Canada’s Food Report Card 2015.
International Comparison
Canada's Food Report Card 2015: International Comparison
Dr. Jean-Charles Le Vallée, Michael Grant

Preface
This inaugural annual report card on food was launched at The Conference Board of Canada's Canadian Food and Drink Summit 2015, held in Toronto, Ontario, October 26–27, 2015 (#CBOCFood). It compares 43 food performance metrics and considers Canada's position relative to 16 peer OECD countries covering five main areas, which are also the key elements of the Canadian Food Strategy: industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability.

The report card strives to offer clear, reliable evidence of food system and food sector performance that can enhance public and private awareness and commitment to action. Canada's overall grades are “A” in food safety, “B” in healthy food and diets, “B” in household food security, “B-” in industry prosperity, and “C+” in environmental sustainability.


©2016 The Conference Board of Canada
Published in Canada | All rights reserved | Agreement No. 40063028 | "Incorporated as AERIC Inc.

An accessible version of this document for the visually impaired is available upon request. Accessibility Officer, The Conference Board of Canada
Tel.: 613-526-3280 or 1-866-711-2262 E-mail: accessibility@conferenceboard.ca

®The Conference Board of Canada and the torch logo are registered trademarks of The Conference Board, Inc. Forecasts and research often involve numerous assumptions and data sources, and are subject to inherent risks and uncertainties. This information is not intended as specific investment, accounting, legal, or tax advice. The findings and conclusions of this report do not necessarily reflect the views of the external reviewers, advisors, or investors. Any errors or omissions in fact or interpretation remain the sole responsibility of The Conference Board of Canada.
CONTENTS

i EXECUTIVE SUMMARY

1 Canada’s Food Report Card 2015: International Comparison

3 Methodology

5 Element: Industry Prosperity (B–)
6 Sub-element: Resource Endowments
7 Metric 1: Agricultural Land Per Capita (B)
8 Metric 2: Renewable Water Resources (A)
9 Sub-element: Farm Capitalization
9 Metric 3: Farm Capitalization (A)
11 Sub-element: Agriculture, Crop, and Livestock Production
11 Metric 4: Agricultural Production (C)
12 Metric 5: Crop Production (A)
13 Metric 6: Livestock Production (D)
14 Sub-element: Agricultural Productivity
14 Metric 7: Total Factor Productivity Growth in Agriculture (C)
16 Sub-element: Agriculture’s Contribution to Gross Domestic Product
16 Metric 8: Agriculture’s Contribution to GDP (B)
17 Sub-element: Agricultural Exports
18 Metric 9: Agricultural Export Orientation (B)
19 Metric 10: Agricultural Exports Per Capita (B)
20 Sub-element: Representation Among Leading Food Industry Companies
20 Metric 11: Representation Among Leading Global Food Processing Companies (D)
21 Metric 12: Representation Among Leading Global Food Retailers (C)
23 Sub-element: Retail Market Concentration
23 Metric 13: Market Concentration in Food Retailing (C)
25 Sub-element: Protecting Industry From Competitive Forces
26 Metric 14: Trade Barriers: Simple Average Tariffs on Agricultural Goods (B)
28 Metric 15: Trade Barriers: Percentage of Tariff Lines Exceeding 15 Per Cent Tariffs (A)
30 Metric 16: Producer Supports (A)
32 Sub-element: Food Innovation
33 Metric 17: Annual Growth in Multifactor Productivity (C)
34 Metric 18: Triadic Biotechnology Patents (D)
35 Sub-element: Food Regulations
36 Metric 19: Product Market Regulations (D)
37 Metric 20: Agricultural Regulatory Restrictiveness (A)
Element: Healthy Food and Diets (B)

Sub-element: Produce Consumption
Metric 21: Vegetable Consumption (B)
Metric 22: Fruit Consumption (B)

Sub-element: Salt, Fat, Sugar Intake
Metric 23: Salt Intake (A)
Metric 24: Saturated Fat Intake (B)
Metric 25: Added Sugar (C)

Sub-element: Diet Diversification
Metric 26: Prevalence of Non-Starchy Foods in Diets (A)

Sub-element: Food Acquisition
Metric 27: Food Over-Acquisition (C)
Metric 28: Adult Obesity (C)
Metric 29: Diabetes Mortality (C)

Sub-element: Food Education
Metric 30: Food Literacy (B)

Element: Food Safety (A)
Metric 31: Global Food Safety Ranking (A)

Element: Household Food Security (B)

Sub-element: Food Affordability
Metric 32: Consumer Expenditures on Food (B)

Sub-element: Food Price Stability
Metric 33: Domestic Food Price Volatility (B)

Element: Environmental Sustainability (C+)

Sub-element: Food Waste
Metric 34: Household Food Waste (D)
Metric 35: Pre-purchase Food Loss (D)

Sub-element: Air Quality
Metric 36: Greenhouse Gas Emissions (D)
Metric 37: Ammonia Emissions (D)

Sub-element: Water Quantity
Metric 38: Water Withdrawals in Agriculture (B)

Sub-element: Soil Health
Metric 39: Nitrogen Balance (A)
Metric 40: Phosphorus Balance (A)
Metric 41: Soil Erosion From Water (A)
Metric 42: Soil Quality (C)

Sub-element: Seafood Sustainability
Metric 43: Sustainable Marine Food Provision (B)

Appendix A

Bibliography
Acknowledgements

This report was prepared for The Conference Board of Canada's Centre for Food in Canada's (CFIC) Canadian Food Observatory under the direction of Dr. Michael Bloom, Vice-President, Industry and Business Strategy, The Conference Board of Canada. Funding was provided by CFIC investors and The Conference Board of Canada.

The report was written and researched by Dr. Jean-Charles Le Vallée and Michael Grant, with research contributions from Beement Alemayehu of McGill University.

The findings and conclusions of this report are entirely those of The Conference Board of Canada, not of the Centre’s investors. Any errors and omissions in fact or interpretation remain the sole responsibility of The Conference Board of Canada.

About the Centre for Food in Canada

The Centre for Food in Canada (CFIC) is an evidence-based, independent source of advanced food and beverage performance monitoring and reporting that provides advisory and research services, food strategy engagement, and communications outreach.

It aims to:

• raise public awareness of the nature and importance of the food and beverage sectors in Canada’s economy and society;
• articulate and promote a shared vision for the future of food in Canada—the 2014 Canadian Food Strategy—that meets our country’s need for a coordinated, long-term strategy for change;
• track and report on Canada’s national food and beverage performance, covering industry prosperity, healthy food and diets, food safety, household food security and environmental sustainability, through its Canadian Food Observatory program;
• conduct advanced research on new and emerging issues related to food and drink to sustain the empirical basis for planning and action;
• provide opportunities for dialogue and collaboration among food- and non-food-related stakeholders to promote and facilitate change.

For more information on CFIC, visit us at www.conferenceboard.ca/cfic. You can also follow us on Twitter at @CBOC_Food.

Questions? Contact us at food@conferenceboard.ca.
EXECUTIVE SUMMARY

Canada's Food Report Card 2015: International Comparison

At a Glance


- The report card compares 43 food performance metrics spread across the Canadian Food Strategy's five elements.

- Canada's overall grades are “A” in food safety, “B” in healthy food and diets, “B” in household food security, “B-” in industry prosperity, and “C+” in environmental sustainability.
Welcome to the first *Annual Report Card on Food*, produced by The Conference Board of Canada’s Canadian Food Observatory\(^1\). The 2015 report card on food is the first in a series of annual report cards that will summarize Canadian food and beverage sector performance and progress made in the year prior to each report’s release.

The 2015 report card assesses Canada’s national food performance against that of 16 leading Organisation for Economic Co-operation and Development (OECD) countries. As the basis for comparison, it measures 43 food performance metrics across five main areas (which are also the key elements of the Canadian Food Strategy): industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability. Grades for each of the 43 metrics across all 17 OECD countries are presented in Table 1.

In 2016, the report card will evaluate Canada’s domestic food performance across all 10 provinces, covering the same five key elements. The annual report cards will alternate yearly thereafter between international and domestic comparisons.

Following are the summary grades and a brief overview of Canada’s relative food performance by element of the Strategy.

**B – in Industry Prosperity**

Twenty metrics shed light on food industry prosperity performance. Comparisons and ratings show Canada punches below its weight in food innovation, product market regulation, livestock production, and

---

1 The Canadian Food Observatory is a program of the Conference Board of Canada’s Centre for Food in Canada (CFIC).
representation among leading global food companies. Conversely, Canada’s strengths are in its resource endowments, farm capitalization, crop production, and economic viability.

B in Healthy Food and Diets

Ratings on healthy food and dietary performance show Canada’s performance is helped by lower-than-average intake levels of salt and saturated fats, along with a diverse diet (including a higher share of non-starchy foods) and moderate food literacy levels. Somewhat weaker results for diabetes, obesity, and excess food acquisition hinder overall performance, contributing to higher incidences of diet-related diseases and reducing the prospects of living long, healthy lives.

A in Food Safety

All countries have very high food safety standards, but Canada (along with Ireland) is an excellent performer relative to its peers. The 10 metrics in this category highlight areas where countries can improve their food safety performance. For Canada, work remains to improve reporting on chemical risks in food consumption (e.g., Total Diet Studies), conduct more frequent nutrition and dietary studies, and make additional improvements to traceability and radionuclide standards.

