

Dairy Farming Forward to Net Zero 2050

Korb Whale, Clovermead Farms Inc.
June 1, 2022

 : Julaine Treur, BC



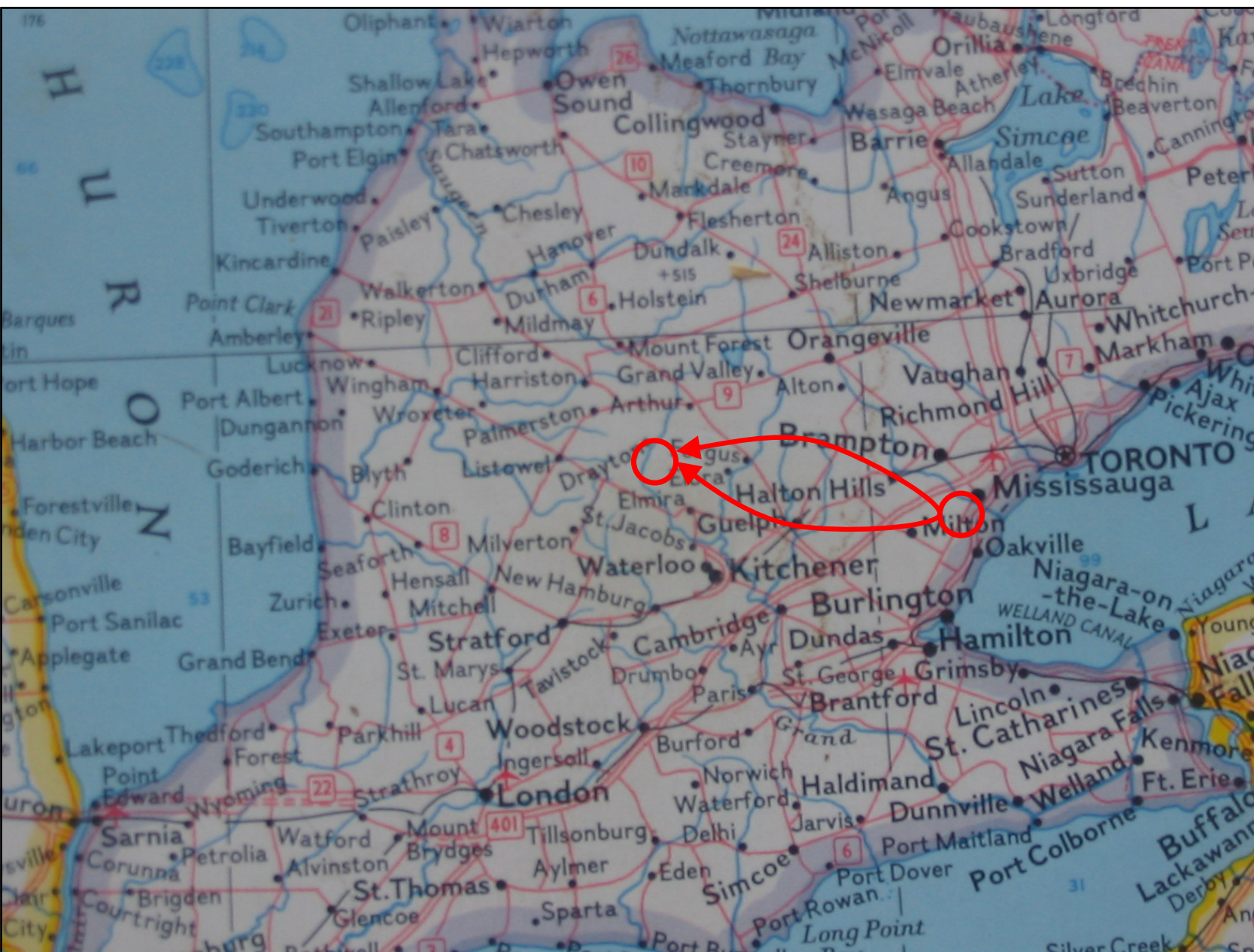
The Evolution of Clovermead Farms

A Brief History

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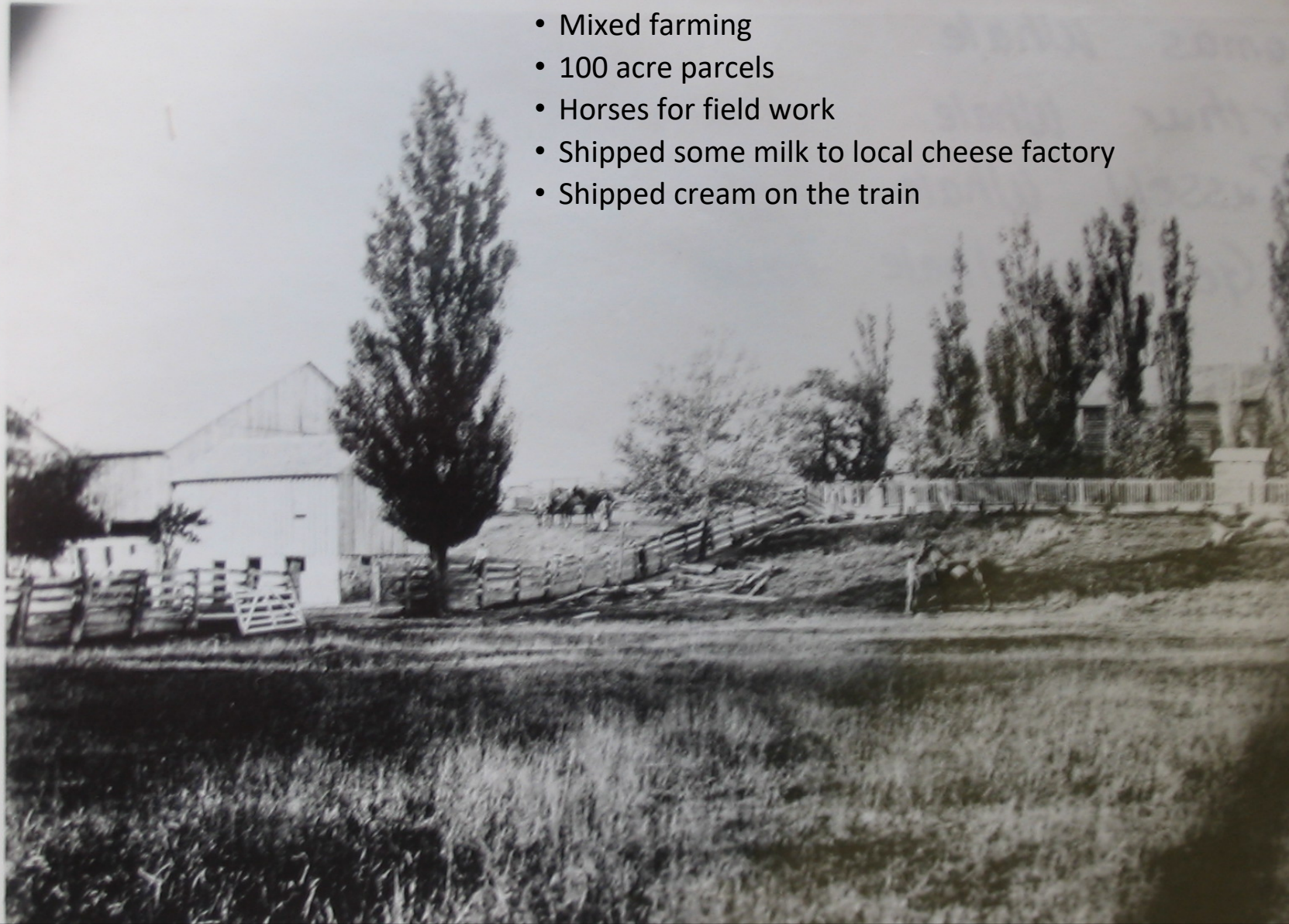
- Immigrated to Canada from Wiltshire County in England in 1845
- Claimed a forested 100 acre parcel of land adjacent to our current operation





The Long Walk....

- 120 km each way, twice every year, on foot!!



- Mixed farming
- 100 acre parcels
- Horses for field work
- Shipped some milk to local cheese factory
- Shipped cream on the train

