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Balancing Success: Navigating the Future for Sustainable Solutions in Pork Production

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01 Climate Change in a global and national context

01|Climate change: global context

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- United Nations' 17 Sustainable Development Goals (SDGs), adopted in 2015 as a universal call to action to end poverty, protect the planet, and ensure prosperity for all by 2030.

- The Paris Agreement, signed in 2016 by 196 countries, seeks to limit global warming to well below 2°C, with efforts to limit it to 1.5°C.

- Net-zero approach adopted after the Paris Agreement to achieve net-zero carbon emissions by around 2050.

01|Climate change: national context

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- Pan-Canadian Framework on Clean Growth and Climate Change (PCF): Announced in 2016, the PCF is Canada's primary plan to meet emissions reduction target.
- Federal Sustainability Strategy 2026 and Development Act
- Canadian environmental path: "A Healthy Environment and a Healthy Economy"
- Canadian Net-Zero Emissions Accountability Act: commitment in achieving net zero by 2050

Is climate change that important?

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Causes

- **Industrialization**
(5.2% in GHG emissions)
- **Deforestation**
(lost 4.7 million hectares forest)
- **Energy use**
(57% of the GHG emissions)
- **Agriculture production**
(18.4% in GHG emissions)
- **Transportation**
(16.2% of the GHG emissions)
- **Waste**
(3.2% in GHG emissions)

Effects

- Global temperatures have risen about **1.2°C**
- Wildfires burned over **13 million** acres of land
- Over **3,000** flood disasters worldwide, affecting more than **2 billion people**
- Sea levels have risen by about **8 inches**
- Oceans have become **30%** more acidic
- **1 million** species threatened with extinction
- The global economy stands to lose up to **$7.9 trillion** by 2050

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02 Environmental impact of pork production

Pork production GHG footprint

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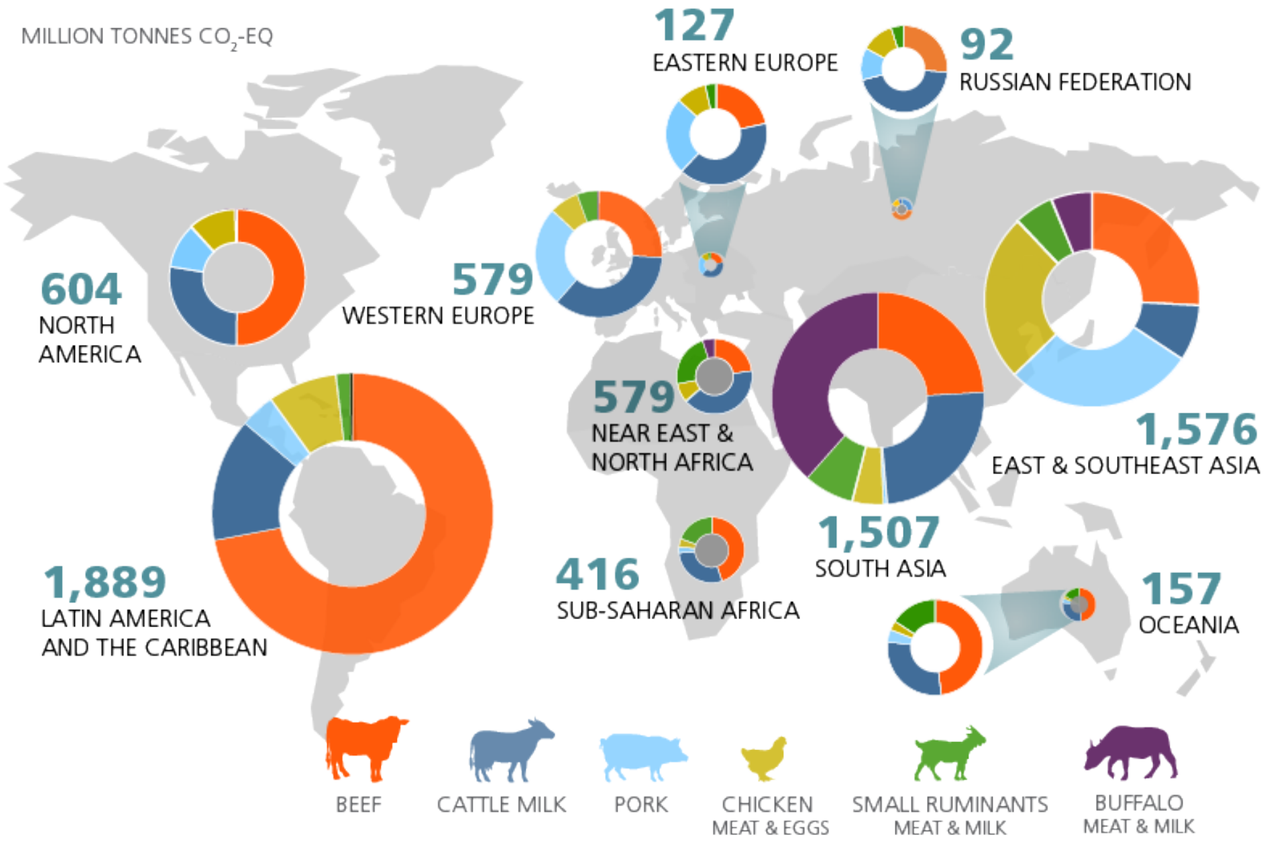
- Pork production contributes roughly **1.31%** to **global** anthropogenic GHG emissions
- Pork production accounts for less than **0.3%** of total GHG emissions in **Canada**
- In the agriculture sector, pork emissions contribute roughly **2.3%**
- 1kg of Canadian pork (carcass weight) after primary processing produces **4.43 kg CO_2 eq**