B in Household Food Security

Average dietary energy availability is very high in all countries, including Canada. For developed countries like Canada, overall food availability is not at issue nationally; localized problems with economic food access and food poverty among indigenous people, single-parent households, and other at-risk populations are the greatest concerns. Additionally, food insecurity in Canada is affected by a lower exchange rate, natural hazards such as floods and droughts, rising animal feed costs, and
<table>
<thead>
<tr>
<th>Metric</th>
<th>Canada</th>
<th>Australia</th>
<th>Austria</th>
<th>Belgium</th>
<th>Denmark</th>
<th>Germany</th>
<th>France</th>
<th>Finland</th>
<th>Ireland</th>
<th>Italy</th>
<th>Japan</th>
<th>Netherlands</th>
<th>Norway</th>
<th>Sweden</th>
<th>Switzerland</th>
<th>United Kingdom</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element: Industry Prosperity</strong> (Canada: B–)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural Land per Capita</td>
<td>B</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Renewable Water Resources</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Farm Capitalization</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Agricultural Production</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Crop Production</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Livestock Production</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Total Factor Productivity Growth in Agriculture</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Agriculture's Contribution to GDP</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Agricultural Export Orientation</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Agricultural Exports Per Capita</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Representation Among Leading Global Food Processing Companies</td>
<td>D</td>
<td>–</td>
<td>–</td>
<td>D</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Representation Among Leading Global Food Retailers</td>
<td>C</td>
<td>–</td>
<td>–</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Market Concentration in Food Retailing</td>
<td>C</td>
<td>–</td>
<td>C</td>
<td>–</td>
<td>C</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Trade Barriers: Tariff Lines Exceeding 15 Per Cent</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Annual Growth in Multifactor Productivity</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>Triadic Biotechnology Patents</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Product Market Regulations</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Agricultural Regulatory Restrictiveness</td>
<td>A</td>
<td>A</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Element: Healthy Food and Diets</strong> (Canada: B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetable Consumption</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Fruit Consumption</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Metric</td>
<td>Canada</td>
<td>Australia</td>
<td>Austria</td>
<td>Belgium</td>
<td>Denmark</td>
<td>Germany</td>
<td>France</td>
<td>Finland</td>
<td>Ireland</td>
<td>Italy</td>
<td>Japan</td>
<td>Netherlands</td>
<td>Norway</td>
<td>Sweden</td>
<td>Switzerland</td>
<td>United Kingdom</td>
<td>United States</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------</td>
<td>-----------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>--------</td>
<td>---------</td>
<td>---------</td>
<td>-------</td>
<td>-------</td>
<td>-------------</td>
<td>--------</td>
<td>--------</td>
<td>-------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>Element: Healthy Food and Diets (Canada B)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt Intake</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>Saturated Fat Intake</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Added Sugar</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>Diet Diversification</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Food Over-Acquisition</td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Adult Obesity</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Diabetes Mortality</td>
<td>c</td>
<td>c</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>c</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>c</td>
<td>c</td>
<td>c</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>d</td>
</tr>
<tr>
<td>Food Literacy</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td><strong>Element: Food Safety (Canada A)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Ranking</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>D</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td><strong>Element: Food Security (Canada B)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Expenditures on Food</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Domestic Food Price Variability</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td><strong>Element: Environmental Sustainability (Canada C)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household Food Waste</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>–</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Pre-Purchase Food Loss</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>A</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>C</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>GHG Emissions</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Ammonia Emissions</td>
<td>D</td>
<td>–</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Water Withdraws</td>
<td>B</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>B</td>
</tr>
<tr>
<td>Nitrogen Balance</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Phosphorus Balance</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Soil Erosion from Water</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Soil Quality</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Sustainable Marine Food Provision</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>C</td>
</tr>
</tbody>
</table>

Source: The Conference Board of Canada.
imports of several commodities such as produce, coffee, sugar, tropical fruit, and olive oil, with greater consequences, relative to its peers, on resulting food price volatility and affordability.

**C+ in Environmental Sustainability**

The report card examines several environmental risk areas that result from the activities of various subsectors of the food supply chain, from primary production (agriculture and seafood) to food manufacturing, retail subsectors, and consumers. It considers impacts including food waste, water withdrawals, air quality, soil health, and seafood sustainability.

Canada has higher rates of both food waste and food losses before and after purchases. It is also ranked last with rising rates of greenhouse gas and ammonia emissions. However, Canada performed strongly in soil health, while work remains on improving its seafood sustainability performance.
Canada’s Food Report Card 2015: International Comparison

Summary

- This first Annual Report Card on Food assesses Canada’s food and beverage sector performance in five areas against that of 16 leading peer OECD countries.

- The report card compares 43 food performance metrics by element of the Canadian Food Strategy: industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability.

- The report card strives to offer clear, reliable evidence of food system and food sector performance that can enhance public and private awareness and commitment to action.

- Canada performs well in the areas of food safety, food security, and healthy food and diets, but shows a weaker performance in the areas of industry prosperity and environmental sustainability.

- In 2016, the report card will evaluate Canada’s domestic food performance across all 10 provinces, covering the same five key elements. The annual report cards will alternate yearly thereafter between international and domestic comparisons.

Produced by the Canadian Food Observatory (a program of our Centre for Food in Canada [CFIC]), the report card is the first in a series of annual reports that will summarize food sector performance and progress made in the previous year, using food performance metrics established by the Observatory.

To encourage implementation efforts and to track progress on Canada’s food performance and potential, CFIC established the Canadian Food Observatory1 to monitor progress in the food and beverage sectors and to prepare an annual report card to report progress over time. The report card measures five main areas, which are also the key elements of the Canadian Food Strategy. (See “The Canadian Food Strategy.”) They are industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability.

This year’s report card uses 43 food performance metrics to assess Canada’s national food performance against that of 16 peer Organisation for Economic Co-operation and Development (OECD) countries. It compares the relative national food performances of the 17 OECD countries with each other. It does not compare their performance outside this group of countries, nor does it reflect sub-national differences in food performance.

In 2016, the report card will evaluate Canada’s domestic food performance across all 10 provinces, covering the same five key elements. The annual report cards will alternate yearly thereafter between international and domestic comparisons.

---

1 The Conference Board of Canada, Canadian Food Observatory.
Methodology

For each food performance metric, a grade has been assigned to each country where data permit. To assign a score, we calculated the difference between the top and bottom performers and divided the figure by 4 into four quartiles. Thus, a country receives an “A” if its score is in the top quartile, “B” if it scores in the second quartile, “C” if its rating is in the third quartile, and “D” if it is in the bottom quartile. The following rating legend colour scheme applies throughout the report card to all charts and tables:

Our approach to food performance measurement and reporting is inductive, practical, and linked to concrete action. Food performance metrics must be credible to stakeholders and cover the complete food system, including local producers, processors, retailers, and operators of all sizes. They should spur stakeholders to act—to make management decisions, finance investments, build programs, and improve dietary, consumption, and production choices.

Domestically, for instance, as reported in CFIC’s 2013 report *Toward Performance Metrics for Canada’s Food System*, if agriculture multifactor productivity (food innovation), returns on capital employed (prosperity), soil quality (sustainability), and the cost of nutritious food baskets (food security) improve, Canada could reach many of its desired outcomes as set out in the Canadian Food Strategy. This good performance could benefit the food economy, the well-being of Canadians, and the ecosystem itself. Conversely, worsening performance would represent a failure to achieve the desired outcomes.

---

2 The only indicator that does not follow this standard methodology is food literacy, Metric 30. Results over 50 per cent received an “A,” above 40 per cent a “B,” above 30 per cent a “C,” and under 30 per cent a “D.”

3 Le Vallée, *Toward Performance Metrics*.
and could pose further risks to Canadians, the food system, and its stakeholders. Currently, worsening domestic food performance metrics include obesity levels (health), fruit and vegetable intake (health), water quality (sustainability), and the return on assets in agriculture (prosperity).

The report card strives to offer clear, widely accepted evidence of food system and food sector performances that can enhance public and private awareness and commitment to action. It is our hope that this report card will engage Canadians, food businesses, governments, and civil society organizations to take action to advance Canada’s food performance and potential.

The Canadian Food Strategy

The Canadian Food Strategy, launched by The Conference Board of Canada in March 2014, recognizes that change is essential to meet both current and future food needs. Canadians want foods that are safe, nutritious, affordable, and available to all, and that are produced in ways that are environmentally sustainable. These goals can be achieved while taking advantage of abundant and growing opportunities to further export to the world and enhance industry prosperity.

The Strategy contains five fundamental elements: industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability. Each element is represented in the Strategy through eight high-level aspirational goals. The Strategy is the product of four years of research, national surveys, and national dialogue through the Conference Board’s Centre for Food in Canada (CFIC). The broad scope is essential. It reflects Canadians’ widely held view that our food system encompasses more than the food industries. It includes multiple economic, social, and environmental dimensions; it is a blueprint for change.

4 The Conference Board of Canada, *The Canadian Food Strategy*.
5 The Conference Board of Canada, *Centre for Food in Canada: Research Reports*.
6 The Conference Board of Canada, *Centre for Food in Canada*. 
Element: Industry Prosperity

Industry prosperity is one of five key elements of the Centre for Food in Canada's Canadian Food Strategy. Given that Canada's food system operates primarily through market mechanisms, industry approaches to management, innovation, and productivity are essential to determining Canadians’ food security, safety, and diets while ensuring environmental sustainability.

The food industry comprises: primary production (crops, livestock, and seafood); food processing and distribution; and wholesale, retail, and food services. In our Centre for Food in Canada report Valuing Food: The Economic Contribution of Canada’s Food Sector, we showed that the food industry is responsible for more than 9 per cent of GDP and 2.3 million jobs, roughly 13 per cent of Canadian employment. The food services industry alone accounted for almost 900,000 jobs. Other key employers were retail trade (528,000 jobs) and wholesale trade (100,000 jobs). Food and beverage manufacturing employed 272,000 Canadians, while another 280,000 worked at the agricultural end of food production. These jobs are virtually all in the private sector.

Industry prosperity is determined by a combination of resource endowments, the development of resources through capital and labour, innovation to get the most out of endowments, and capital and labour inputs (otherwise known as productivity), with regulations throughout. Market structures shape competitive incentives to lower costs and innovate.