The ORIGINAL Whale Farm in 1850

Grandfather's farm in 1955



Clovermead Farms 1955



Clovermead Farms 1975

New state-of-the-art slatted floor dairy barn
New Tower silos

▪ Complete with a double 4 herringbone milking parlour



Clovermead Farms Today

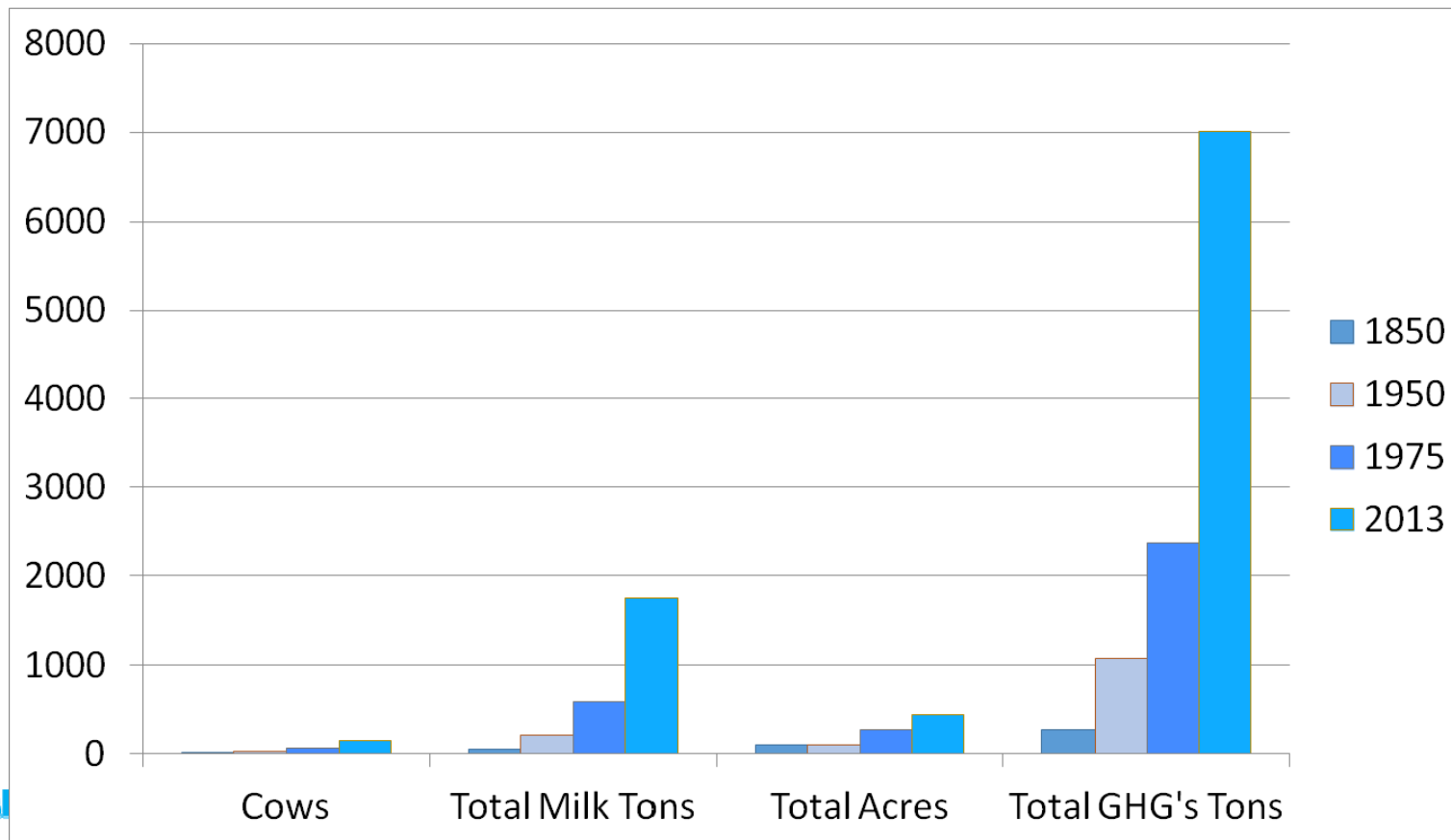


Green House Gas Emissions at Clovermead Farms

	1850	1950	1975	2013
Cows	10	28	65	150
Litres/cow	15	21	25	32
1000kg CO2	274	1073	2373	7008

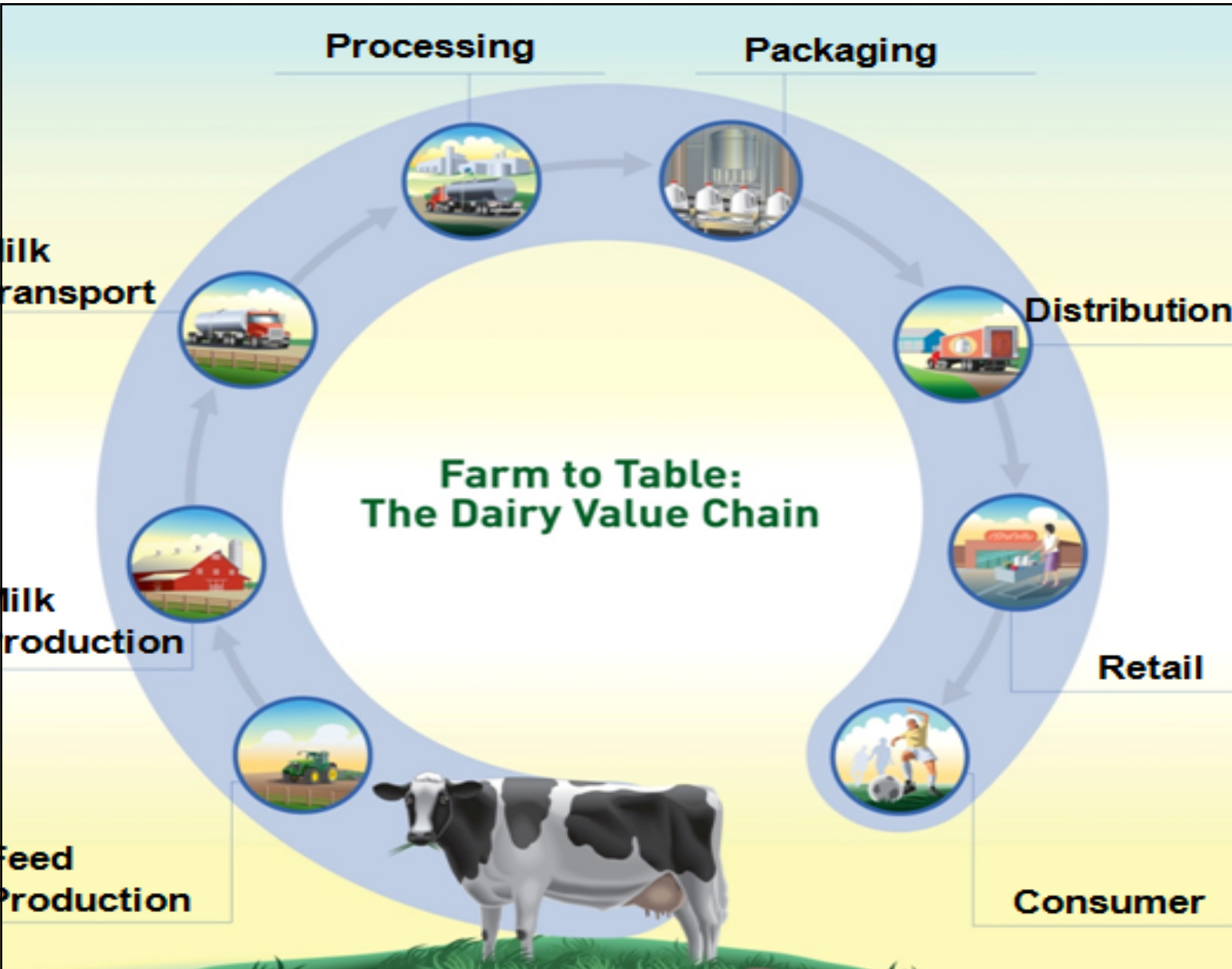


Clovermead Farms over time



GHG Statistics for the Dairy Industry

- ❑ Globally, the livestock Industry accounts for 18% of the anthropogenic GHG's
- ❑ 4% is attributed to the dairy industry
- ❑ 0.7kg – 7.5kg of CO₂ equivalent/ kg of FPCM
- ❑ Main Sources of GHG's on dairy farms are cows and manure storage
- ❑ The most important GHG's are N₂O, CH₄ and CO₂
- ❑ 1kg of N₂O is equivalent to 310kg CO₂
- ❑ 1kg CH₄ is equivalent to 21kg CO₂



Milk Transport
as a key process
driver:

Ø Minimize
Transportation
Carbon-Wastes
to fuels

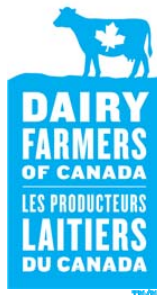
U.S. Fluid Milk
Carbon Footprint:
Supply Chain
Emissions

Percentage of
greenhouse gas
emissions associated
with a gallon of milk,
from farm to table



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Center for U.S.
Dairy

Key Focus:
“Greening” of Milk
Products by
reducing
environmental
footprint of Value
Chain Activities



Why a sustainability strategy?



