scope	GHG Source
1	Stationary & Mobile Fuel Combustion
1	Process Emissions (nitrogen fertilizer applications, urea and lime applications)
2	Imported electricity and steam

¹ The verification opinion of MIMTA timberland GHG emissions (conducted by Futurepast) is provided in a separate document.

<p>3 (Category 13)</p>	<p>1. All Scope 1 and Scope 2 GHG sources listed above occurring on leased properties</p> <p>2. Methane emissions from water management on leased rice properties</p>
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Level of Assurance: Limited.

Threshold of Materiality: 10%

Verification Criteria: Futurepast performed this in accordance with the requirements of ISO 14064-3:2019.

Description of Work Performed

Description of the Basis for Our Conclusions and Opinion

Futurepast designed and executed analytical procedures and controls testing on a risk-based approach after reviewing Manulife’s reported GHG and energy consumption Statements. Futurepast performed the following assessments of information and data during the verification:

1. Assessing the boundaries of Manulife’s GHG inventory.
2. Tracing GHG calculations in the consolidated statements to confirm the accuracy of reported values.
3. Reviewing for accuracy of GHG emission factors and calculation methodologies.
4. Comparing the prior year results of GHG emissions and key input data values (e.g. fuel consumption).
5. Assessing the reasonableness of assumptions (including Manulife’s definition of non-relevant sources of GHG emissions).

The data reviewed were historical in nature.

Summary of the Responsible Party's Statements

Manulife's 2023 energy consumption totals are presented in the table below for both MFC and MIMTA-AG:

Energy Source	Equivalent kWh (ekWh)
Natural Gas	7,504,258
Diesel	176,851,854
Gasoline	3,507,631
Propane	12,256,688
Electricity	122,175,221
Total	322,295,652

Manulife's 2023 GHG emissions are presented in the table below.

GHG Scope and Source	Metric tonnes CO _{2e}
SCOPE 1	
Stationary and Mobile Fuel Combustion	22,303
Process Emissions (nitrogen fertilizer applications, urea and lime applications)	18,285
Total Scope 1	40,588
SCOPE 2	
Purchased (grid) electricity	20,703
SCOPE 3²	
Category 13 (Downstream Leased Assets)	107,432
Total GHG Emissions³	168,724

² MIMTA's Scope 3 GHG emissions from purchased goods and services, capital goods, business travel, and employee commuting are consolidated and reported with Manulife Financial Corporation's GHG emissions. Scope 3 emissions from upstream fuel and energy impacts has been determined to be relevant to MIMTA and may be reported in future years. The following Scope 3 categories have been deemed not relevant to MIMTA: upstream transportation and distribution, waste generated in operations, downstream transportation and distribution, processing of sold products, use of sold products, end-of-life-treatment of sold products, franchises.

³ Table does not include GHG emissions or removals from Manulife Investment Management Timber and Agriculture timber business unit.

Limitations, If Any

None

Modifications, If Any

Manulife's GHG inventory did not fulfil all requirements for public disclosure listed in the GHG Protocol, Chapter 9, "Reporting GHG Emissions", including:

- Emissions data for all seven GHGs separately (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃) in metric tonnes and in tonnes of CO₂ equivalent

Conclusions

Except for the modification listed above, and based on our evaluation of the evidence, nothing comes to our attention which causes us to believe:

- That Manulife's inventory report for the period from 01/01/2023 to 31/12/2023 is not materially correct and is not a fair representation of its GHG and energy data and information, and
- That Manulife's inventory report for the period from 01/01/2023 to 31/12/2023 has not been prepared in accordance with the World Resources Institute/World Business Council for Sustainable Development's "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard – Revised Edition" (March 2004).


Approvals

Verification Team Leader:



Stephen Boles, 3 May 2024

Independent Reviewer:



John C. Shideler, 5 May 2024

Signature

Verification/Validation Body: Futurepast: Inc., Arlington, Virginia USA

Opinion Issued:

2024-05-06