---

7 Bloom, From Opportunity to Achievement.
8 This is why the Centre for Food in Canada conducted a significant body of research on industry prosperity, including the macroeconomics of the food economy, the microeconomics of Canadian farms, the fisheries and aquaculture sector, private food standards, the supply management system, and more.
9 Grant and others, Valuing Food, 18.
Government policies have an important influence on food enterprise costs and benefits. This is especially true, for instance, in trade policy, product innovation, access to markets, and agriculture supply management. All these factors work together in subtle ways to determine the what, where, and how of Canada’s food sector prosperity.

Canada's Industry Prosperity Performance

Canada's strengths are in its resource endowments, farm capitalization, crop production, and economic viability. It punches below its weight in food innovation, product market regulation, livestock production, and representation among leading global food companies.

Sub-element: Resource Endowments

Robust Resource Assets Leverage a Strong Natural Foundation

A country's resource endowments are the foundation upon which its food industry is built. Resource endowments include agricultural land, water, and climate. All land-based food is derived through agricultural production that makes intensive use of land and water. Countries with abundant land and water are well positioned to leverage natural endowments to produce food. These countries start from a lower cost base than others that lack these endowments. When land and water are plentiful, agriculture is less likely to compete with other industrial and commercial uses of these resources, which lowers the cost of these in comparison with competitors that lack these resources. We look at two key metrics of resource endowments: agricultural land per capita and water availability.
Metric 1: Agricultural Land Per Capita

Canada Is a Strong Performer

Canada is a world leader in agricultural land per capita, scoring a “B” grade. It has a very low population density, second only to Australia in low population density among the peer countries. (See Chart 1.) When land is not needed to house people, it can be freed for agricultural production. With just over 35 million people, Canada is blessed with the eighth most arable land of any country in the world. As discussed below, this helps explain why Canada is one of the few countries that is a net food exporter—and that has the potential to export significantly more.

Chart 1

Hectares of Agricultural Land, 2012
(per capita)

Canada has more than 50.5 million hectares of dependable agricultural land. Yet from 1971 to 2011, the farm area in Canada declined (-6 per cent) from 68.7 million hectares to 64.8 million hectares.\textsuperscript{10} The loss of 3.9 million hectares of farmland is equal to an area approximately the size of British Columbia’s Vancouver Island.

**Metric 2: Renewable Water Resources**

Canada Tops the List

Canada has a massive amount of freshwater resources relative to its population, the highest among the comparator countries, as Chart 2 illustrates. Agriculture is one of the most water-intensive enterprises: water is used in crop irrigation, for animals’ drinking needs, in cleaning, and in food processing. Worldwide, agriculture accounts for over 70 per cent of all freshwater use, compared to 20 per cent for industry and around 10 per cent for domestic use.\textsuperscript{11} Therefore Canada’s abundance of fresh water positions its agricultural sector well.

**Chart 2**

**Renewable Freshwater Resources Per Capita, 2013**

(\text{thousand cubic metres})

<table>
<thead>
<tr>
<th>Country</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>87.5</td>
<td>83.5</td>
<td>80.5</td>
<td>77.5</td>
</tr>
<tr>
<td>Norway</td>
<td>75.5</td>
<td>72.5</td>
<td>69.5</td>
<td>66.5</td>
</tr>
<tr>
<td>Australia</td>
<td>70.5</td>
<td>67.5</td>
<td>64.5</td>
<td>61.5</td>
</tr>
<tr>
<td>Finland</td>
<td>65.5</td>
<td>62.5</td>
<td>59.5</td>
<td>56.5</td>
</tr>
<tr>
<td>Ireland</td>
<td>58.5</td>
<td>55.5</td>
<td>52.5</td>
<td>49.5</td>
</tr>
<tr>
<td>United States</td>
<td>42.5</td>
<td>39.5</td>
<td>36.5</td>
<td>33.5</td>
</tr>
<tr>
<td>Austria</td>
<td>28.5</td>
<td>25.5</td>
<td>22.5</td>
<td>19.5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>20.5</td>
<td>17.5</td>
<td>14.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Japan</td>
<td>10.5</td>
<td>7.5</td>
<td>4.5</td>
<td>1.5</td>
</tr>
<tr>
<td>France</td>
<td>6.5</td>
<td>3.5</td>
<td>0.5</td>
<td>0.0</td>
</tr>
<tr>
<td>Italy</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Germany</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>


\textsuperscript{10} Statistics Canada, *Human Activity and the Environment*.

\textsuperscript{11} International Fund for Agricultural Development, *Water Facts and Figures*. 
Sub-element: Farm Capitalization

Metric 3: Farm Capitalization

Canada Leads
In modern agriculture, international competitiveness depends on much more than mere resource endowments. Enterprises have to invest capital in a wide range of farm resources, including technology, machinery, and infrastructure.

CFIC’s 2013 report, *Funding Food*, demonstrated that primary agriculture is one of the most capital-intensive industries. The ratio of net capital stock to value-added (gross domestic product) in Canadian agriculture is 2.5 to 1. To put this in context, Canadian manufacturing is about half as capital intensive by this measure and food manufacturing’s ratio is only 0.6 to 1. This means that capitalization is critically important to industry prosperity, especially on the farm. Studies of farm competitiveness have shown that the North American approach of a high level of capital employment (see Chart 3) results in low operating costs and efficient performance, which enhance productivity and profitability.
Chart 3
Capital Stock Per Agricultural Worker, 2007
(constant 2005 US$ 000s)

Source: Food and Agriculture Organization of the United Nations.
Sub-element: Agriculture, Crop, and Livestock Production

Mixed Performance: Moderate Agricultural Production—A Leader in Crop Production but a Straggler in Livestock Production

The FAO indices of agricultural production show how much is available for direct consumption, processing, and trade (disposable production), setting aside an adequate amount for seed and feed. Canada sits slightly behind the Netherlands, the U.S., and Germany in agricultural production (illustrated in Chart 4) with a “C” grade. Although the country tops crop production rankings with an “A” (see Chart 5), it falls behind in livestock production with a “D” (see Chart 6).

Metric 4: Agricultural Production

Chart 4
Agricultural Production Index, 2010

Source: OECD.
**Metric 5: Crop Production**

**Chart 5**

*Index of Crop Production, 2010*

- Netherlands
- United States
- Canada
- Australia
- Denmark
- United Kingdom
- Belgium
- France
- Austria
- Germany
- Italy
- Sweden
- Switzerland
- Japan
- Finland
- Norway
- Ireland

Source: OECD.
Metric 6: Livestock Production

Chart 6
Index of Livestock Production, 2010

Source: OECD.
Sub-element: Agricultural Productivity

Metric 7: Total Factor Productivity Growth in Agriculture

Canada Is a Laggard

A familiar theme in The Conference Board of Canada’s *How Canada Performs* is that Canada tends to lag peer countries in productivity performance. Essentially, Canada relies heavily on its resource endowments to employ more resources, as opposed to getting more out of capital and labour resources. This is also true when one considers total factor productivity in agriculture over the very long term (since 1961).

The good news for Canada is that it has avoided realizing declining returns in agriculture over time. The threat of declining returns is natural in countries that push up against resource endowment constraints, as they may end up bringing marginal land into production or have difficulty securing renewable water resources. Several European countries have experienced these challenges, resulting in declining factor productivity over time. Yet, other European countries, like Italy, have been able to avoid this fate by employing modern farming practices. Research on Canadian food manufacturing has come to similar conclusions on long-term productivity performance. Between 1961 and 2007, productivity growth in food manufacturing lagged that of overall manufacturing. But since 2000, productivity performance has begun to pick up in the food manufacturing sector. (See Chart 7.)

---

13 Ross, *A Detailed Analysis.*
Chart 7
Average Annual Total Factor Productivity Growth in Agriculture, 1961–2011
(per cent)

Source: Fuglie, Wang, and Ball.
Sub-element: Agriculture’s Contribution to Gross Domestic Product

Metric 8: Agriculture’s Contribution to GDP

Agriculture Plays a Significant Role in the Economy, but Canada Is a “B” Performer Comparatively

Countries differ significantly in their economic structures, which determine the contribution that agriculture makes to the gross domestic product (GDP). In places like Australia and Canada, very substantial resource endowments of agriculture combined with a relatively small manufacturing base means that agriculture plays a more significant role in the economy. (See Chart 8.) The United States has a very large agricultural sector, but agriculture is dwarfed by other aspects of the U.S. economy.

Chart 8
Agriculture’s Share of GDP, 2010–14
(per cent)

Sub-element: Agricultural Exports

Canada Well-Positioned Both in Value-Added Exports and Exports Per Capita

Canada’s exceptional resource endowment positions it well as a potential net exporter of food. Indeed, Canada is one of only a handful of substantial net food exporters in the world, a group that includes Brazil, Argentina, New Zealand, Australia, and the United States. The export orientation of agriculture is an indicator of the farming sector’s exposure to global market forces that result in farm competitiveness and innovation. Those forces have resulted in many beneficial innovations. For example, Canada virtually created the global canola market and is a key player in pulses and other commodities.

Results show Canada as a “B” performer both in value-added exports as a share of gross exports and exports per capita. (See charts 9 and 10.) For the latter ranking, we removed the Netherlands, Belgium, and Denmark from the comparison because of their role as entrepôts for European trade, meaning that per capita trade is not an accurate reflection of the national capacity to export. As Europe taken together is the world’s largest food trader, the inclusion of these entrepôts would result in Canada falling to a “C” performer.

14 Where countries play a role in entrepôt trade, foreign goods/food are stored in customs warehouses for future sale; therefore, goods are not counted in-country.
A recent study by Farm Credit Canada ranked Canada as the fifth-largest exporter in the world, with Europe ranking first and the United States second.\textsuperscript{15} As we analyze in the CFIC report \textit{Liberalization’s Last Frontier}, Canada’s food trade has grown strongly in the last 15 years and has changed its orientation away from the United States toward emerging markets.\textsuperscript{16} Of interest, 2012 was the first time markets other than the United States accounted for over half of Canada’s food exports.

