

# Supporting Farms of The Future

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## Issue

To feed the world, we must grow 10,000 years' worth of food in the next thirty years, which means agriculture producers worldwide must increase food production by 60 to 70 percent<sup>1</sup>. This demand is met with finite resources in agriculture including people, land and investment coupled with the high costs of technological adoption and implementation, environmental and regulatory burdens and a lag in specialized education and skill development. The convergence of skills development, new technologies, regulatory and cost controls must all be coordinated to deliver an effective agriculture and agri-food strategy in order to develop the farms of the future.

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## Background

In March 2016, the Federal Government's Advisory Council on Economic Growth (ACEG) was tasked by the Minister of Finance to provide policy directions for conditions needed for strong and sustained long-term economic growth. ACEG identified the agriculture and agri-food<sup>2</sup> sector as one of six strategic sectors with "a strong endowment and untapped and significant growth potential."<sup>3</sup> However, in order to be a key economic player in our growth, we must tap into our financial and social capital, human capital, natural capital, along with our built capital to build and implement sustainable practices, increase public awareness and trust and achieve food security for the future.

## *Environmental Considerations*

Science and innovation have been key to the progress and growth in the Canadian agriculture and agri-food sector. Many new innovations such as crop varieties, livestock breeds and farm management practices have delivered health, environmental and economic benefits. A number of Canadian innovations have yielded significant improvements. Crop production to zero-till techniques and equipment have improved soil health and enhanced carbon sequestration globally. Improvements in animal genetics and feeding efficiency have reduced GHG intensity in animal protein production. In addition, many scientists are confident that farming can be adapted to build carbon into soils<sup>4</sup>. Soil carbon building practices, loosely gathered under the term "regenerative agriculture," have been practiced for decades, or centuries in some places. However, there are barriers that keep more farmers from adopting these strategies, including higher costs for specialized equipment, and reduced return as these practices don't necessarily provide higher yields or demand premium prices in a global market where producers are price-takers.

More needs to be done to secure the ongoing delivery of sustainably produced nutritious food now and in the future. Science continues to unveil the complex relationships between soil-human-animal health and offer opportunities for lower risk, higher return, and quality food systems.<sup>5</sup>

There has been increased attention and funding by the federal government for fundamental research and development and to support innovation and commercialization. However there needs to be additional funding and support for companies to scale up and commercialize innovations through an innovation marketplace, a private-sector-led growth fund, review and rationalization of innovation-focused government programming, a systems level approach to look at carbon offsets and conservation protocols, along with greater efforts to access talent through targeted immigration policies.

## *Human Capital: Education and Skills Development*

<sup>1</sup>Rob Saik (2019), *Food 5.0*: <https://www.robertsaik.com/presentations.html>

<sup>2</sup> Agri-food includes agriculture, fisheries and aquaculture and food and beverage processing.

<sup>3</sup>The Canadian Agri-Food Policy Institute (2018), *Barton Forward: optimizing Growth in the Canadian Agri-Food Sector*: [https://capi-icpa.ca/wp-content/uploads/2018/06/CAPI\\_Barton\\_WhatWeHeardReport\\_Eng.pdf](https://capi-icpa.ca/wp-content/uploads/2018/06/CAPI_Barton_WhatWeHeardReport_Eng.pdf)

<sup>4</sup> Washington Post 'Planting Crops and Carbon, too': <https://www.washingtonpost.com/graphics/2021/climate-solutions/climate-regenerative-agriculture/>

<sup>5</sup> [https://capi-icpa.ca/wp-content/uploads/2018/06/CAPI\\_Barton\\_WhatWeHeardReport\\_Eng.pdf](https://capi-icpa.ca/wp-content/uploads/2018/06/CAPI_Barton_WhatWeHeardReport_Eng.pdf)

According to an [RBC report](#), 600 fewer young people are pursuing agricultural careers each year, and the number of unfilled agricultural jobs is expected to increase from 63,000 in 2017 to 123,000 by 2020<sup>6</sup>. Most of those empty jobs are in manual, unskilled labour, and are often filled by temporary foreign workers. We need to address barriers to working and investing in the industry and focus on not only skill development and redevelopment for career transitions but also early career development and awareness of the opportunities in agriculture, agri-food and agri-tech.

There is an ageing population within agriculture that may not be interested in technology, however, agriculture is fast becoming a technologically driven-industry. With the development in machine learning, artificial intelligence and new innovative systems, there is an expanded opportunity for career development in innovation and agri-tech.

Additionally, there is an untapped opportunity to create agriculture programs, similar to trades, apprenticeship and health related programs. Such programs can provide theory, safety and science-based training and education through course curriculum, but then also integrate applied program training and specialization through immersive work experience. By modelling programs and creating incentives to target this specialized sector, industry and education can work together to create a suite of employable skills that enable students to gain the insight and experience to gainfully contribute to the agricultural industry and our economy into the future.

