

# An **overview** of the CRSB's **NATIONAL BEEF SUSTAINABILITY ASSESSMENT**



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**CRSB's**  
Sustainability  
Assessment

## **What** is the National Beef Sustainability Assessment?

The National Beef Sustainability Assessment (NBSA) is a two-year, farm to fork study that sets environmental, social and economic benchmarks for the Canadian beef industry.

All aspects of the value chain, from farming to consumption, were examined in the NBSA, to allow for a comprehensive evaluation of full value chain sustainability.

The study was guided by a multi-stakeholder steering committee and reviewed by an external third-party panel of experts. It also followed international guidelines and standards.

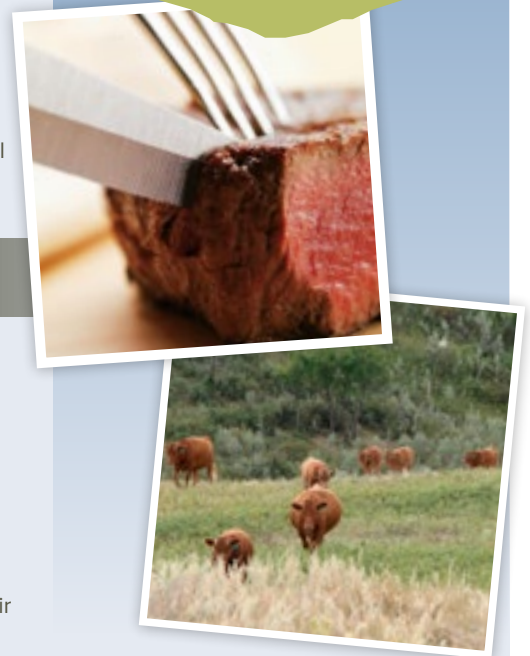
## **What** did we do?

We collected information through surveys with 77 producers and meat packing companies across Canada and consulted with numerous subject matter experts. Secondary sources included extensive literature reviews and statistical and proxy data.

### **THE STUDY CONTAINS 3 PARTS:**

**1) Environmental Assessment** included two main segments:

- i. Environmental Life Cycle Assessment (E-LCA)
  - a. Evaluated value chain impacts on climate change, fossil fuel use, water use and air and land pollution potentials
  - b. Followed International Organization for Standardization (ISO) 14040
  - c. Applied the Food and Agriculture Organization of the United Nations (FAO) Livestock Environmental Assessment and Performance (LEAP) guidelines
  - d. Figure 1 shows the stages included in the E-LCA



**Figure 1**

*E-LCA stages*



## Land Use Assessment (LUA)

- Assessed topics not well addressed in standard life cycle assessments such as biodiversity, carbon soil sequestration, water use and water risk.
- Innovative techniques were developed to assess these topics in this study

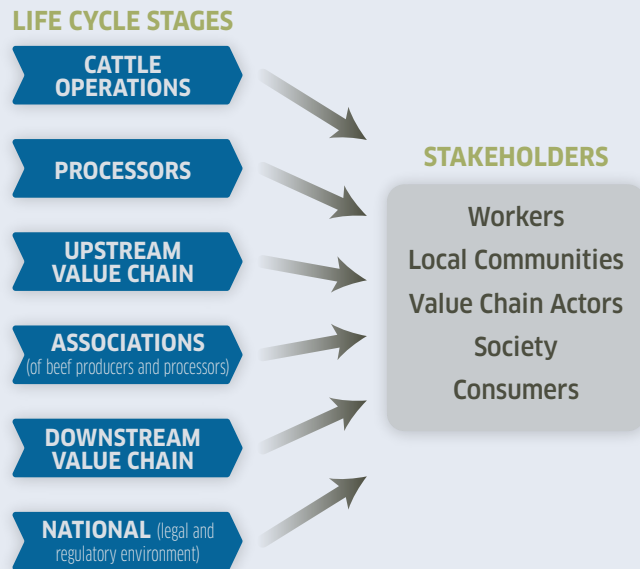
## 2) Social Assessment

- Adopted a Social Life Cycle Assessment (S-LCA) approach
- Complied with the United Nations Environment Programme (UNEP)/Society of Environmental Toxicology and Chemistry (SETAC) guidelines
- Figure 2 shows the stages and stakeholders included in the S-LCA

**Life Cycle Assessment (LCA)** is a tool used to assess the environmental performance of products, processes and services. It provides a comprehensive approach to understanding relationships and trade-offs between environmental and social impacts.

**Figure 2**

S-LCA stages and stakeholders



## 3) Economic Assessment

- Adopted an indicator approach to evaluate economic aspects of the Canadian beef industry. The indicator approach allows for measurement in quantitative, qualitative and descriptive terms.

The environmental and social assessments were conducted by Deloitte. The economic assessment was conducted by Canfax Research Services.