**Increasing demand
from consumers**



**Ambitious net-zero targets being set by
Government of Canada, agri-food supply
chains, national dairy organizations (GDP
Pathways to Net Zero Initiative)**



**Direction from farmers
that this is a priority**

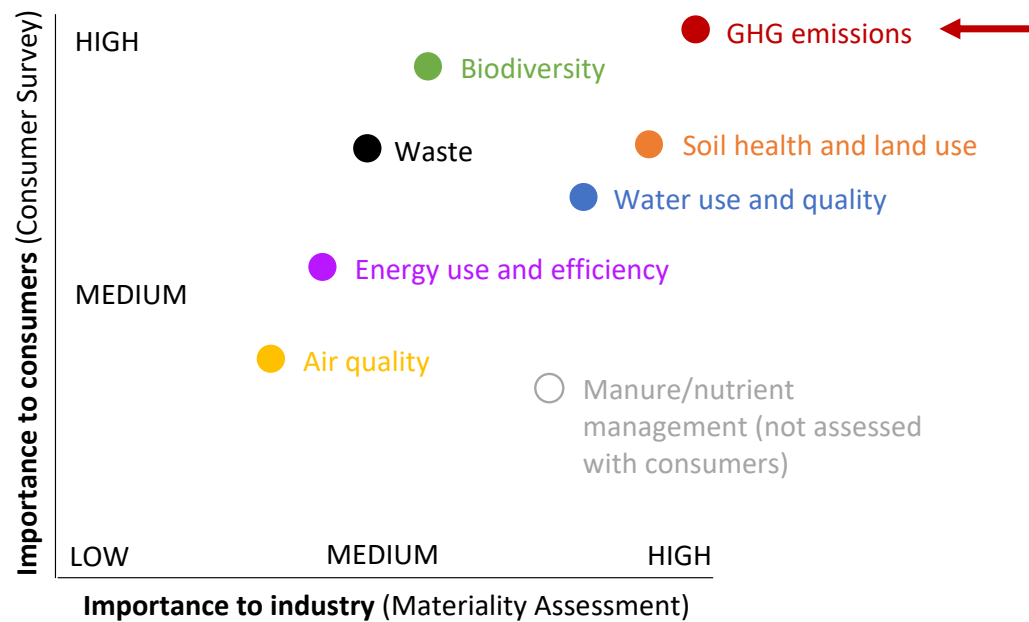
Sustainability Working Group

- DFC 2021 Strategic Objective
 - The mandate of the Sustainability Working Group from its inception has been to support the development of a national environmental target for consideration by the DFC Board that is credible and meaningful to consumers
- Steps taken
 - Knowledge building
 - Materiality Assessment
 - Environmental target setting

Identifying priority areas

- **Materiality Assessment (June-Aug. 2021, by ISOS Group):** Analysis to identify priority areas for the industry, using:
 - International sustainability frameworks
 - DFC research, Life Cycle Assessment, and other publications
 - Previous consumer and stakeholder surveys
- **New Consumer Survey (Sept. 2021, by Nanos Research):** Survey of 1,000 Canadians to confirm priority areas for consumers

Priority matrix



85% of Canadians say it is “important” or “somewhat important” that Canada’s dairy farms meet the target of **net zero emissions by 2050** (up from 71% in Oct. 2020)

Setting targets



Review materiality assessment



Consumer feedback review



Scan BMPs and mitigation pathways



Farmer workshops



Assessment of BMPs



Environmental targets



Proposed targets

Net-Zero by 2050

- Greenhouse Gas Emissions

Regenerative agriculture targets

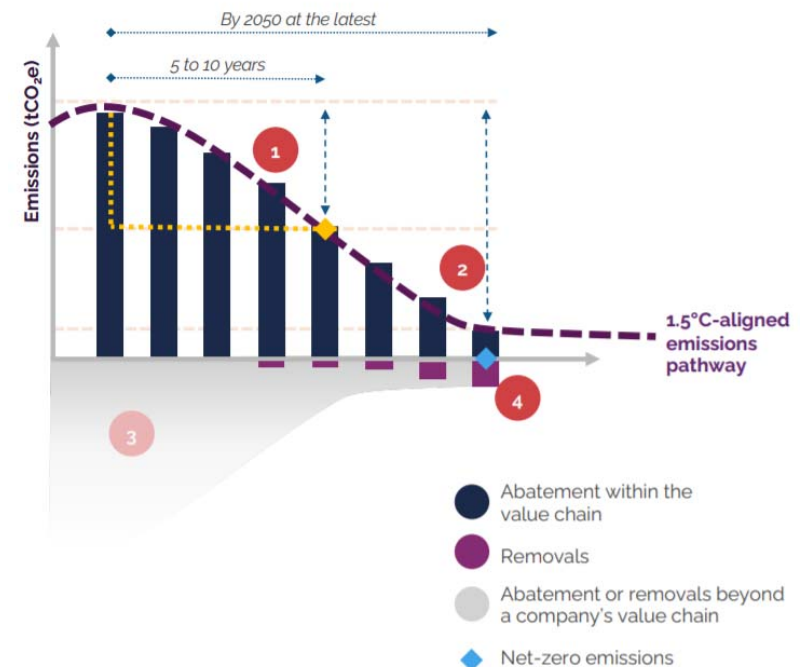
- Soil and land
- Water
- Biodiversity
- Waste
- Energy