\textsuperscript{15} Farm Credit Canada, \textit{FCC Ag Economics}.

\textsuperscript{16} Audet, \textit{Liberalization’s Last Frontier}.
Metric 10: Agricultural Exports Per Capita

Chart 10
Per Capita Agricultural Exports, 2013 (US$)

Note: The Netherlands, Denmark, and Belgium have been left off the comparison because of their unique role as entrepôts for European trade.
Sources: OECD, The Conference Board of Canada.
Sub-element: Representation Among Leading Food Industry Companies

Metric 11: Representation Among Leading Global Food Processing Companies

Canada Punches Below Its Weight

Although there is a home field advantage in food processing, most genuinely successful food processing companies develop brands that are adopted by global markets, especially when they do not have a very large domestic market. This metric considers representation among the top 100 global food processing companies by the nationality of the company. Canada tends to be under-represented on this metric in relation to the size of its economy.

Even though the United States dominates the list of global food processing companies, U.S. companies rely disproportionately on the U.S. market (with a domestic population of nearly 320 million) for their size.

There are only four Canadian companies represented on the list of top-100 global food processors: (in order of size) Saputo, McCain Foods, Maple Leaf Foods, and Agropur Cooperative. Interestingly, two of these global companies are dairy processors, even though Canada's supply management regime largely restricts Canada's dairy farms and processors to the domestic market. These dairy processors have grown by exporting capital from Canada into other markets, often through mergers and acquisitions, to acquire the means of production on a large scale for global markets.

Despite having a population only 16 per cent the size of Canada's, Denmark has three companies on the list. The Netherlands, too, has been very successful in developing global food brands, second after Denmark. (See Chart 11.)
Chart 11

Headquarters of Top 100 Global Food and Beverage Companies, by Sales, 2014
(per 10 million population)

Note: Canadian companies in the top 100 include Saputo, McCain Foods Ltd., Maple Leaf Foods, and Agropur Cooperative.
Sources: Foodengineeringmag.com; The Conference Board of Canada.

Metric 12: Representation Among Leading Global Food Retailers

For various reasons, food retail brands do not travel as well as food processing brands. As all food is retailed locally, it is quite common for national brands to dominate local markets. Yet, it is very difficult for these brands to challenge competitors in other markets, perhaps because of the trust inherent in food retailing. This makes Walmart’s global expansion to become the world’s leading food retailer all the more impressive. Also noteworthy as an exception to the pattern are Finnish companies that have found a way to break out of their small local market to develop food retailers of significant size, giving Finland an “A” grade. (See Chart 12.) With a population of only 5.5 million, Finland boasts two companies in the world’s top food retailers, S Group and Kesko Corporation.
Chart 12
Headquarters of Top 100 Food Retailer Companies by Net Retail Revenue, 2014
(per 10 million population)

Note: Canadian companies in the top 100 include Loblaws, Empire Company (Sobeys), Metro, and Overwaitea Foods.
Sources: Deloitte; The Conference Board of Canada.

Generally, however, the scale of food retailers is less a function of global expansion efforts than of their ability to build market share nationally. This tendency toward concentration of food retailing is seen in Canada where, through organic growth and acquisitions, four Canadian-owned food companies have grown to national pre-eminence, namely, Loblaws, Empire Company (Sobeys), Metro, and Overwaitea. All four companies count among the global top food retailers by revenue but are almost entirely dependent on their Canadian-based sales.
Sub-element: Retail Market Concentration

Metric 13: Market Concentration in Food Retailing

Not Straightforward
A debated issue in food markets is the degree of concentration in the food supply chain. This primarily applies to the processing and distribution (wholesale and retail) parts of the supply chain, where economies of scale and scope and ease of corporate consolidation have led to concentration over time. While operating economies tend to favour scale, policy-makers are sometimes concerned that such concentration may undermine competitive forces that benefit consumers.

Chart 13
Five Firm Concentration Rates in Food Retailing
(per cent)

Note: Canadian data are for 2013; data for other countries are for 2007. Sources: OECD, Competition Issues; Canadian Grocer; Euromonitor International.
Although the scoring in Chart 13 implies that less concentration is better, at least from a competitive perspective, it is not clear that this is always in the best interest of consumers. Ideally, food markets need some balance between pure competitiveness and reaping the advantages of scale and scope that goes along with larger competitive entities. Indeed, a review of Australia’s food retailing sector suggests that concentration may benefit consumers as long as there remains some level of competition.\textsuperscript{17} Canada’s scores a “C,” as many parts of the food system are concentrated, which may result in inefficiencies, decreasing incomes, and profitability.\textsuperscript{18} The Japanese market, although highly competitive, may face challenges in efficiency and in offering consumers a wide selection of goods. Scandinavian countries are uncompetitive at both the wholesale and retail levels, which may be taking a good thing on scale too far.

\hspace{.5cm} \textsuperscript{17} Australian Competition & Consumer Commission, \textit{Report of the ACCC Inquiry}.

\hspace{.5cm} \textsuperscript{18} Le Vallée, \textit{Toward Performance Metrics}.
Sub-element: Protecting Industry From Competitive Forces

A Mixed Story

A powerful indicator of a food sector’s economic viability is the extent to which it requires support through government policies. In countries like New Zealand and Australia, the removal of government protection has actually led to a vibrant, export-oriented agri-food sector.

In Canada there are three (often interrelated) support systems: trade barriers, producer supports, and supply management. Although other countries practise forms of supply management, no advanced country does so on the same scale as Canada. 19

These forms of industry protection can fundamentally change producer incentives to respond to market forces. They often lead to a lack of industry innovation, higher costs, and poorer quality for domestic consumers.

19 Grant and others, Reforming Dairy Supply Management.
Trade allows a country to specialize in what it does best.

**Metric 14: Trade Barriers: Simple Average Tariffs on Agricultural Goods**

The case for free trade was clearly articulated in the late 18th century by Adam Smith, who rested it on the benefits associated with specialization. Trade allows a country to specialize in what it does best and trade with other countries for what they do best. Trade is especially important in agriculture because of the unique role that resource endowments and climate play in the agronomy of different kinds of foods. It is much more cost-effective to grow oranges in Florida and winter season tomatoes in Mexico. Without these foreign sources of food, Canadians’ diets would be less varied and rich in nutrients. Similarly, the Canadian prairies are uniquely suited to growing high-quality wheat and canola, among other crops.

For this reason, governments around the world have been steadfastly attempting to lower international barriers to trade in agri-food products. A major advance in this area was made through the Uruguay Round of the General Agreement on Tariffs and Trade (GATT, subsequently the World Trade Organization). Regional (e.g., NAFTA) and bilateral (e.g., Canada-European Union Trade Agreement) trade agreements have further reduced barriers to trade in food. Subsequently, global food trade has expanded considerably over time. Since 2001, global food trade has almost tripled, to over US$1 trillion in 2011.\(^{20}\)

There are two measures of openness to trade. One is the simple average tariff, which straightforwardly divides the aggregate tariff rates by the number of tariff lines. On this measure, Canada is a “B” performer. (See Chart 14.) As we explore in the CFIC report *Liberalization’s Last Frontier*, this is because Canada maintains extremely high tariffs in supply managed goods as part of that regime. For example, average over-access (i.e., beyond import quota) dairy tariffs are around 250 per cent compared to less than 20 per cent in the United States.\(^{21}\)

---

\(^{20}\) Audet, *Liberalization’s Last Frontier*, 11.

\(^{21}\) Ibid., 20.
Chart 14
Simple Average Most Favoured Nation Tariffs Applied to Agricultural Goods, 2013

Note: The European Union negotiates tariffs for its members. This includes the comparator countries Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Sweden, and the United Kingdom.
Source: World Trade Organization.
Metric 15: Trade Barriers: Percentage of Tariff Lines Exceeding 15 Per Cent Tariffs

A different picture emerges when one considers tariff structure from the point of view of the percentage of tariff lines with over 15 per cent tariffs. On this indicator, Canada is actually an “A” performer, despite the aforementioned relatively high average tariffs. (See Chart 15.) In fact, leaving aside a handful of supply-managed goods and meat products, Canada is a relatively free trading country in agricultural goods. For instance, the average tariff rate for most favoured nation (MFN) fruits and vegetables is 3.4 per cent, compared to Japan’s 12.3 per cent and Switzerland’s 22.6 per cent.22

Chart 15
Most Favoured Nation Agricultural Goods Tariff Lines Over 15 Per Cent Duties, 2013
(per cent)

Note: The European Union negotiates tariffs for its members. This includes the comparator countries Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Sweden, and the United Kingdom.
Source: World Trade Organization.

Essentially, Canada concentrates its protection in a handful of industries. The CFIC report *Reforming Dairy Supply Management: The Case for Growth* details the distorting effects of supply-managed/high-tariff regimes in the dairy industry. The result has been a stable but stagnating domestic dairy industry with virtually no growth in tangible assets and yet very high levels of farm indebtedness (to acquire quota). Supply-managed sectors are effectively cut off from global growth opportunities, which have been richly developed by other Canadian commodities such as wheat, oilseeds, and pulses.

23 Grant and others, *Reforming Dairy Supply Management*. 
Canada has gradually moved its support away from subsidy to insurance in the event of extreme market or weather events.

**Metric 16: Producer Supports**

Another way that governments try to help the agricultural sector is by engineering transfers from taxpayers to farmers in the form of various producer supports. Such supports can take many forms, including direct subsidies, indirect subsidies, and below-market financing. Subsidies are often designed as a form of insurance that effectively guarantee farmers returns on a portion of their employed assets.