Pork GHG footprint by activity

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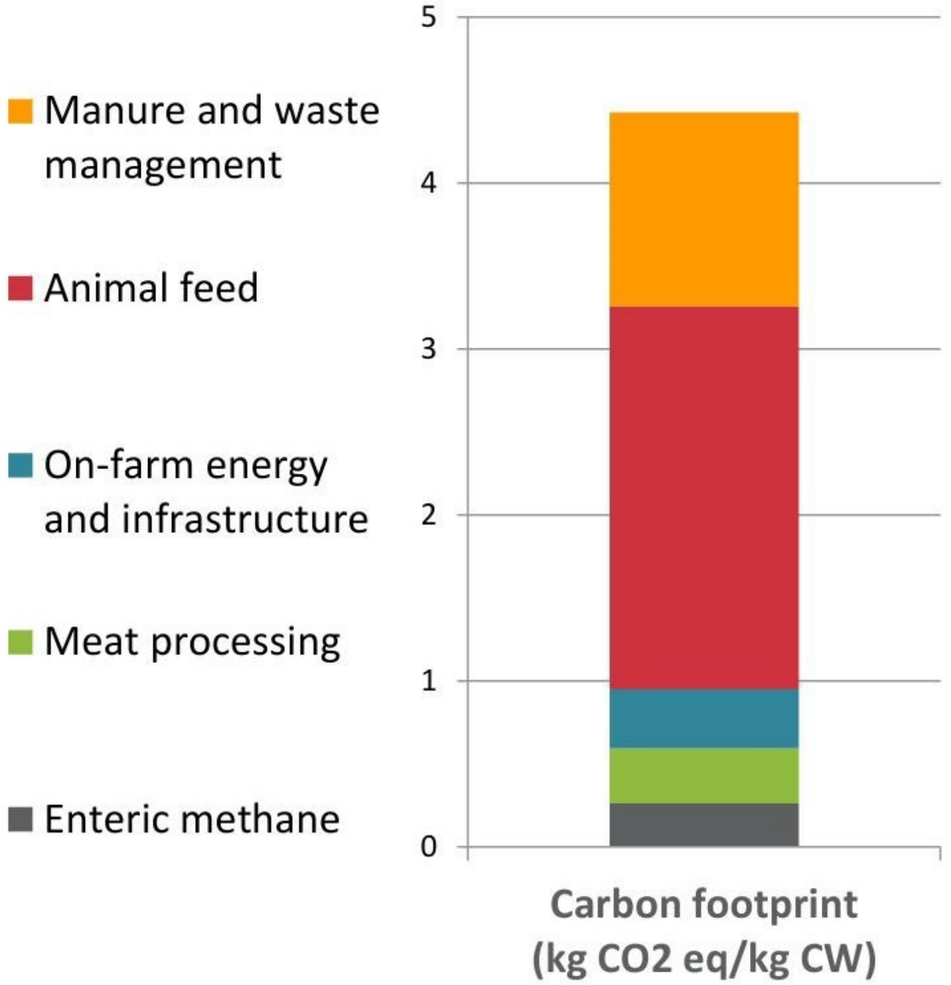

Manure management (26%)
—Methane and nitrous oxide emissions (direct and indirect) caused by the storage and treatment of manure.