GHG Targets – Public-Sector

- Ambitious Net-Zero Targets being set by:
 - Public-sector: Canada, Guelph, Vancouver, Hamilton, Toronto, Halifax, Newfoundland and Labrador, Quebec, Prince Edward Island (2040), Nova Scotia and British Columbia
- Government of Canada: Net Zero by 2050
 - Canadian Net-Zero Emissions Accountability Act
 - 2030 target: 40-45% below 2005 levels (increased from 30% reduction – exceeding expectations)
 - \$165.7M Agricultural Clean Technology Program
 - \$4B Natural Climate Solutions Fund: \$185M – Agricultural Climate Solutions; \$631M – Nature Smart Climate Solutions; \$3.19B for 2 Billion Trees Commitment

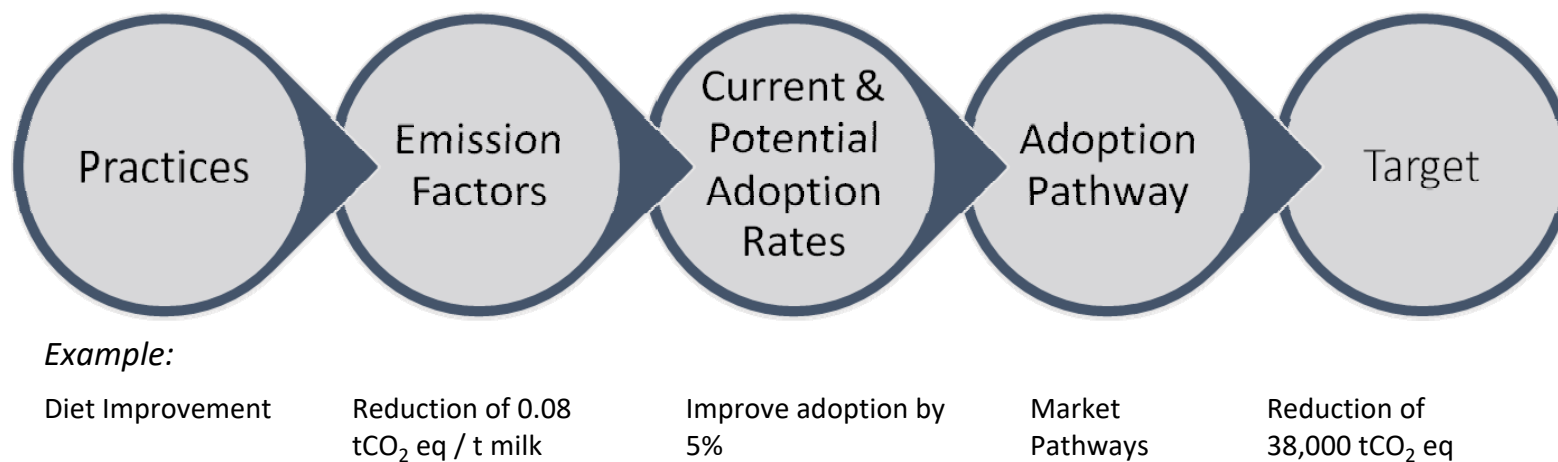
GHG Targets – Private-Sector

- Ambitious Net-Zero Targets being set by:
 - Private-sector: especially major corporations in agri-food supply chains, e.g. McDonalds, Walmart, Nestle, Mars
- Corporate Drivers: Science-Based Targets Initiative
 - New Corporate Net-Zero Standard – covers all value chain emissions
 - Net-zero by 2050 with interim targets (e.g. 2030) – means 90-95% decarbonisation for most corporates by 2050 (~50% by 2030)