Through multilateral negotiations, countries have tended to move away from such supports because of their trade and market distorting effects. Some have been more successful than others in taking farmers off these forms of support. (See Chart 16.) Canada has been very successful in this regard, over time gradually moving its support away from subsidy to insurance in the event of extreme market or weather events. The latest framework is called the Growing Forward Agricultural Policy Framework, which includes mechanisms for including farmer self-insurance through savings, income stabilization insurance, and disaster relief.²⁴

²⁴ For a discussion of the current Canadian regime, see Burt and others, The Sky's the Limit, Chapter 5.
Chart 16
Producer Supports as Percentage of Total Farm Receipts, 2013

Note: The European Union’s Common Agricultural Policy is the main policy governing producer supports in Europe. It includes the comparator countries Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Sweden, and the United Kingdom.

Source: OECD.
Sub-element: Food Innovation

Declining Annual Growth and Behind in Biotechnology Patents

The innovation performance of Canada’s food industry has direct consequences for the health and well-being of Canadians, as well as for the economy and society. Food-related innovation can be defined in different ways, including product, process, and organizational innovation.

Possible global and national food innovation performance measures include research and development investments or intensity, capital investments, multifactor productivity (MFP) or total factor productivity, labour productivity, or the ratio of farm business gross receipts to operational expenses. The ratio of exports to total sales could also indicate the food system’s ability to expand into new markets through increased volume or added value.

However, performance metrics for food system innovation with data for most comparator countries are rare. Only two performance metrics were retained for the report card: growth in multifactor productivity and triadic biotechnology patents.
Metric 17: Annual Growth in Multifactor Productivity

Food innovation in Canada is driven by a combination of consumer demand, competitive conditions, and the regulatory environment. The CFIC report on food innovation performance, Competing for the Bronze: Innovation Performance in the Canadian Food Industry,25 details current issues, obstacles, and potential solutions to raising Canada’s “C” performance. (See Chart 17.) Overall, Canadian MFP performance from 2002 to 2008 improved in the agriculture sector but stagnated and dropped slightly in the food manufacturing sector.

Chart 17

Annual Growth in Multifactor Productivity, 2008
(per cent)

Source: OECD.

*2007 data

25 Munro, Stuckey, and Butler, Competing for the Bronze.
Metric 18: Triadic Biotechnology Patents

Canada’s performance in triadic biotechnology patents is an indicator of its success in research-based food innovation. This metric also shows the pace of growth in technological change for a subset of the sector. Canada’s inventive process is much slower in this area, earning a “D” grade, as is the case with most peer countries when compared with the leaders, the U.S. and Japan. (See Chart 18.)

Chart 18
Triadic Biotechnology Patents, 2011

Source: OECD.
Sub-Element: Food Regulations

Over-Regulation Hinders Performance
Across the globe, regulators and private companies have a vested interest in a safe, healthy, and nutritious food supply. Canadian food businesses understand that a solid regulatory environment, including strong national standards, benefits the entire food market and reinforces brand reputation for quality.26

It is widely recognized among industry members and regulators that a high-performance food system requires a strong and enabling regulatory environment, streamlined in a way that reduces unnecessary costs and leverages the work that industry already does, for instance, on food safety. Achieving these objectives is important to meeting the challenges of the future of food—such as addressing the risks of an increasingly complex global food supply while also supporting the success of the Canadian food industry in a competitive global marketplace.

26 Grant, Butler, and Stuckey, All Together Now.
Metric 19: Product Market Regulations

Regulation streamlining is important because each regulation affects company performance through its impact on speed, risk, market functioning, and costs. Product market regulation is one of several policy factors that affect the ability of a country’s food businesses to compete with its peers.

Canada lags its peers in product market regulation, with a “D” grade. (See Chart 19.) As explained in the 2012 CFIC report on Canada’s food regulations and industry performance, All Together Now: Regulation and Food Industry Performance, structural and process reforms, along with functional improvements, would help advance food outcomes.  

Chart 19
Product Market Regulation, 2013

*2008 data
Source: OECD.
Metric 20: Agricultural Regulatory Restrictiveness

Canada performs much better in agricultural regulatory restrictiveness, earning an “A” grade, along with many competitors. The weakest performer by far in this measure is France. (See Chart 20.)

Chart 20
FDI Regulatory Restrictiveness for Agriculture, 2014
(0 = open, 1 = closed)

*2006 data
Source: OECD.
The long-term impact of unhealthy diets is increasingly having an impact.

Element: Healthy Food and Diets

Dietary patterns have an enormous impact on the health and well-being of Canadians. As the Canadian population ages, the long-term impact of unhealthy diets is worsening. Canadians suffer from rising rates of chronic diseases like heart disease, cancer, diabetes, and obesity, of which dietary patterns are a major contributing cause. This reduces people’s quality of life and costs Canada’s health care system billions of dollars each year. Canadians need to make the connection between diet and long-term health, encourage government and industry efforts to improve the food choice environment, and take responsibility for improving their own dietary behaviours.

Over 18 per cent of Canadian adults self-report that they are obese. However, 2007–09 data from the Canadian Health Measures Survey (CHMS) show that, in fact, 24.1 per cent of adult Canadians are obese. Worryingly, rising rates of childhood obesity cut hopes for improvement in the long run. Additionally, as the Canadian population ages, the long-term impact of unhealthy diets is increasingly having an impact.

In terms of micronutrient deficiencies, according to the 2009–11 Canadian Health Measures Survey, around 5 per cent of Canadians aged 3 to 79 suffer from low iron stores (8 per cent for women), 7 per cent from moderate deficiency in iodine, and 10 per cent from vitamin D deficiency. Another performance metric is deaths due to malnutrition and nutritional deficiencies, as reported by Statistics Canada. Data from 2009 show there were 185 deaths across Canada related largely to protein-energy malnutrition in a single year.
Canada’s Healthy Food and Diets Performance

The report card’s metrics on healthy food and dietary performance highlight areas of strength as well as areas of weakness where action could improve health and well-being by helping to ensure that Canadians acquire and consume foods that contribute to lower incidences of diet-related diseases and live long, healthy lives.

Canada’s performance is helped by relatively low consumption levels of salt (sodium) and saturated fats, along with a diverse diet and moderate food literacy. Weak performances in diabetes, obesity, and excess food acquisition lower the overall performance rating.

Sub-element: Produce Consumption

Higher Vegetable and Fruit Consumption Than Most Peer Countries

Inadequate daily consumption of fruits and vegetables is used as a representative measure of an unhealthy diet. In absolute terms, Canada finds itself among the top consumers of fruit and vegetables. (See charts 21 and 22.) However, only 40.3 per cent of Canadians aged 12 and older reported that they consumed fruit and vegetables five or more times per day in 2011, down for a second year in a row from the 2009 peak of 45.6 per cent.³² Note that Canada’s Food Guide recommends a minimum of seven portions a day for Canadians aged 14 and older, although Canada reports frequency of consumption of only five portions a day.

³² Statistics Canada, CANSIM table 105-0501.
Metric 21: Vegetable Consumption

Chart 21
Vegetable Consumption, 2011
(kg per capita per year)

Source: FAO.
Metric 22: Fruit Consumption

Chart 22
Fruit Consumption, 2011
(kg per capita per year)

Source: FAO.
Sub-element: Salt, Fat, Sugar Intake

Lower Intake of Salt, Saturated Fat, and Sugar Leads to Healthier Canadian Diets

In addition to absolute fruit and vegetable consumption, portion sizes, daily food energy totals, and the consumption of other foods—such as milk, grains, sodium, various fats, sugar, protein, fibre, and non-starchy foods—are also valuable in defining good or bad nutrition. As discussed in the CFIC report *Improving Health Outcomes: The Role of Food in Addressing Chronic Diseases*, when consumed too often or in unhealthy quantities, certain foods and ingredients—including salt (sodium), sugar, red and processed meat, alcohol, saturated fat, and trans fat—may increase the risk of some chronic diseases.34

---

33 Every gram of salt contains 393 mg of sodium, and there are 2,300 mg of sodium in 1 teaspoon of salt. Sodium Working Group, *Sodium Reduction Strategy*, v.

34 The Conference Board of Canada, *Improving Health Outcomes*. 
Metric 23: Salt Intake

On salt intake, Canada has the lowest average salt intake level among peer countries and is awarded an “A.” (See Chart 23.)

Chart 23
Average Salt Consumption, 2011
(g per capita per day)

Source: WHO.
**Metric 24: Saturated Fat Intake**

As Chart 24 shows, Canada is among the top-performing countries for mean saturated fat intake levels, at just above 10 per cent. It ranks third among comparator countries and gets a “B” grade.

**Chart 24**

**Mean Saturated Fat Intake, 2009**

(percentage of energy intake)

Source: Elmadfa and Kornsteiner.
Metric 25: Added Sugar

Canada is a “C” performer for its share of dietary energy from added sugar\(^{35}\) per capita per day, at 12.9 per cent. Only four countries received an “A” and met WHO’s guideline recommendation of less than 10 per cent of total energy intake (roughly 50 grams, or 12 and a half teaspoons of sugar).\(^{36}\) (See Chart 25.)

Chart 25
Share of Energy Intake From Added Sugar, 2011
(per cent)


---

35 The report card does not look at total sugars, meaning naturally occurring sugars and added sugars. Added sugars are those added by consumers to their foods and by manufacturers to their products.

36 World Health Organization, *WHO Calls on Countries to Reduce Sugars Intake.*
Canada Among Nations With Greatest Dietary Share of Non-Starchy Foods

Diet diversification is a measure of the share of non-starchy foods within total dietary energy consumption. Diets that consist of higher percentages of non-starchy foods, which include everything but cereals, roots, and tubers, tend to be more nutritious owing to the prevalence of vegetables, dairy, and meat or fish products. Canada is among a leading group with strong diversification and receives an “A” grade. (See Chart 26.)