Feed production (52%)
—The environmental impacts related to the feed production stage are sensitive to the composition of the pork diet and the quantity of feed intake.
—Corn is the main contributor to climate change impacts.

Other contributors (21%)
—Include enteric methane, meat processing, on-farm energy use, and infrastructure.

Due to a lack of data on feed management and diets, this % is also uncertain.
The assumption is that it is lower!

Credit: Streamlined Environmental Lifecycle Assessment of Canadian Pork Production, Groupe AGECO, December 2018

Pork emissions and other livestock

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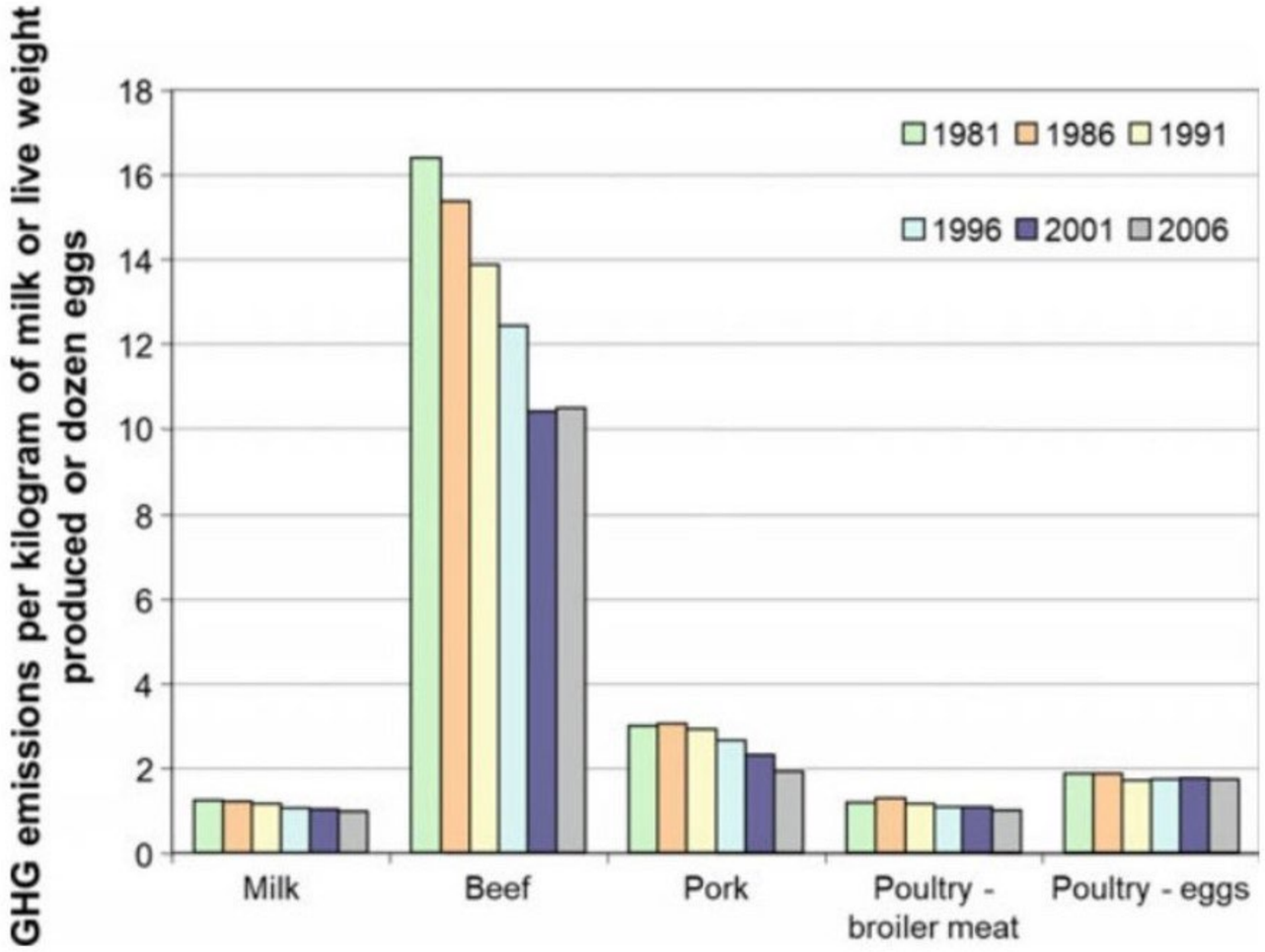
- Pork produces **38% less GHG emissions** than beef cattle.
- Pork requires approximately **30% less water** than beef - influenced by feed production, animal husbandry, and processing.
- Pork needs **44% less land** for pig farming than beef.
- Less land means pork contributes **20% less** to deforestation than beef.