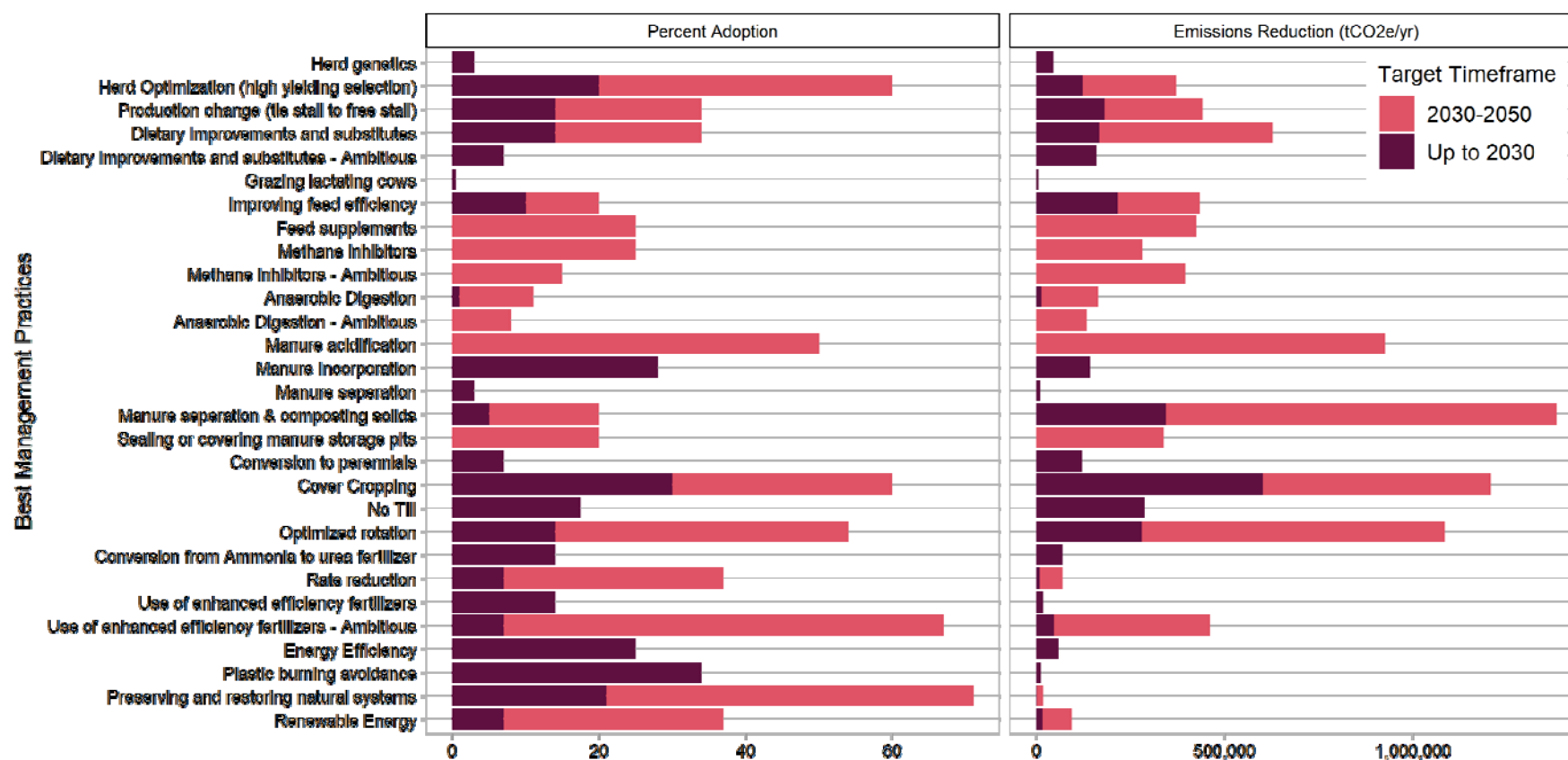


Quantifying Emission Reductions

Total Milk Production
10.3 million t FPCM / year
Total Emissions across sector **9.7 million tCO₂ eq / year**
* Based on 2016 LCA



Net Zero Scenario Estimate

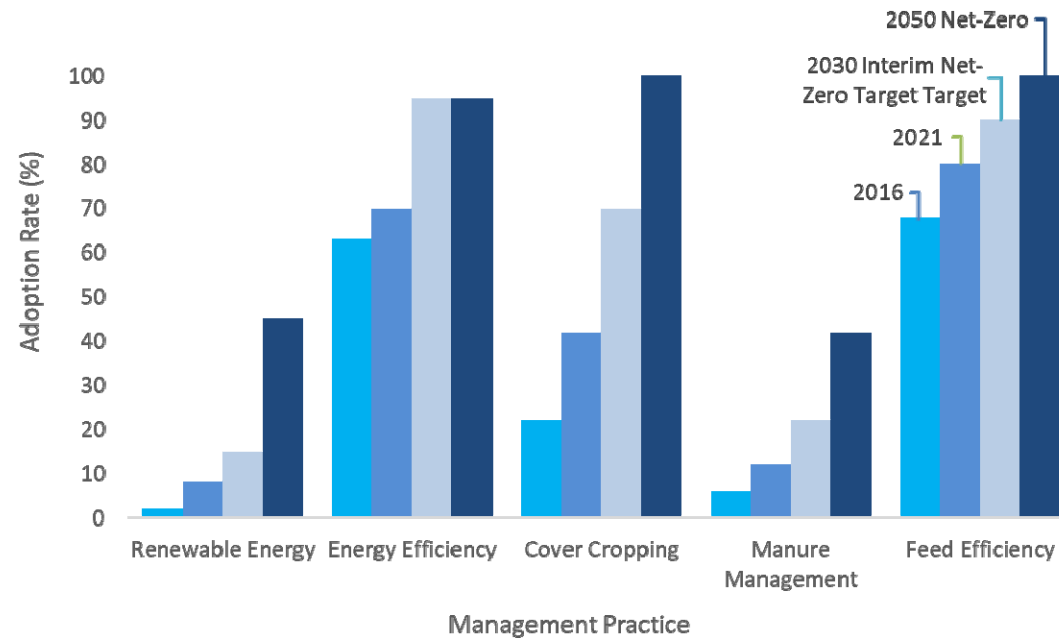


DAIRY FARMERS OF CANADA | LES PRODUCTEURS LAITIERS DU CANADA

Reaching Net Zero

- There may be a portion of emissions (residuals) that cannot be eliminated within the sector:
 - Feed production, energy use, enteric methane
- Some of these may be offset by removals, such as from:
 - Pasture management: Science is developing
 - Tree-planting
 - Avoided conversion of existing natural sinks
- The rest may need to be 'offset':
 - Through the purchase of carbon offsets in carbon markets
 - Through emission reductions elsewhere in the value chain