Chart 26
Diet Diversification, 2015
(per cent)

Source: Economist Intelligence Unit.
Sub-element: Food Acquisition

Grade for Canada’s Excess Food Acquisition, Weight, and Higher Diabetes

Food over-acquisition is a relatively new concept, a metric based on the excess over a person’s habitual normal range of dietary energy requirements. This is not a consumption measure. Excess acquisition can also raise food prices as well as food waste, with impacts on production. The metric assesses populations that regularly acquire food in excess of their maximum needs, reflecting a proxy measure for dietary quality. Canada is 11th among its peers, earning a “C” grade. (See Chart 27.)

Metric 27: Food Over-Acquisition

Chart 27
Prevalence of Food Over-Acquisition, 2011–13 Average
(per cent)

Source: Food and Agriculture Organization.
Metric 28: Adult Obesity

In addition to worrying dietary patterns, there are concerns about low levels of physical activity and high rates of overweight and obesity among Canadian children and adolescents (as discussed in our CFIC report Improving Health Outcomes). Rates of obesity and diabetes are on the rise. Globally, Canada ranks 15th, earning a “C” grade, with an obese population of over 25 per cent, a risk factor for chronic disease. (See Chart 28.)

Chart 28

Obesity in Population 15 Years and Older, 2012 or Nearest Year (per cent)

Source: OECD.
**Metric 29: Diabetes Mortality**

Canada ranks 11th in mortality due to diabetes, another global epidemic. (See Chart 29.) Indeed, Canada has not improved its grade since the 1960s. Overall, greater efforts are needed to improve diabetes outcomes as an important element in Canadian dietary performance, health, and well-being through policy, food industry action, and consumer education and behavioural change.

**Chart 29**

*Diabetes, Deaths Per 100,000 Inhabitants, 2012*

(number)

Source: WHO.

---

37 The Conference Board of Canada, *How Canada Performs: Mortality Due to Diabetes.*
Sub-element: Food Education

Metric 30: Food Literacy  

Less Than Half of Canadians Are Adequately Food-Literate

Greater efforts are needed to improve Canadian nutrition and health outcomes through education. Nutrition knowledge is a vital component of dietary quality, food consumption, and health and well-being. Beyond food knowledge, literacy is about food selection, handling, storage, disposal, and food safety along with related skills, attitudes, and behaviours.

Publications such as *Canada’s Food Guide* have helped many Canadians improve their eating habits. However, as shown in our CFIC report *What’s to Eat? Improving Food Literacy in Canada*, despite the confidence expressed in surveys of individuals’ self-reported knowledge, household knowledge of nutrition remains weak in some areas.

Globally, less than half the population is adequately food-literate. (See Table 2.) Most countries’ average food literacy scores fall within a 41 to 46 per cent range, for which they are awarded a “B” grade. The top performer on understanding the meaning of organic food is Sweden (73 per cent), while Canada leads in nutrition labelling observance (52 per cent). Japan performed most poorly on food knowledge about quality, safety, and the origin of food, with an average result below 40 per cent.

---

39 Howard and Brichta, *What’s to Eat?*
Table 2

Food Literacy Through Five Consumer Metrics, 2014
(percentage of population)

<table>
<thead>
<tr>
<th>Country</th>
<th>Australia</th>
<th>Canada</th>
<th>France</th>
<th>Germany</th>
<th>Japan</th>
<th>Sweden</th>
<th>United Kingdom</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand what &quot;organic&quot; means*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>59</td>
<td>55</td>
<td>44</td>
<td>36</td>
<td>73</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Distinguish between local and non-local foods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>54</td>
<td>37</td>
<td>42</td>
<td>38</td>
<td>42</td>
<td>28</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Importance of knowing how food is produced</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>47</td>
<td>45</td>
<td>52</td>
<td>55</td>
<td>52</td>
<td>45</td>
<td>33</td>
<td>47</td>
</tr>
<tr>
<td>Well-informed about quality, safety, and origin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>33</td>
<td>27</td>
<td>35</td>
<td>19</td>
<td>29</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Prevalence of observing nutrition labelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>52</td>
<td>44</td>
<td>42</td>
<td>39</td>
<td>44</td>
<td>43</td>
<td>51</td>
</tr>
<tr>
<td>Average*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>45.2</td>
<td>44</td>
<td>42.8</td>
<td>37.6</td>
<td>43.8</td>
<td>41</td>
<td>45.4</td>
</tr>
</tbody>
</table>

Grade

| Country                        | B         | B       | B       | B       | C       | B       | B                       | B               |

*CBoC calculations.
Sources: National Geographic Survey Results.
Element: Food Safety

Food safety is a function of the ways that food, commodities, animals, and related products are grown, handled, transformed, distributed, prepared, stored, and cooked along the supply chain to minimize or eliminate risks from various hazards to human health and the environment. It is about exposure to these risks and how risks are managed and communicated. Origins, trade, hygiene, safe practices, labelling, ingredients, inspections, certification, regulatory compliance, traceability, standards, recalls, and other elements are constituents of the food safety system.

Benchmarking is essential to help monitor ongoing food safety performance and to inform continued food safety system design, adoption, and implementation toward more efficient and effective food safety preparedness, responsiveness, and accountability. Yet, despite the importance of measuring safety, there is a lack of performance data collected strategically on a global scale. Food safety data segmentation and limitations hamper the world’s ability to select, build up, monitor, and evaluate food safety performance and, ultimately, to construct a truly global food safety system.

To help address the gap, the Conference Board of Canada, along with the University of Guelph’s Food Institute, recently conducted a global benchmarking study.40 The study results are shared here to identify, evaluate, and compare common elements among global food safety systems around three food safety risk governance domains and 10 food safety performance indicators:

• Food safety risk assessment, recognized as a science-based process that assesses exposure and characterizes food safety risks. Indicators explore chemical risks, microbial risks, and national reporting on food consumption.

• **Food safety risk management**, which is both a policy-based and a commercially based process to prevent, control, and mitigate risks while ensuring health protection and fair trade practices. Indicators include national food safety capacity, food recalls, food traceability, and radionuclides standards.

• **Food safety risk communication** or the exchange of information and opinions around food safety risks (actual or perceived). Indicators include allergenic risks and public trust.

---

**Canada’s Food Safety Performance**

Table 3 summarizes results from 10 food safety metrics published in our 2014 global ranking of food safety performances. The ranking points to areas where each country can improve their food safety performance. All countries have very high food safety standards, but Canada and Ireland, in particular, earned excellent grades relative to their peers. (See Chart 30.)

However, continuous improvement is needed for Canada, as work remains to advance reporting on chemical risks in food consumption (e.g., Total Diet Studies), conduct more frequent nutrition and dietary studies, and make additional improvements to traceability and radionuclide standards.
### Table 3

#### 2014 World Ranking of National Food Safety Performances by Indicator

<table>
<thead>
<tr>
<th>Country</th>
<th>Pesticide use</th>
<th>TDS*</th>
<th>FBI*</th>
<th>Consumption</th>
<th>Capacity</th>
<th>Recalls</th>
<th>Traceability</th>
<th>Radionuclides</th>
<th>Allergen</th>
<th>Trust</th>
<th>Result (mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>Poor</td>
<td>Superior</td>
<td>Regressive</td>
<td>Average</td>
<td>Progressive</td>
<td>Progressive</td>
<td>Poor</td>
<td>2.1</td>
</tr>
<tr>
<td>Austria</td>
<td>Progressive</td>
<td>Regressive</td>
<td>Superior</td>
<td>Superior</td>
<td>Poor</td>
<td>Regressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.2</td>
</tr>
<tr>
<td>Belgium</td>
<td>Regressive</td>
<td>Moderate</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Regressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>Canada</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Superior</td>
<td>Average</td>
<td>Superior</td>
<td>Progressive</td>
<td>Average</td>
<td>Moderate</td>
<td>Progressive</td>
<td>Superior</td>
<td>2.6</td>
</tr>
<tr>
<td>Denmark</td>
<td>Progressive</td>
<td>Regressive</td>
<td>Poor</td>
<td>Average</td>
<td>Superior</td>
<td>Moderate</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.2</td>
</tr>
<tr>
<td>Finland</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Poor</td>
<td>Superior</td>
<td>Average</td>
<td>Regressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.2</td>
</tr>
<tr>
<td>France</td>
<td>Moderate</td>
<td>Progressive</td>
<td>Superior</td>
<td>Superior</td>
<td>Superior</td>
<td>Progressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Poor</td>
<td>2.4</td>
</tr>
<tr>
<td>Germany</td>
<td>Progressive</td>
<td>Regressive</td>
<td>Poor</td>
<td>Poor</td>
<td>Superior</td>
<td>Moderate</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.1</td>
</tr>
<tr>
<td>Ireland</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Superior</td>
<td>Poor</td>
<td>Superior</td>
<td>Progressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Superior</td>
<td>2.6</td>
</tr>
<tr>
<td>Italy</td>
<td>Regressive</td>
<td>Progressive</td>
<td>Poor</td>
<td>Average</td>
<td>—</td>
<td>Progressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Poor</td>
<td>2</td>
</tr>
<tr>
<td>Japan</td>
<td>Regressive</td>
<td>Moderate</td>
<td>Superior</td>
<td>Superior</td>
<td>Superior</td>
<td>Regressive</td>
<td>Average</td>
<td>Progressive</td>
<td>Progressive</td>
<td>Poor</td>
<td>2.22</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Regressive</td>
<td>Moderate</td>
<td>Average</td>
<td>Superior</td>
<td>Superior</td>
<td>Regressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.2</td>
</tr>
<tr>
<td>Norway</td>
<td>Progressive</td>
<td>Regressive</td>
<td>Average</td>
<td>Average</td>
<td>Superior</td>
<td>Moderate</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.33</td>
</tr>
<tr>
<td>Sweden</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Poor</td>
<td>Average</td>
<td>Average</td>
<td>Regressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Moderate</td>
<td>Regressive</td>
<td>Average</td>
<td>Poor</td>
<td>Superior</td>
<td>Regressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Progressive</td>
<td>Poor</td>
<td>2.11</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Superior</td>
<td>Superior</td>
<td>—</td>
<td>Regressive</td>
<td>Superior</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Average</td>
<td>2.33</td>
</tr>
<tr>
<td>United States</td>
<td>Progressive</td>
<td>Moderate</td>
<td>Superior</td>
<td>Superior</td>
<td>Superior</td>
<td>Moderate</td>
<td>Average</td>
<td>Regressive</td>
<td>Progressive</td>
<td>Poor</td>
<td>2.3</td>
</tr>
</tbody>
</table>

*TDS: Total Diet Studies; FBI: Food-borne illness. Mean (result column) was calculated by dividing the sum of the scores by the number of scores per nation. Values of 3 were attributed to progressive responsive and superior outcome scores, 2 to moderate responsive and average outcome scores, and 1 to regressive responsive or poor outcome scores.

