



# Innovation Driving Greenhouse Gas Mitigation in Canada's Beef Sector

**AIC 2017**

Karin Wittenberg, Kim Ominski, Emma McGeough  
and Getahun Legesse



UNIVERSITY  
OF MANITOBA

**ncle** | National Centre for Livestock  
and the Environment  
ncle.ca

# Population Change



Source:  
<http://politic365.com>

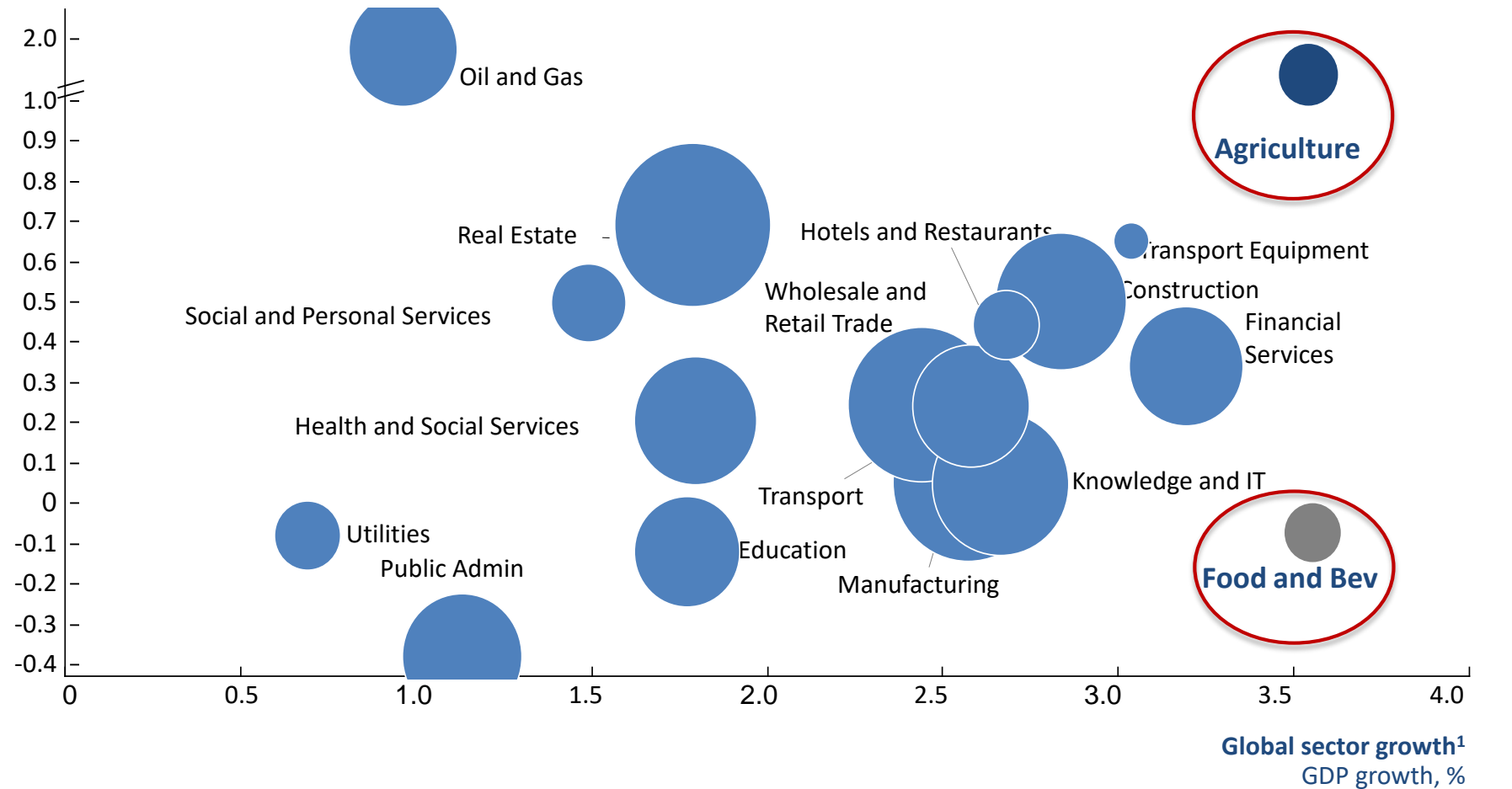
- There will be 2.4 billion new middle class consumers by 2030 – of which 2 billion will come from the Asia-Pacific region
- 50%↑ in demand for milk and meat