Farms implementing key practices



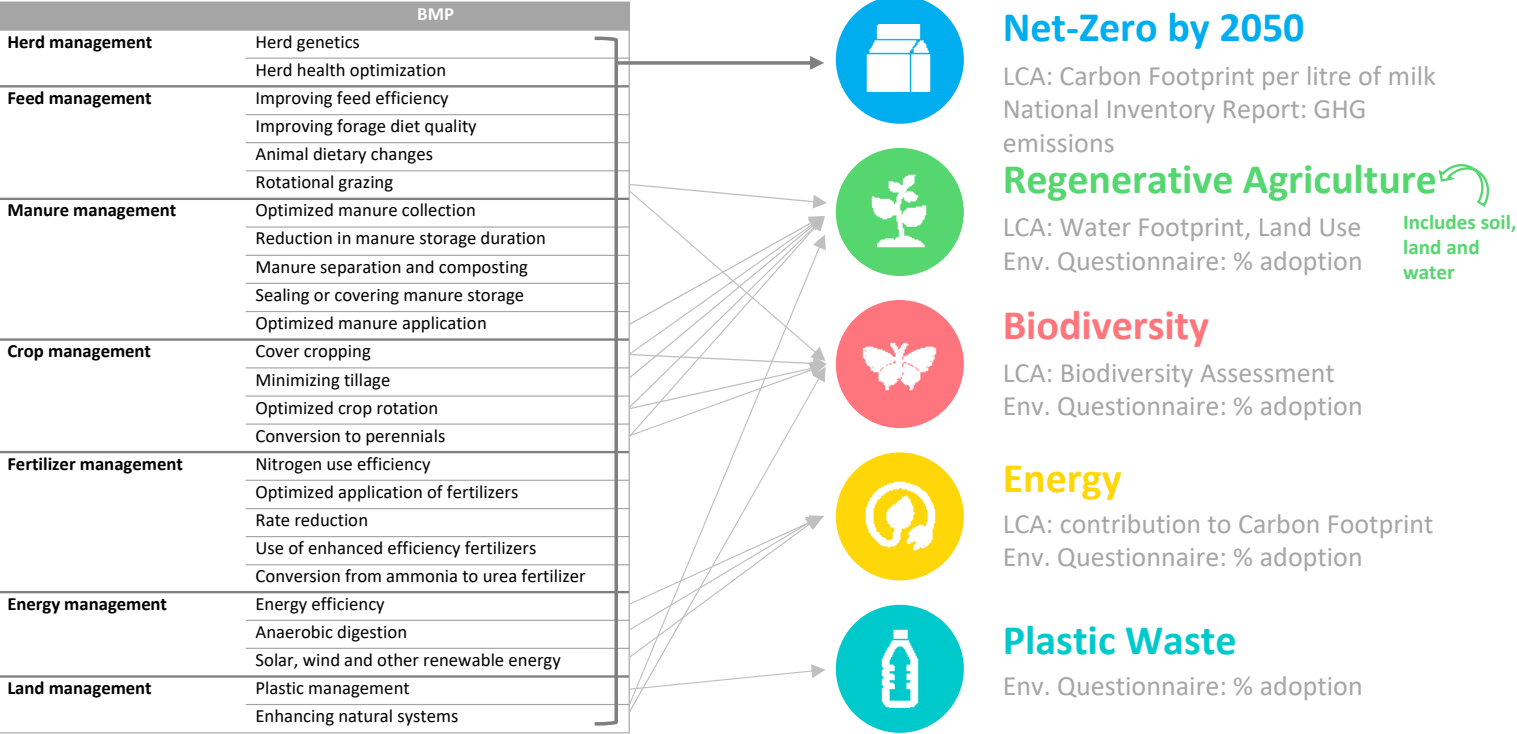
Regenerative agriculture - Qualitative targets

- Based on priority areas for industry and consumers, and which support GHG reduction target
- Difficult to quantify so will focus on adoption of BMPs – targets will be based on current rates of implementation and adoption needed to reach GHG reduction target
- Will recognize current practices farmers are implementing and encourage increased adoption of beneficial practices

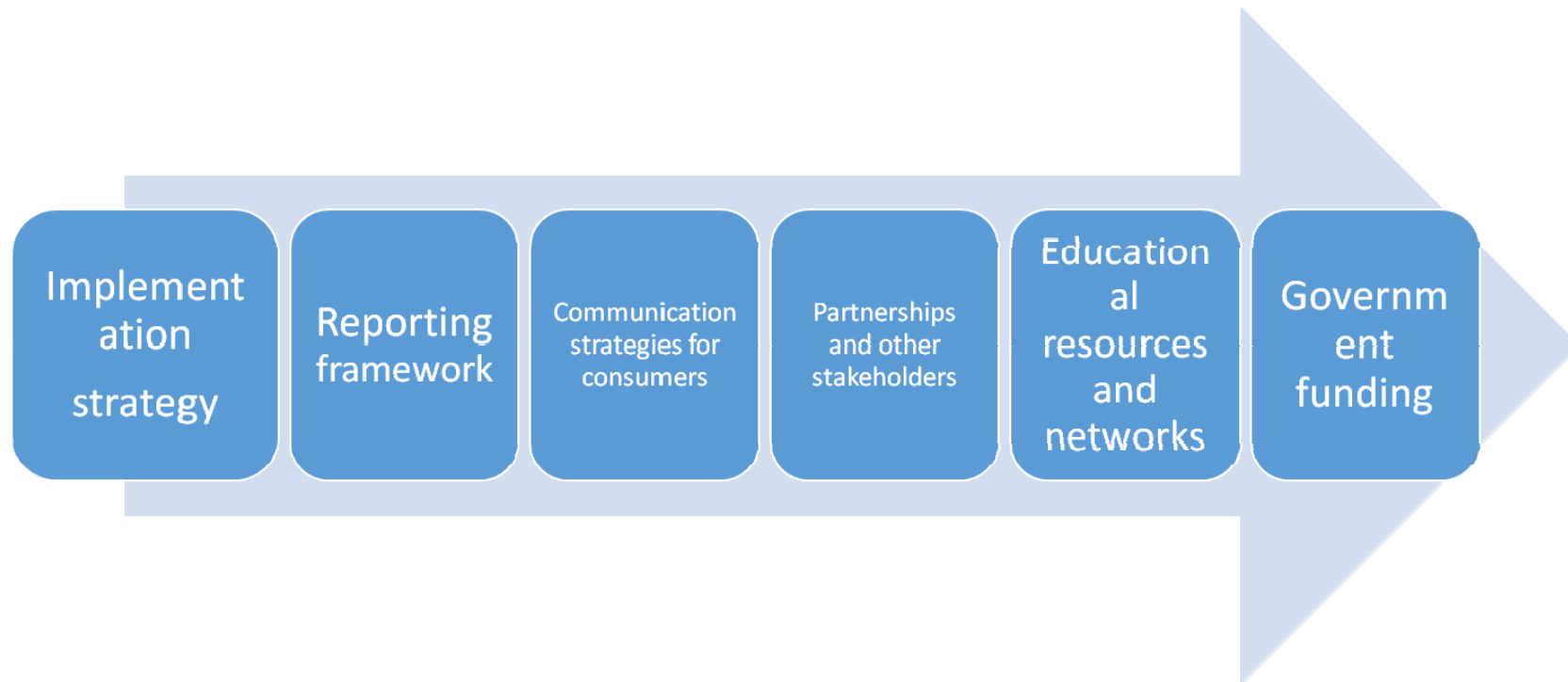
Identified Priority Categories



Pathways to improve regenerative agriculture: Net-Zero Key Performance Indicators



Where do we go from here?