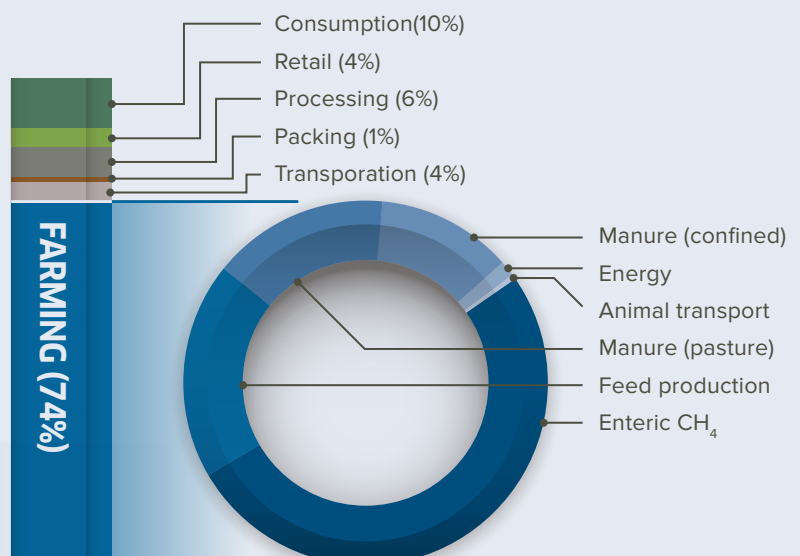
## What did we find?

### ENVIRONMENT

- The greenhouse gas (GHG) footprint of Canadian beef is:
  - 30.8 kg CO<sub>2</sub> eq. per kg packed boneless beef (delivered and consumed)
  - 11.4 kg CO<sub>2</sub> eq. per kg live weight
- Farming accounts for 74% of the GHG footprint, followed by consumption, processing, retail and transportation, and packing (Figure 3).

**Figure 3**

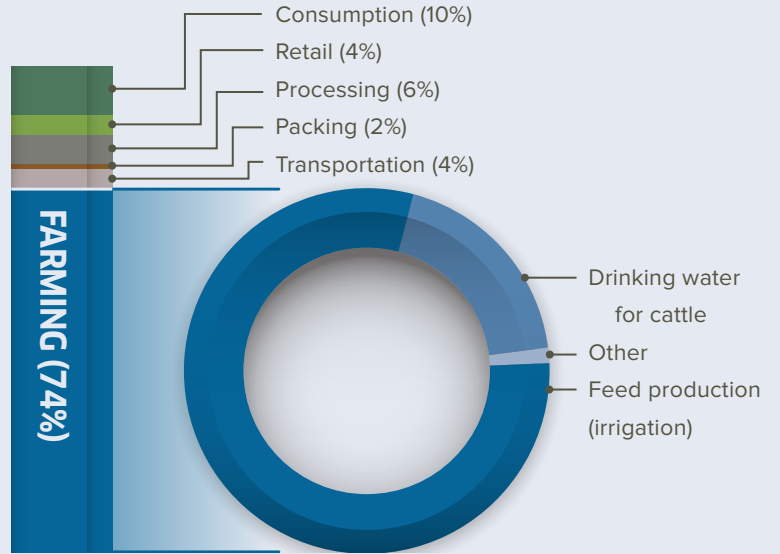
Contribution of different life cycle stages to the GHG footprint of Canadian beef



kg	kilogram	Ma	million acres
CO <sub>2</sub>	carbon dioxide	Mha	million hectares
m <sup>2</sup>	square metres		

## What did we find?

- The blue water footprint of Canadian beef is:
  - 631 litres per kg of packed boneless beef (delivered and consumed)
  - 235 litres per kg of live weight
- Farming accounts for 74% of the blue water footprint, followed by consumption, processing, retail and transportation, and packing (Figure 4).



Canadian beef was found to have relatively low GHG and blue water footprints per unit of meat produced when compared to other studies conducted around the world.

Approximately 19% (0.23 kg of 1.24 kg) of edible bone free meat is wasted from secondary processing to consumption, because of trimming, spillage, discardment of expired meat, and other reasons (Figure 5).