Source: GHG emissions per kg of milk or live weight or dozen eggs in Canada in 1981–2006 (Desjardins et al. 2020)

Are we doing better than we think?

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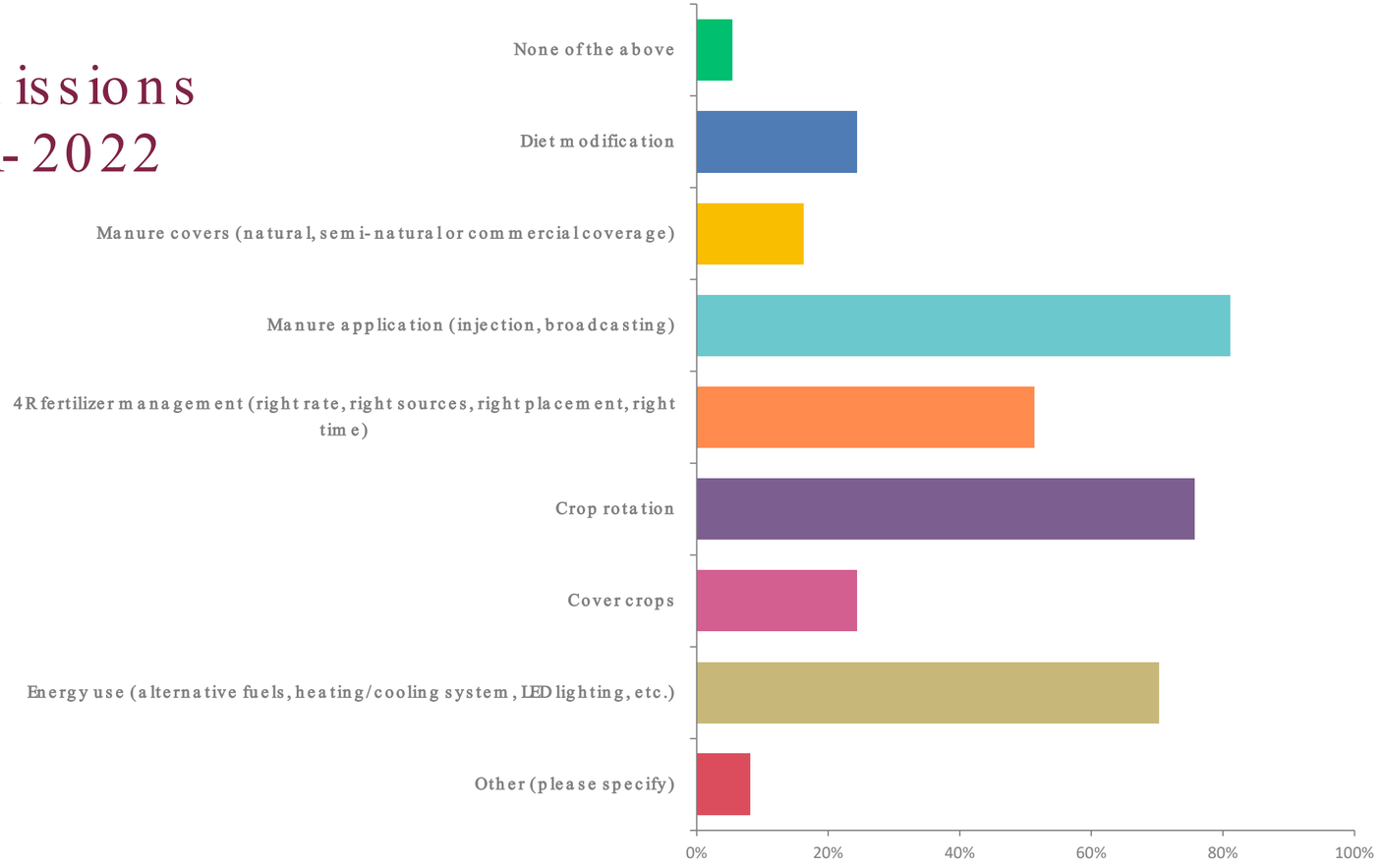
- From 1981 to 2011, the carbon footprint of Canadian pork **decreased by 16%**
- We estimate a reduction of GHG emissions by **more than 20%** in the period 2011-2022