# Dominic Barton Report

## Canada's sector growth momentum relative to global trends, 2010-15

### Canadian success in capturing sector growth<sup>1</sup>

Canadian GDP growth / global GDP growth



<sup>1</sup> Based on historical GDP CAGR data for 2010 - 2015

SOURCE: IHS Global Insight

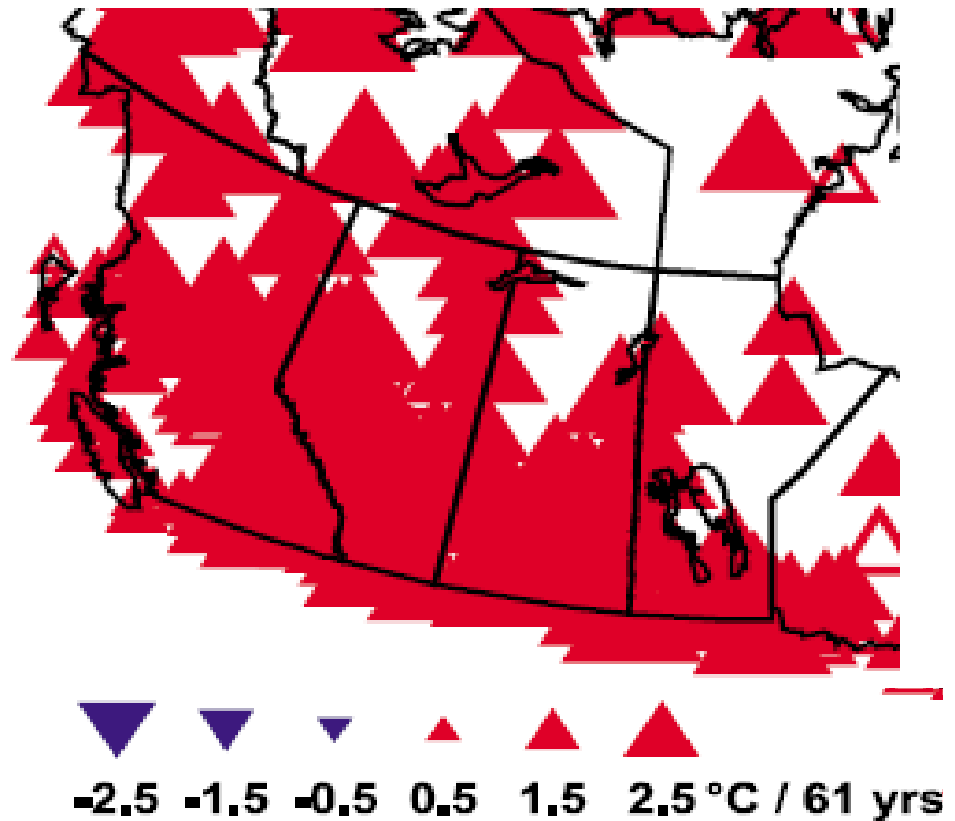


# Prairie Agriculture is Driven By:

trade population  
weather politics climate  
technology  
global transportation  
policy

# Western Canada – 1950 to 2010

- Most of the warming has been in the winter
- Less snowfall





# Prairie Weather in 2050

---

- Annual temperature increase between 1 and 4 °C
  - Reduce heat limitation
  - Increase water limitation
- Increase in extreme weather-related events
  - 2013 flooding in Alberta – climate change?
- Canada mostly insulated from big climatic effects
- Bigger challenges elsewhere: global?