Source: Le Vallée and Charlebois.
**Metric 31: Global Food Safety Ranking**

**Leading Global Food Safety Performances by Canada and Ireland**

**Chart 30**

2014 World Ranking of Food Safety Performance Among 17 OECD Countries
(mean results column, Table 3)

Source: Le Vallée and Charlebois.

**Element: Household Food Security**

Household food security integrates 1) available food supplies from production, losses, and trade; 2) stability of the food supply; 3) economic, physical, and cultural access to nutritionally adequate and healthy food; and 4) consumption, nutrition, safety, and health, also referred to as utilization. It also refers to Canadians’ feelings of vulnerability about their capacity to address their food insecurities, dietary needs, and food preferences, which affects their livelihoods, happiness, health, and social and economic participation.
Globally, all developed countries have sufficient average food supplies to feed their people. For example, Canada’s daily average is 3,419 kilocalories available per person. In Canada, food is generally available, accessible, and affordable. In this sense, global indices such as the FAO’s State of Food Insecurity in the World report or the Economist Intelligence Unit’s Global Food Security Index report little to no food insecurity in developed countries.

For developed countries like Canada, food availability is not at issue nationally; economic food access and food poverty are more focused concerns. Indeed, individual and household food insecurity persists in Canada, often for the Inuit, single parents, and Canadians receiving social assistance. Rather than food availability, food insecurity mainly relates to Canadians’ physical, social, and economic access to, and use of, safe, nutritious, and affordable food. Some 4 million Canadians are affected by food insecurity.

For a more in-depth analysis, see CFIC’s 2013 publication Enough for All: Household Food Security in Canada. The report analyzes the state of household food security in Canada, explores key risk factors, highlights current efforts, and recommends strategies to alleviate Canada’s household food security challenges, including a call to implement a pan-Canadian school nutrition program.

41 Food and Agriculture Organization (FAO), Food Balance Sheets.
43 Economist Intelligence Unit, Global Food Security Index. Canada ranks seventh overall. However, beyond food insecurity indicators, the index also includes food safety, health, environmental, and food industry measures in its index.
44 University of Toronto, PROOF.
45 Howard and Edge, Enough for All.
Canada’s Household Food Security Performance Rating

The report card focuses on two metrics—food affordability and price volatility. Globally, no common household food insecurity metric was identified for developed countries. Average dietary energy availability is very high in all countries. However, Canada is affected by a lower exchange rate, natural hazards such as floods and droughts, and rising animal feed costs, and is a net importer of several commodities such as produce, coffee, sugar, tropical fruit, and olive oil, with consequences on resulting food price volatility and affordability.

Sub-element: Food Affordability

Metric 32: Consumer Expenditures on Food

Canada Fourth in Food Supply Chain Efficiency

A measure of the efficiency of supply chains is the percentage of consumption expenditures dedicated to food purchases. Canada benefits from efficient food supply chains, which results in relatively low prices for Canadian food consumers. In fact, when compared with other essentials such as clothing and shelter, food expenditures have fallen the most as a percentage of household expenditures. The average Canadian household spent almost 2 per cent less of its budget on food in 2008 than in 1997. Despite some recent upward pressure on prices, food remains very affordable for most households. These drops in food expenditures have also occurred at a time of higher quality and greater food variety.

Canadians who compare today’s year-round availability of a wide array of fresh fruit and vegetables to, say, 25 years ago will recognize that efficient food supply chains are delivering more and better food

46 Burt and others, The Sky’s the Limit, 7.
at lower prices than in the past. Canada scores a “B” in the share of household income dedicated to satisfying food needs, in part because the United States is an extremely efficient food producer and distributor. (See Chart 31.)

**Chart 31**

**Consumer Expenditures on Food, 2014**

(per cent)

Food consumption as a share of household expenditure is a food affordability measure. Household spending on food varies in all countries but is relatively low in developed countries, as average income levels and GDP per capita are high (i.e., the ability to consume and relative wealth). The metric reflects household capacity to afford food without financial pressure. Such pressures also come from other expenditures, such as for housing and transportation in particular. The food affordability metric shows how households on average are able to meet food expenses but
also cope with food price increases, which have risen over recent years, and shocks such as the 2007–08 world food price crisis and related financial and economic crisis. There are slight differences between developed countries. For instance, Japan, France, Belgium, and Italy spend double the share or more of household expenditure on food, making them more vulnerable to price changes. At 9.5 per cent, Canada does relatively well, with a “B” grade.

Sub-element: Food Price Stability

Metric 33: Domestic Food Price Volatility B

Canada Among Countries With Highest Food Price Volatility

Food price volatility is a concern worldwide. Food price spikes and increases make headlines regularly. Not only do such changes have serious impacts for those who spend more of their income on food, as discussed above, but they can also affect economic stability, government interventions, market failures, and shifts in food production toward other commodity choices as farmers make planting decisions. Indeed, both demand and supply side factors are food price drivers. Food prices also depend on transportation and transaction costs, openness to trade, global levels in food stocks, and domestic food-related policies.

Higher volatility means greater uncertainty and increased risk and vulnerability. Sweden, Canada, and Norway express higher volatility than their peers—two to three times that of Ireland, for instance. (See Table 4.) Canada’s “B-” performance is concerning because it reflects a steady rise from its 5.2 average score over the last 15 years.
Table 4
Domestic Food Price Volatility Index, 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>3.3</td>
<td>A</td>
</tr>
<tr>
<td>France</td>
<td>4.8</td>
<td>A</td>
</tr>
<tr>
<td>Italy</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>Germany</td>
<td>5.6</td>
<td>B</td>
</tr>
<tr>
<td>Japan</td>
<td>5.6</td>
<td>B</td>
</tr>
<tr>
<td>Netherlands</td>
<td>5.6</td>
<td>B</td>
</tr>
<tr>
<td>Austria</td>
<td>5.9</td>
<td>B</td>
</tr>
<tr>
<td>Belgium</td>
<td>6</td>
<td>B</td>
</tr>
<tr>
<td>Denmark</td>
<td>6</td>
<td>B</td>
</tr>
<tr>
<td>Finland</td>
<td>6.2</td>
<td>B</td>
</tr>
<tr>
<td>Switzerland</td>
<td>6.6</td>
<td>B</td>
</tr>
<tr>
<td>Sweden</td>
<td>6.7</td>
<td>B</td>
</tr>
<tr>
<td>Canada</td>
<td>7.1</td>
<td>B</td>
</tr>
<tr>
<td>Norway</td>
<td>11.3</td>
<td>D</td>
</tr>
</tbody>
</table>

Sources: FAO; The Conference Board of Canada.

Net food exporting countries are generally more resilient than importing countries. For instance, Canada’s food export share of GDP is 0.8 per cent, compared to the Netherlands’ 3.8 per cent and the United Kingdom’s -1.6 per cent. When combined with its average household spending on food and relative wealth as a nation, Canada is considered less food-vulnerable than its peers.47

---

Nevertheless, Canada’s food systems are vulnerable to risks of human-made and natural threats and shocks from floods, droughts, policy failures, speculation, exchange rates, oil price shocks, transportation and communication failures, contamination and diseases, border closings, bioterrorism, and climate change. These may affect human welfare, environmental sustainability, branding, and industry viability, among other factors. Therefore, investments in domestic food emergency preparedness and resilience-building are indispensable.

Future report cards will continue to assess various meaningful food security performance metrics. For instance, stock-to-use ratios showing tightness of the food supply may be of use as a resilience measure. Other possible metrics include the diversity and reliability of food transportation and energy supplies; the share of consumption met through local and imported foods; regulatory compliance; measures to protect crops and animals from drought, pests, and diseases; the ratio of total business liabilities to total assets; and national food contingency, emergency, and continuity plans and related capacity and implementation measures.
Element: Environmental Sustainability 🟢

The food system exerts pressure on the environment. Eating has an environmental footprint, as do producing, harvesting, processing, distributing, preparing, and discarding food. Each time, we take from or add to the environment along the way. Therefore, ensuring and improving environmental sustainability grows in significance as the food system expands to feed the global population, which may rise to 9.5 billion by 2050.

Explicit, measurable food sustainability benchmarks can help advance action. As highlighted in CFIC’s 2013 report Reducing the Risk: Addressing the Environmental Impacts of the Food System, benchmarks help to motivate and support improved business and public environmental performance. The report recommends improving household food waste literacy, developing food eco-labels for retail products, and tying green actions to agricultural policy and income support programs, among several actions to pursue.⁴⁸

Canada’s Environmental Sustainability Performance 🟢

Our report card highlights several environmental impacts resulting from the activities of different subsectors of the food supply chain, including primary production (agriculture and seafood), the food manufacturing and retail subsectors, food services, and household and personal consumption.