#### *Technology and Innovation Cost Controls and Incentives*

Around the world, modern farming is beginning to utilize technologies such as advanced sensors, imaging, remote monitoring, automation, robotics, artificial intelligence and blockchain.<sup>7</sup> Alberta Innovates describes self-driving tractors, automated cultivators and robotic harvesters as current technology under development. Agricultural producers could yield substantially more yields while minimizing environmental impact by utilizing intelligent, automated systems.

Today, Canada's agri-food sector has low rates of technology adoption compared to other countries.<sup>8</sup> Canada can remain competitive and benefit from bridging the gap between emerging technology and traditional farming methods, but unfortunately, Canada is lagging in the agtech race.<sup>9</sup> Canadian farmers rely heavily on government supported funding for new technologies and processes and we are seeing that Canada's share of global agtech investment is less than either of India or Brazil.<sup>10</sup>

According to an RBC Report, Canada could gain \$11 billion in annual GDP by 2030 by closing the agriculture labour gap and accelerating investment in technology. This would bring agricultural GDP to \$51 billion, making it bigger than automobile assembly and aeronautics combined.

While more than 80% of producers under the age of 40 report using technology; for those over 60, it's 57%.<sup>11</sup> This is likely because it is largely felt that the current cost of technology adoption does not lead to the financial returns that would justify investment. Agriculture is a capital-intensive business and always has been, which makes it tough to compete in a new economy that thrives on software and puts an ever greater value on intangibles. Farmers' access to credit is also surprisingly low: Canadian agriculture has a 1.9% share of national commercial lending. The global average is 2.9%; in New Zealand, it's 14.1%. The capital intensity is one of the reasons so many operations stay family-owned and operated, and stands as a barrier to those seeking careers in agriculture.

Technology is apt to open agriculture opportunities to non-traditional sources of talent. If Canada can find new ways to commercialize technology, the country can cultivate the next generation of skills to go with it.

<sup>6</sup> RBC Thought Leadership (2019), *Farmer 4.0: How the coming skills revolution can transform agriculture*:

[http://www.rbc.com/economics/economic-reports/pdf/other-reports/Farmer4\\_aug2019.pdf](http://www.rbc.com/economics/economic-reports/pdf/other-reports/Farmer4_aug2019.pdf)

<sup>7</sup> Alberta Innovates, *The Future of Farming*: <https://albertainnovates.ca/impact/newsroom/the-future-of-farming/>

<sup>8</sup> Canada's Economic Strategy Tables, Agri-Food – The sector today and opportunities for tomorrow (Interim Report) (Spring 2018).

### *Regulatory Obstacles*

Agri-food products have a long and multi-stage journey to market and agri-food issues naturally span across different departments within the government, which results in regulatory obstacles. Cross-departmental communication and collaboration is essential to triage and resolve these regulatory obstacles.<sup>12</sup> Alignment between all levels of government can contribute to efficiency by eliminating or reducing the duplication of regulations.

In addition, many regulations for the agri-food sector are out of date, impeding investment, innovation and competitiveness.<sup>13</sup> Modernization of regulations should focus on an appropriate balance of science and risk without unnecessarily impeding innovation. Our regulatory process must demonstrate that Canada's food is the safest, most sustainable and most nutritious in the world.

### **Recommendations**

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The Medicine Hat and District Chamber of Commerce recommends the Government of Canada:

1. Create a systems level approach to creating programs that capture carbon offsets or carbon credits for carbon sequestering.
2. Create a cohesive science-based strategy that addresses both the environmental regulations and the economy, evaluating emissions intensity alongside carbon sequestering and soil health.
3. Create job grants or an employment placement program for employers to encourage more work placements for students.
4. Encourage student placements by creating student tax credits for post-secondary students seeking employment opportunities in agriculture, agri-food and agri-tech.
5. Promote career opportunities through grants for secondary and post-secondary institutions that provide agriculture, agri-food and agri-tech opportunities for students.
6. Modernize and synchronize regulations and frameworks to speed up approval times and help the industry adjust quickly to regulations around new technologies.
7. Stimulate innovation, commercialization, investment, connectivity and data collection in agri-tech developments through taxation incentives for agri-tech developers and investors.
8. Create taxation incentives or subsidies for on-farm agri-tech strategies, investment, adoption and implementation by producers.

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<sup>12</sup><https://capi-icpa.ca/wp-content/uploads/2017/04/Canada-as-an-Agri-Food-Powerhouse-Strengthening-our-Competitiveness-and-Leveraging-our-Potential-2017.pdf>