Implementation of environmental measures on farm	
None of the above	**5%**
Diet modification	**24%**
Manure covers (natural, semi-natural or commercial coverage)	**16%**
Manure application (injection, broadcasting)	**81%**
4R fertilizer management (right rate, right sources, right placement, right time)	**51%**
Crop rotation	**76%**
Cover crops	**24%**
Energy use (alternative fuels, heating/cooling system, LED lighting, etc)	**70%**
Other	**8%**



Source: CPC environmental survey, March 2023 on capacity building assessment

How can we improve?

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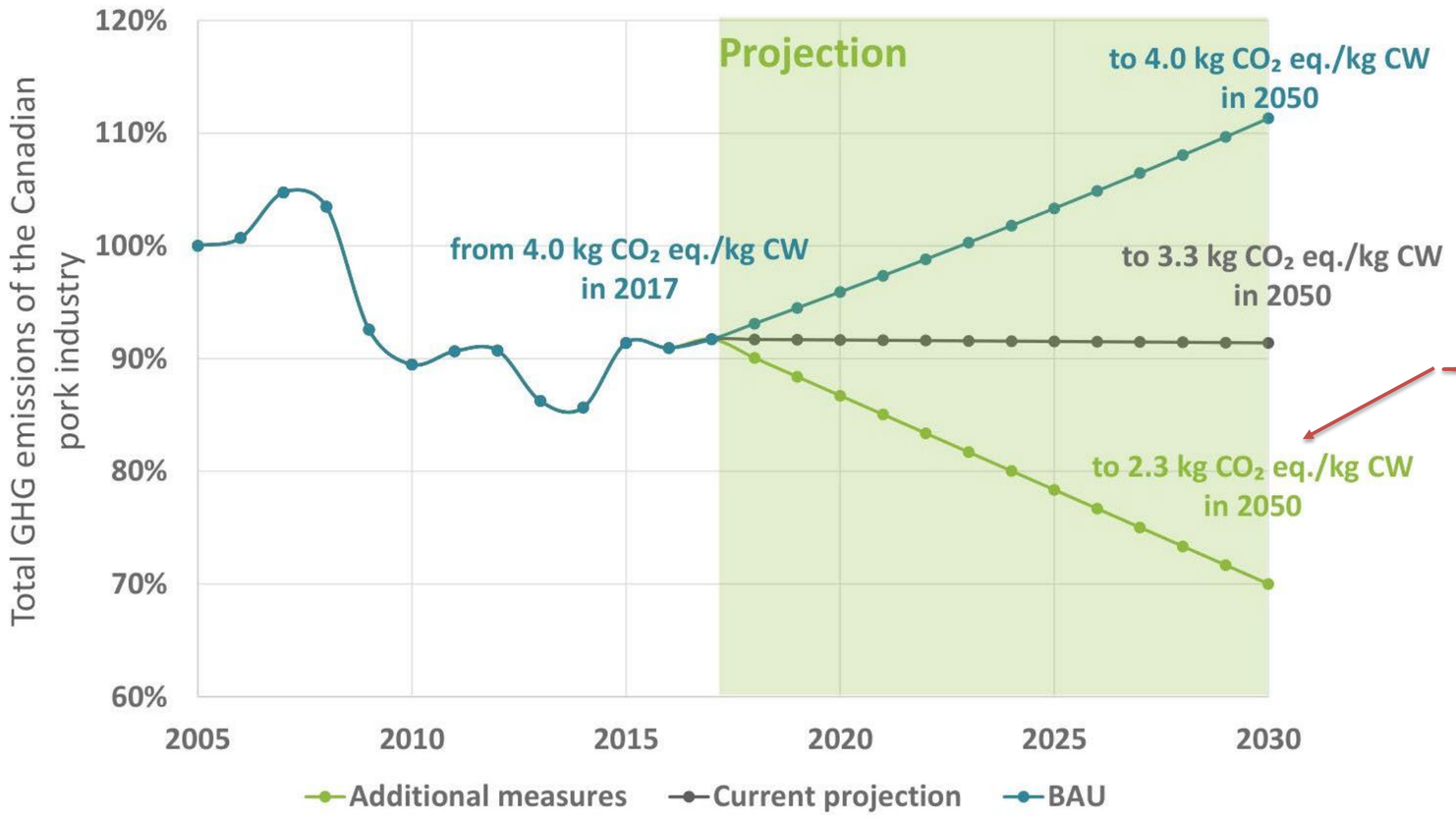
Scenarios of pork environmental stewardship:



Best management practices

- Feed Management
- Manure Management
- Energy Efficiency
- Water Optimization
- Soil Heath
- Resource and food waste recovery

Credit: Streamlined Environmental Lifecycle Assessment of Canadian Pork Production, Groupe AGECO, December 2018

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03 The role of national policy

Sustainable Agriculture Strategy (SAS)

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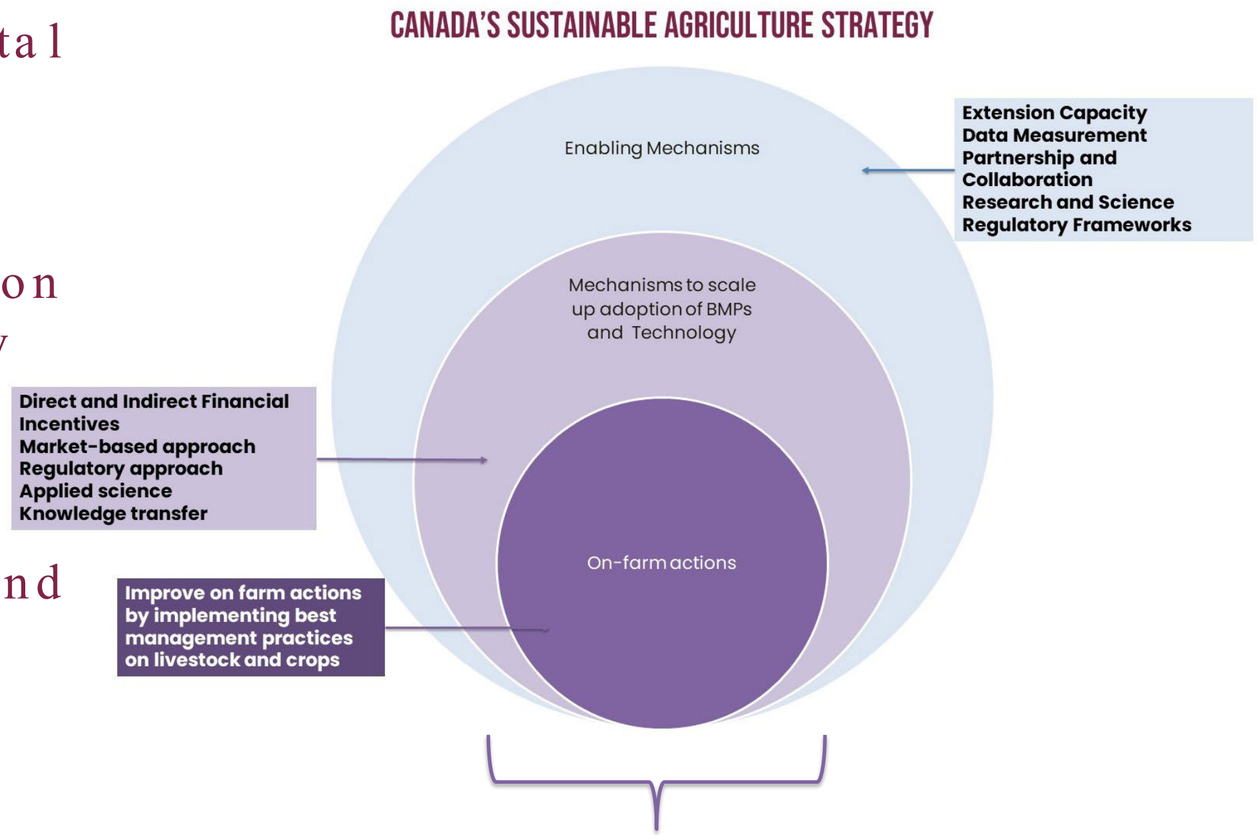
- SAS to help improve the long-term environmental performance of the sector and make the Canadian agriculture industry more profitable.
- AAFC and the Advisory Committee are working on developing the Sustainable Agriculture Strategy 2023-204
- Focus areas: climate change mitigation, biodiversity, soil health, water use, adaptation and resilience.
- CPC an active member of the Advisory Committee
- SAS to ensure reasonable solutions to economic, environmental and social sustainability.