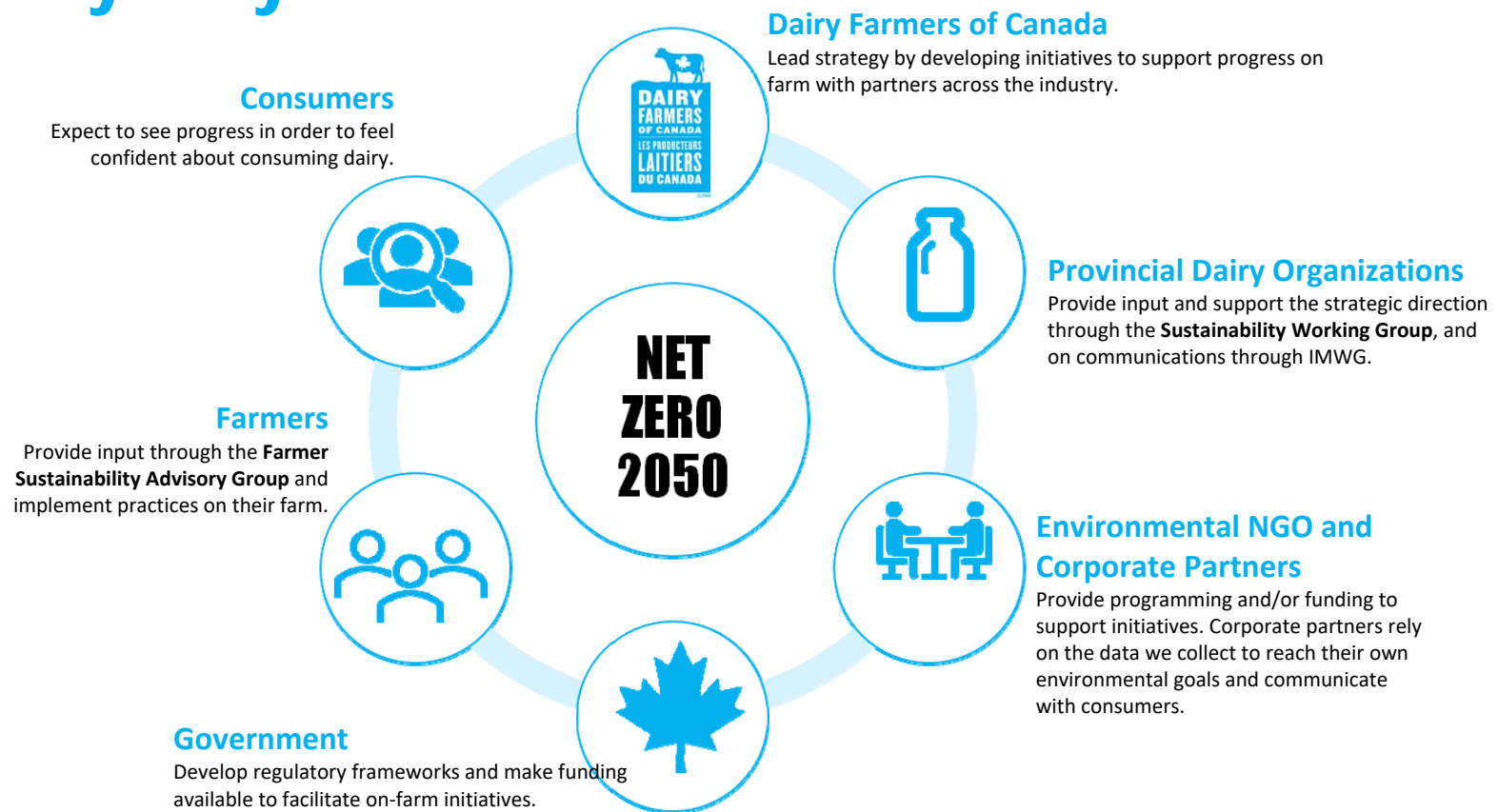
Where do we go from here?

- Adopt a national tool to measure Actual GHG on farm
- Opportunities for collaboration with processors, government and NGOs to fund training, implementation, and pilot projects
- Farmer Advisory Group
- Establish a national farmer friendly data system in order to aggregate the data from our efforts, to share the data with our partners and governments and to encourage investment in agriculture



TR/100

Key Players



By Reducing our Environmental Footprint, As Farmers we:



- + Reduce our input costs
- + Reuse our waste streams
- + Diversify our revenue stream
- + Provide our customers with a sustainably produced food
- + Encourage the next generation to farm

How can industry partners help?

- Provide accurate data to verify on-farm practices
- Encourage research that helps find solutions to achieve our net zero target
- Use on farm resources to encourage BMP uptake and Knowledge Transfer
- Develop tools to simplify data collection and accuracy for farmers
- Encourage genetic selection to decrease GHG's per kg of milk produced
- Help develop a complete and accurate model of actual impact of animal agriculture on the environment that is cognisant of the CH4 cycle, biodiversity, nutrients and soil health and water quality



We can do this....

..and you can help!