# Other Drivers: Consumer Preference



New York Times: December 2, 2015

<https://www.nytimes.com/interactive/projects/cp/climate/2015-paris-climate-talks/will-reducing-meat-in-my-diet-help-the-climate>

<http://www.beece.com>

# Innovations...

---

## Of the past, current and future:

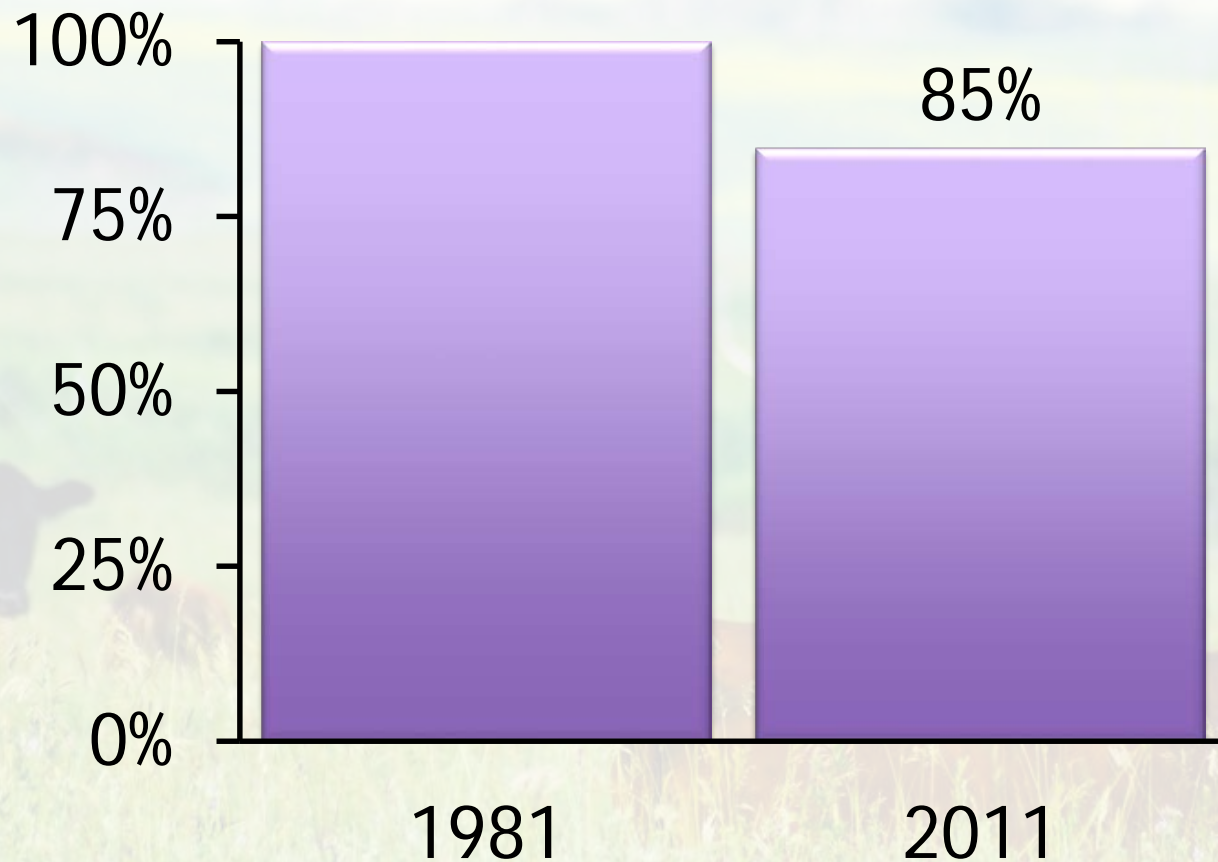
Use of technology in the cattle industry has and will continue to lead to vast improvement in production efficiency

- growth promoting technologies
- genetics
- feed additives
- forage quality
- grazing management