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04 The future of sustainable pork

What is sustainable pork production?

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*"To increase efficiency in an **environmentally** friendly and **economically** viable manner while maintaining excellent **animal health and welfare**."*

Environmental Factors

GHG reduction

Improved feed & manure management, as well as optimized energy and water use to reduce carbon footprint and ensure a healthier planet.

Social Factors

Pig health & care

Upholding food safety standards, prioritizing animal welfare, and adhering to biosecurity protocols. Safeguarding one's health with a dedication to on-farm production excellence.

Traceability

Dedication to traceability for improving emergency management and mitigating risks. This system enhances disease control, supports market access and overall integrity of pork supply chain.

Economic Factors

Profitability

Sustainable practices increase profitability via efficient resource use and access to markets. It allows producers to stay competitive and meet global consumer demands and standards.

Community & Labour

Cost-benefits in sustainable practices

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Feed Management

Diets and feeding techniques can reduce feed costs by **10%-25%**
Technology use can add an additional **5%- 10%**

Energy Use

Energy efficient equipment and systems can lead to annual energy savings from **$5,000 - $50,000+**

Manure Management

Properly managed manure can also be used/sold as fertilizer or energy use can result in savings or revenues **$10,000 - $100,000+**

Animal Health

Biosecurity and preventative health can reduce disease outbreaks, which can cost **$10-100 per pig** in various cases

Water Optimization

Can lead to a reduction of costs by **up to 30%**
Water recycling further reduces costs and minimizes wastewater treatment costs.

Waste recycling

Recycling food waste and on-farm materials can see cost savings of **up to 15%**

Carbon footprint: Lower emissions by **up to 60%**

Sustainable Pork branding and Marketing: can increase profit margins by **20-100%**

Path Toward Sustainable Pork Beyond 2050

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Access to Data

- To understand the environmental impact of pork products.
- To inform decision-making and improve practices.

Education and Skills Building

- Access to information on best practices is vital for on-farm sustainability
- To provide trainings, coaching and advisory services to help producers transition to more sustainable practices.

Investment

- To improve uptake of sustainable practices that lead to long term savings and resilience.
- To modernize by using advanced technologies for monitoring and optimizing resource use.
- Mobilize funding to scale up on-farm investment and innovation.

Innovation

- To set up smart barns that enhance animal welfare, reduce energy use, and ensure optimal growth conditions, thereby improving productivity and sustainability.
- To set PAT and manure management solutions that focus on resource efficiency & recovery, including renewable energy.

Promoting existing efforts is key

Green Marketing

- Product affordability
- Among lowest carbon footprint in the sector
- Technological advances in the past 30 years
- Existing sustainability approaches utilized on the farm
- Highly resource-efficient compared to other meat production systems due to pigs feed conversion efficiency

Thank you