**Figure 5**

*Meat waste occurring during secondary processing, retail and consumption*



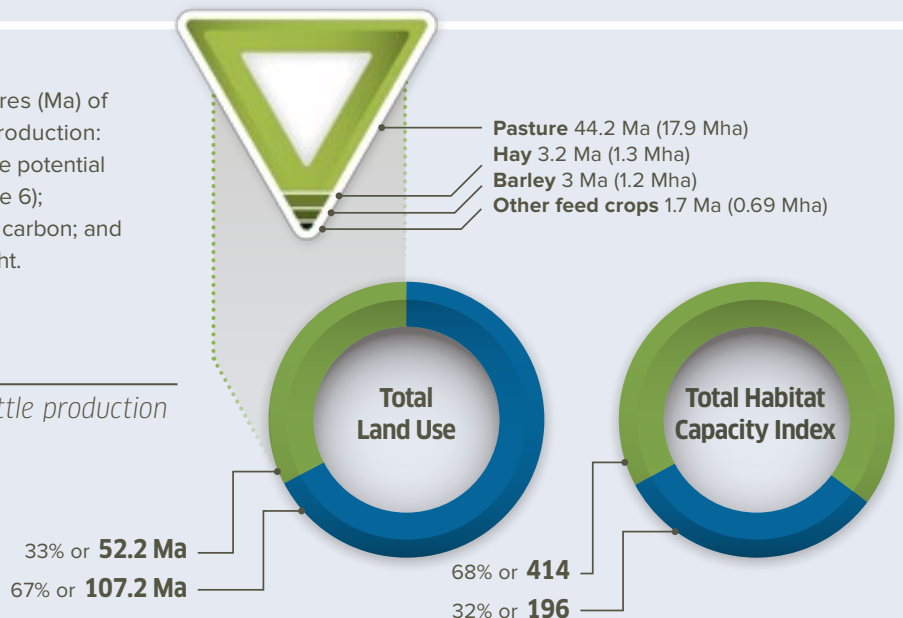
Beef cattle production currently uses 52.2 million acres (Ma) of the Canadian agricultural land base. Land for beef production:

- accounts for 33% of agricultural land but 68% of the potential wildlife habitat on the agricultural landscape (Figure 6);
- currently stores approximately 1.5 billion tonnes of carbon; and
- 37-93 m<sup>2</sup> is needed to produce one kg of live weight.

**Figure 6**

*Land use and habitat index values for beef cattle production and other agricultural areas in Canada*

- Land used for beef cattle production
- Other agricultural use



## SOCIAL

Most indicators related to working conditions showed low risks. Farmers and packers scored well on hourly wages, and health and safety training and prevention. Social impacts for temporary foreign workers were found to be a low risk in terms of social benefits, average hourly wage, and unionization rate. Four social hotspots along the Canadian beef value chain that were directly linked to working conditions were found:

- the rights of temporary foreign workers at the national level;
- the fatality rate at the supplier level;
- the wage of workers at the distribution level; and
- the work load at the beef producer level.

The Canadian beef industry scored very well in the areas of animal health and welfare, partly due to the investment in the Code of Practice for the Handling and Care of Beef Cattle.

- 22 of the 23 indicators assessed were found to be a low to very low risk
- Pain control for branding was found to be a moderate risk
- No high risk indicators were found.

The potential for antimicrobial misuse was found to be a low risk in Canada due to the uptake of best management practices, training and measuring and monitoring.

## ECONOMIC

Cow-calf per unit cost of production (COP) declined 12% between 1990 and 2014, in deflated dollars. Feedlot COP declined 33.5% between 2001 and 2010 before higher input prices reversed this trend. In 2013, COP was still 9% below the peak in 2001.

Domestic retail beef demand was 104 (2000=100) in 2013, as it increased from the low of 96.5 in 2010. International demand was 82 in 2013 and has been increasing since the low of 63.6 in 2009 following the global financial crisis.

Long term average margins from a 200 head cow herd of \$9,650 with paid labour of \$7,909 provides a total annual income of \$17,559 (nominal, excludes government program payments).

The ability of the industry to distinguish between trends and fads and respond to consumer demands were identified as important to the economic sustainability of the beef industry.

## WHAT are the next steps?

The Canadian beef industry has a strong desire to see improvements that reduce its environmental footprint and support society's values while at the same help it remain economically viable. Therefore, the results from the NBSA, complemented by a membership priority setting exercise that took place at the 2016 CRSB semi-annual, informed the development of the CRSB's National Beef Sustainability Strategy.

The Sustainability Strategy identifies goals, key performance indicators and action items that will guide the work of the CRSB and its membership, specifically the organization's third pillar of work, Sustainability Projects. The goals are shown in Table 1.

The Sustainability Strategy incorporates both areas identified as hotspots in the study as well as areas of importance to the beef industry (e.g. consumer interest, continuous improvement).

**Table 1** Summary of goals in the Sustainability Strategy

Overarching	
Goal #1	Build a stronger and more united Canadian beef sustainability community
Environmental	
Goal #2	Reduce the greenhouse gas footprint of Canadian beef per unit of product produced (CO <sub>2</sub> eq./kg)
Goal #3	Enhance ecosystem services and biodiversity on lands managed by beef producers
Goal #4	Enhance riparian health and reduce the blue water footprint of beef production
Goal #5	Reduce post-harvest meat waste
Social	
Goal #6	Promote farm safety and responsible working conditions
Goal #7	Promote excellence in animal care
Goal #8	Support the further development, monitoring and dissemination of best practices regarding antimicrobial use
Economic	
Goal #9	Increase the financial viability of beef production in Canada
Goal #10	Increase demand for Canadian beef through consumer awareness of sustainable beef production

Visit [www.crsb.ca](http://www.crsb.ca) for more information on the National Beef Sustainability Assessment and Strategy.

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