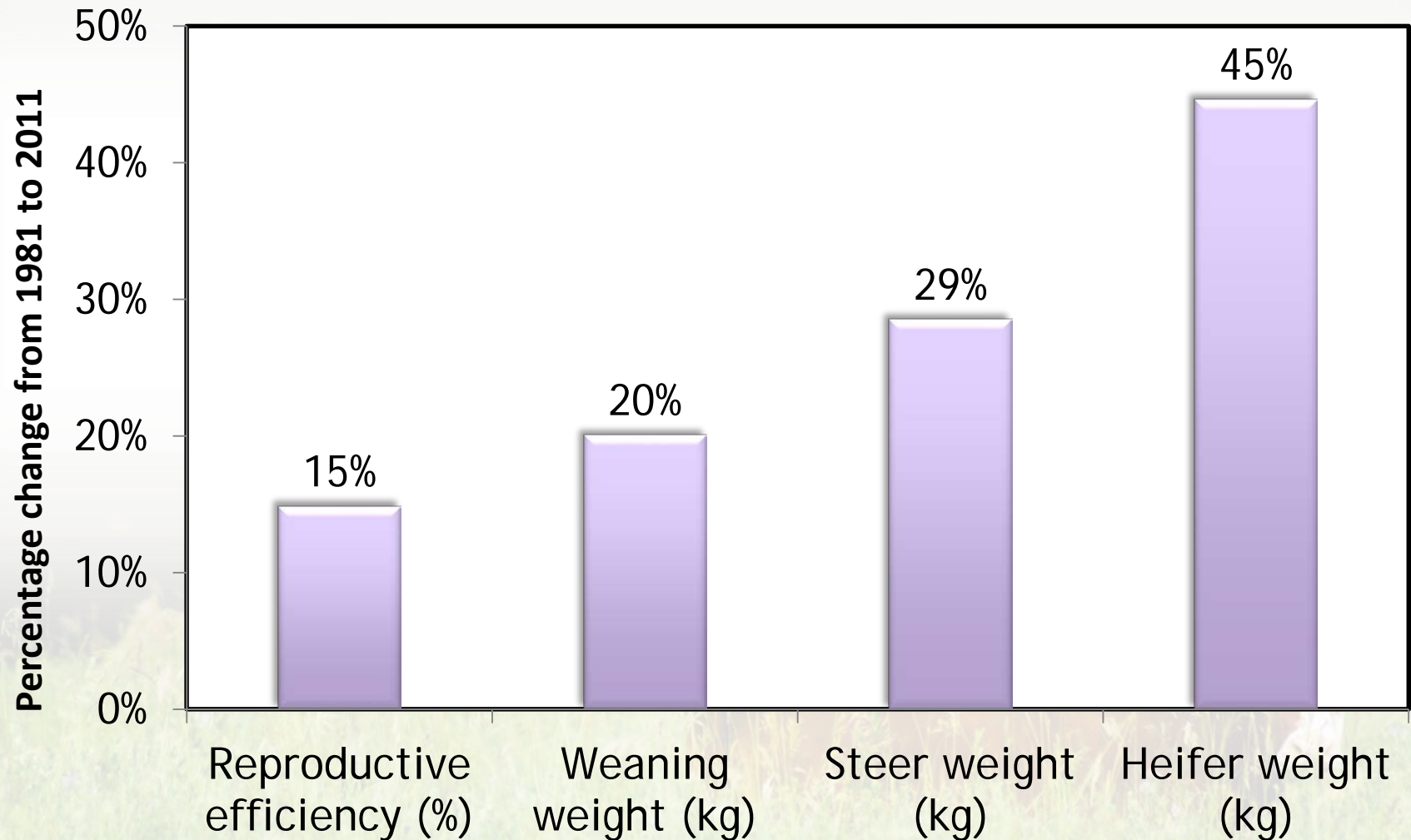


# Improvement in Carbon Footprint

---

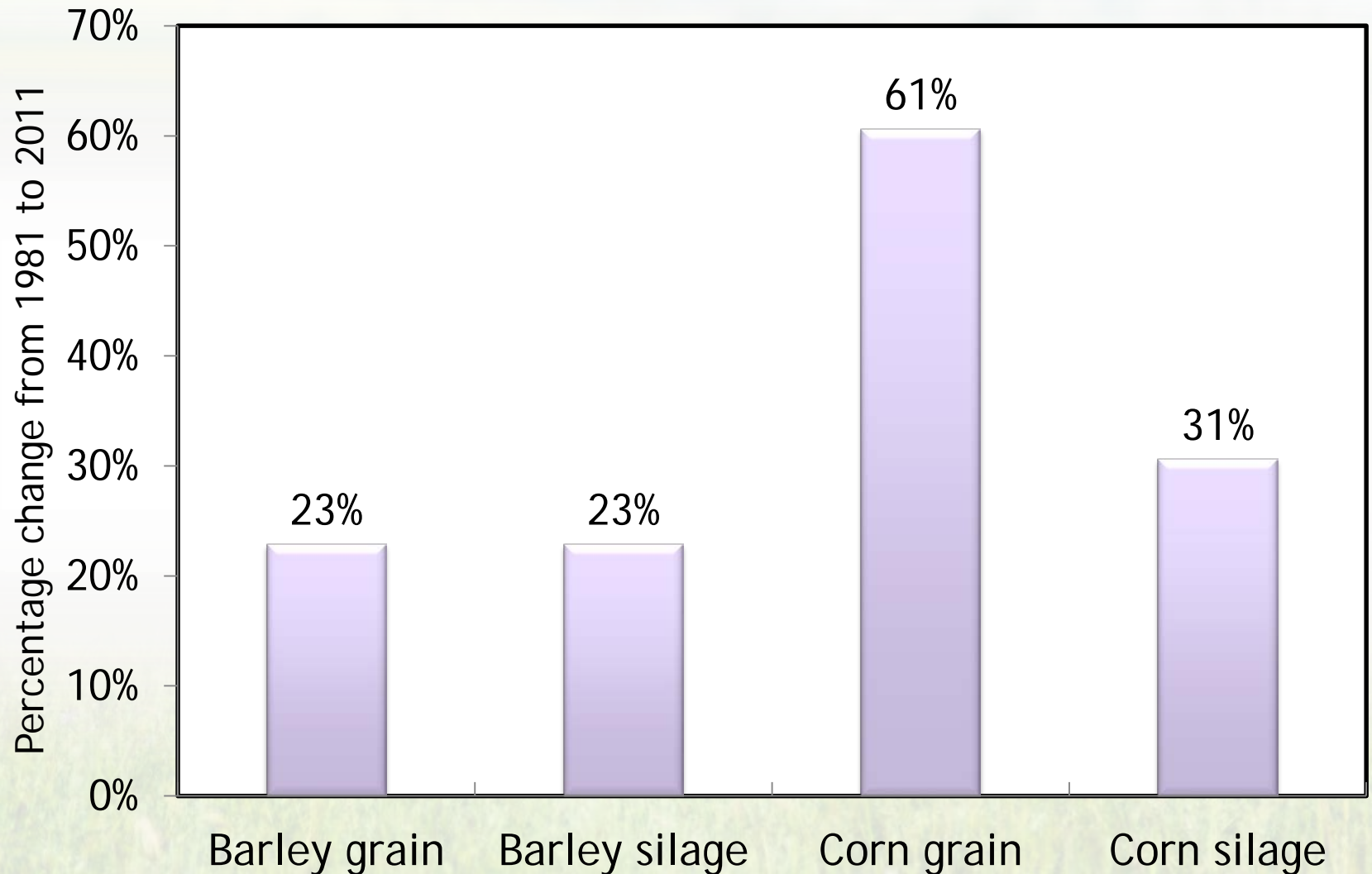


# Improvements in Animal Performance



# Improvements in Feed Crop Yields

---



# Future Change

---

## Incremental Change

- Biological efficiency
  - ↑ Production efficiency
- Technology
  - Manure management
- Social
  - Water use restrictions

## Big Shifts

- Biological efficiency
  - Perennial grains
- Technology
  - Fake meats
- Social
  - No water rights



# Kernza<sup>®</sup>: Food for the Future

A strategy for developing a new, sustainable commercial grain crop

# Biological Efficiency



# Technology



# Current and Future Innovation

---

- Traceability
- Information management, AI
- Education/leadership training



# Innovation in Information Exchange

---



**CRSB**

CANADIAN ROUNDTABLE  
FOR SUSTAINABLE BEEF

TABLE RONDE CANADIENNE  
SUR LE BOEUF DURABLE

# Members of the Canadian Round Table

## Food And Agriculture Business Members



## Non-Governmental Organization Members



## Processors Members



## Producer Organization Members



## Food And Retail Service Members



Observers: Representatives Of Government, Academia And Individual Producers

# Innovation in Information Exchange

---



# Tools for Successful Adaptation & GHG Mitigation in All Sectors

---

- Anticipate change
- Enhance resilience or 'adaptive capacity'
- Development of science-based policy