It considers impacts in several risk areas, namely food waste, water withdrawals, air quality, soil health, and seafood sustainability. Canada performs poorly on food waste, with high rates of food losses before and after purchases. It is last with respect to rising rates of greenhouse gas and ammonia emissions. However, Canada performed strongly in soil health, while work remains on improving its seafood sustainability performance.

⁴⁸ Stuckey, Charman, and Le Vallée, Reducing the Risk.
Sub-element: Food Waste

Metric 34: Household Food Waste

Near the Bottom of the Food Waste Bin

The world produces more food and commodities than are required to meet market demand. Reducing production to match demand will lessen environmental impacts, cut greenhouse gas emissions, and limit landfill expansions, among other benefits.

In Canada, annual retail- and consumer-level food waste amounts to 122 kilograms per person of total fresh and processed fruits and vegetables; 18 kilograms of oils, fats, sugar, and syrup; 16 kilograms of red meats (boneless); 10 kilograms of poultry (boneless); and 6 kilograms of dairy products. When compared with its peers, Canada trails far behind, ranking 16th of 17 in total household food waste. (See Chart 32.) Indeed, households waste 29 per cent of their food post-purchase. Levels climb to 40 per cent when the waste across the supply chain from post-harvest, processing, and distribution, through to retailing and food services, is added—areas where Canada also ranks poorly in pre-consumption food losses. (See Chart 33.)

49 George Morris Centre and Value Chain Management Centre, Cut Waste, GROW PROFIT, 4.
50 Statistics Canada, Human Activity and the Environment, 12.
Chart 32
Household Food Waste, 2006–11
(Kg per capita per year)

Source: OECD.
Metric 35: Pre-purchase Food Loss

Highest Food Loss Rates Along the Supply Chain in Austria, Canada, and Denmark

Chart 33
Pre-Consumer-Purchase Food Loss, 2015
(per cent)

Note: Food loss is a measure of post-harvest and pre-consumer losses as a ratio of total domestic supply (production, net imports, and stock changes) of crops, livestock, and fish commodities in tonnes.
Source: Economic Intelligence Unit.
Sub-element: Air Quality

Metric 36: Greenhouse Gas Emissions

Canada Among Only Three Countries With Increasing Greenhouse Gas Emissions

Agriculture is a significant source of greenhouse gas (GHG) emissions, ammonia, and atmospheric particulate matter. Canada is one of only a few countries that registered an increase in GHG emissions from 2000 to 2010. Today, only the U.S. ranks behind Canada among comparator nations. (See Chart 34.)

In Canada, agriculture’s share of national GHG emissions sits at 8 per cent, much larger than the economic output of the sector. Reducing the overall level and rate of emissions can come through a combination of improved tillage, technology, efficiency gains, improved nutrient and soil management practices, and the use of renewable energy.

Chart 34
Change in Agricultural GHG Emissions, 1998–00 to 2008–10
(average annual percentage change)

Source: OECD.
Metric 37: Ammonia Emissions

Canada Ranks Last in Agricultural Ammonia Emissions

Linked to GHGs, agricultural ammonia emissions are also a concern. Canada is one of only two countries, with Finland, to have increased emissions annually from 2000 to 2010. (See Chart 35.) The emissions largely derive from livestock production (i.e., manure, inorganic fertilizers) and affect water bodies and air quality. Reducing emissions will help lower the impacts on human health, animal health, and the environment.

Chart 35

Change in Ammonia Emissions From Agriculture, 1998–00 to 2008–10
(average annual percentage change)

Source: OECD.
Sub-element: Water Quantity

Metric 38: Water Withdrawals in Agriculture

Canada Among Leaders in Water Withdrawal Reductions

Agriculture represents the largest consumer of water in Canada, using 84 per cent of the water it withdraws.\(^{51}\) Agriculture is largely rain-fed with some irrigation, notably in parts of western Canada, where irrigation supplements rainfall, often pulling water from aquifers, groundwater, and surface water sources. Even though Canada performs poorly in absolute terms per capita, ranking 15th with a “C” grade\(^ {52}\) as shown in Chart 36, it performed well from 2000 to 2010 in reducing agricultural freshwater withdrawals when compared to its peers.

Chart 36
Change in Total Agricultural Freshwater Withdrawals, 1998–00 to 2008–10
(average annual percentage change)

Source: OECD.


\(^{52}\) The Conference Board of Canada, *How Canada Performs: Water Withdrawals*.
Sub-element: Soil Health

A for Good Soil Health: An Asset for Canadian Food Production

Nitrogen and phosphorus are soil fertility, or soil health, metrics. They are necessary inputs for agricultural production, raising yields and productivity. Without them, soil fertility declines; conversely, excess nitrogen can pollute the soil, water, and air. All countries have surplus nitrogen. However, the higher the balance, the greater the environmental risk and pressures on the food system.

Canada ranks second after Australia in average nitrogen balance per hectare of agricultural land. (See Chart 37.) Results are national and do not highlight regional differences (which we will examine in next year’s annual report card on food). As Chart 38 illustrates, Canada also ranks well in average phosphorus balance. Italy is a concern, however, as it shows a deficit in phosphorous, which weakens its soil fertility and soil health. Conversely, Japan’s elevated balance poses a greater environmental risk (pollution) to its food system.
Metric 39: Nitrogen Balance

Healthy Nitrogen Balance, a Lesser Risk to the Environment

Chart 37
Nitrogen Balance Per Hectare of Agricultural Land, 2007–09
(average kg per hectare)

Source: OECD.
Metric 40: Phosphorus Balance

Adequate Phosphorus Balance

Chart 38
Phosphorus Balance Per Hectare of Agricultural Land, 2007–09
(average kg per hectare)

Note: The “A” rating starts from 0. Negative scores are given a “D” as they show a deficit and thus pose a risk to soil fertility.
Metric 41: Soil Erosion From Water

Lower Water Erosion Risk Relative to Its Peers

Soil health is affected by soil erosion, particularly from water and wind. Erosion removes precious topsoil; reduces soil fertility, organic matter, and productivity; and dirties water and air quality. Shifting to grassland or pasture and using green covers help. In Canada, growing adoption of conservation tillage practices and beneficial management practices also provide many benefits. Consequently, risks of natural hazards such as floods are reduced and carbon content is maintained or improved. Italy is most at risk, while Canada’s agricultural land has a small share threatened by moderate to severe water erosion risks. (See Chart 39.)

Chart 39
Agricultural Land Classified as Having Moderate to Severe Water Erosion Risk, 1990–2010

(percentage of total land)

Source: OECD.
Metric 42: Soil Quality

Canada Ranks Sixth in Soil Quality Expressed by Average Organic Carbon Content

Soil organic carbon is another proxy for soil quality. High organic carbon content provides better soil conditions and greater agricultural value. Low content, under 1 per cent, is a sign of soil degradation and risk from erosion from water. This is, for instance, tentatively the case for Australia.

Chart 40 shows that Canada’s average carbon content in topsoil is over 4 per cent, ranking the country sixth—a “C” grade—compared to Finland’s very high carbon content levels.

Chart 40
Average Carbon Content in the Topsoil, 2008
(percentage in weight)

Source: OECD.
Sub-element: Seafood Sustainability

Metric 43: Sustainable Marine Food Provision

Greater Effort Needed to Improve Seafood Sustainability

Fully sustainable fisheries and aquaculture would safeguard a renewable resource that can be repeatedly harvested within safe limits of exploitation and ensure the ocean's continued capacity to feed much of the world that relies on the sea.

Canada is a long way from achieving this goal. Marine fish abundance and fishery catches in Canada have dropped by over half since 1970. More recently, landed values in 2009 were close to the lowest since 1977. Currently, there are 155 major fish stocks. Recent estimates from 2015 statistics show that 3 per cent of all major fish stocks are currently being harvested above approved levels.

Major fish stock status alone is an insufficient seafood sustainability metric. Ideally, all major fish stocks should be covered, as well as farmed species from mariculture (i.e., marine aquaculture, which excludes inland freshwater aquaculture). The Ocean Health Index includes both in its food provision indicator. With a score of 63 (0–100 scale, 100 meaning top sustainability performance), Canada ranks seventh behind the leaders from Norway, Ireland, and Sweden and receives a “B” grade. (See Chart 41.)

53 The Royal Society of Canada, Sustaining Canada’s Marine Biodiversity, 11.
54 Environment Canada, Sustainable Fish Harvest.
55 Ocean Health Index, Harvesting Seafood Sustainably.
Chart 41
Combined Wild-Caught Fishery and Mariculture Food Provision Score, 2015

Source: Ocean Health Index.

Tell us how we’re doing—rate this publication.
www.conferenceboard.ca/e-Library/abstract.aspx?did=7617
APPENDIX A

Bibliography


George Morris Centre (GMC) and Value Chain Management Centre. *Cut Waste, GROW PROFIT.* Guelph, ON: George Morris Centre, 2012.


—. *OBESITY Update*. June 2014.


e-Library.

Do you want to have access to expert thinking on the issues that really matter to you and your organization?

Our e-Library contains hundreds of Conference Board research studies in the areas of Organizational Performance, Economic Trends and Forecasts, and Public Policy.
About The Conference Board of Canada

We are:

- The foremost independent, not-for-profit, applied research organization in Canada.
- Objective and non-partisan. We do not lobby for specific interests.
- Funded exclusively through the fees we charge for services to the private and public sectors.
- Experts in running conferences but also at conducting, publishing, and disseminating research; helping people network; developing individual leadership skills; and building organizational capacity.
- Specialists in economic trends, as well as organizational performance and public policy issues.
- Not a government department or agency, although we are often hired to provide services for all levels of government.
- Independent from, but affiliated with, The Conference Board, Inc. of New York, which serves nearly 2,000 companies in 60 nations and has offices in Brussels and Hong Kong.