



Understanding How Greenbelt Agriculture Feeds the Regional Economy



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The Greenbelt Foundation is committed to promoting awareness and education about Ontario's Greenbelt. To this end we occasionally publish research and general interest papers that explore our three program areas: viable agriculture and viticulture; vibrant rural communities; and, a restored and protected natural environment.

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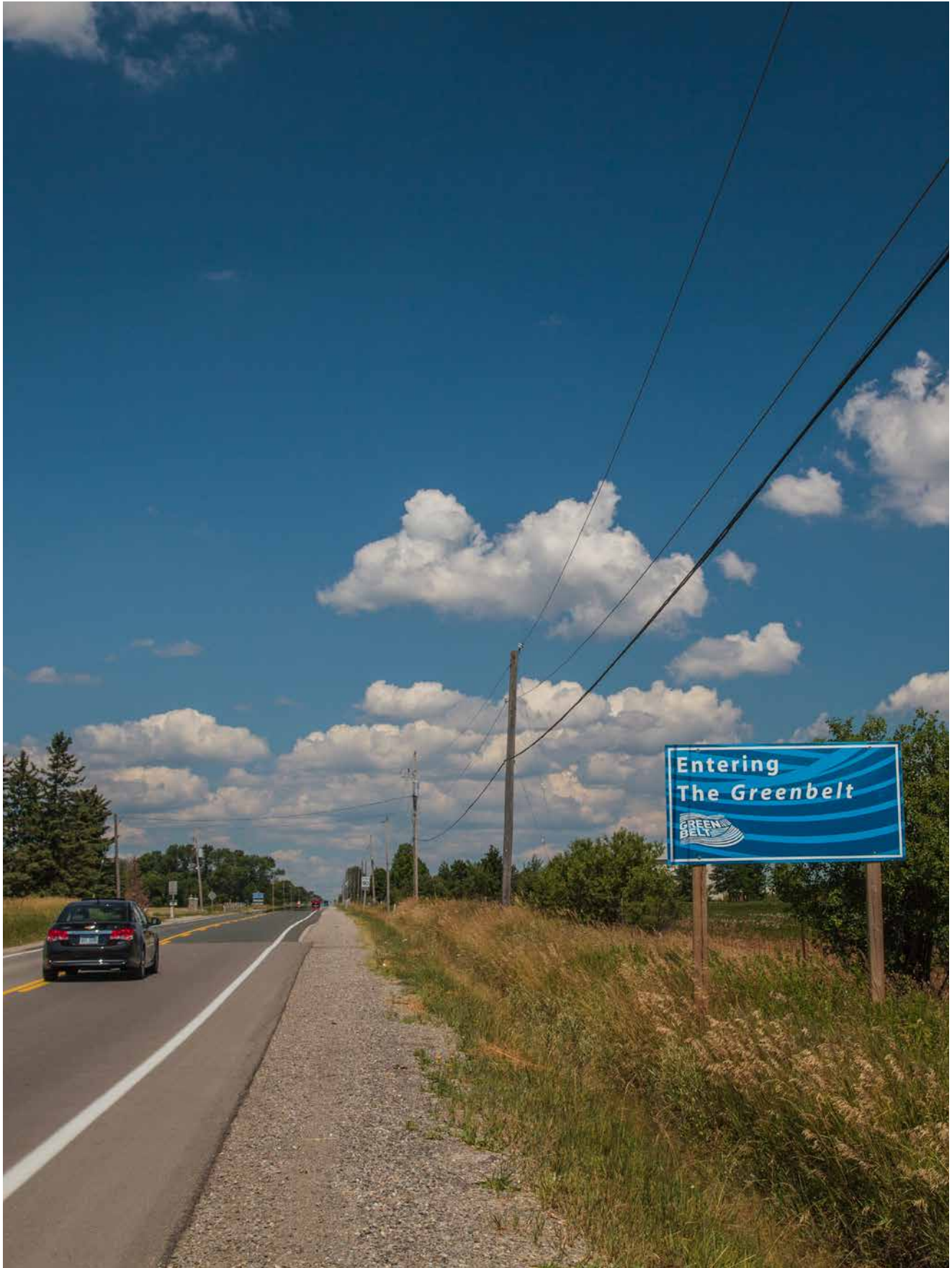
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Executive Summary



Photo: Alina Schulze

Home to a quarter of Canada's population and responsible for two thirds of Ontario's economic activity, the Greater Golden Horseshoe (GGH) is essential to the province of Ontario. Within the GGH is another important region, the Greenbelt.

The Greenbelt includes natural spaces and productive farmland that have been protected under the 2005 Greenbelt Plan. One of the purposes of the Greenbelt Plan is to provide a policy tool that guides development in the GGH and protects agriculture, natural areas, and areas of human settlement. As the population in the region continues to grow and urban areas expand, the economic, social, and environmental benefits of the Greenbelt will become more important. These benefits include:

- Fresh water
- Carbon sequestration
- Food security and sustainable local food production
- Health and wellness related to recreation opportunities
- Regional ecological diversity
- Protection for species at risk

Population growth creates opportunities for companies operating across all sectors of the economy. Looking specifically at the agriculture sector within the Greenbelt, there are clear benefits in terms of jobs and economic impact. Included with farm production, are the processing and distribution of agricultural goods, as well as more novel industries such as culinary tourism and agri-tourism.

A strong and stable farming and food sector is critical to Ontario's economy, now and into the future. The key to maintaining farming and other businesses along the multiple and varied supply chains is the same as it is in every country around the world: the permanent protection of the agriculture land base.

In the case of the Greenbelt and the GGH, this protection is particularly important given the combination of attributes that support the region's production of higher value crops: fertile soils, a moderate climate, access to water, farmer expertise, availability of multi-modal transportation and a variety of technical services including research and development, processing capacity, as well as proximity to local, provincial, national, and international markets.

Summit72 was engaged by the Greenbelt Foundation to build on previous economic analysis to evaluate the significant contribution of agriculture in the GGH to other sectors of the economy. This has involved analysis of the full agri-food sector, in order to describe the interrelationships within the value chain and an understanding of the value of the agri- food network.

Data and analysis for this project has been derived from multiple sources that include Statistics Canada, Ontario Ministry of Agriculture, Food and Rural Affairs, the Golden Horseshoe Food and Farming Alliance, Emsi Burning Glass, and Summit72's Regional Assessment Model.

This study builds on earlier analysis and provides empirical evidence that highlights the importance of agriculture to the region's overall economic health and supports the continued protection of the Greenbelt.

A strong agriculture sector presents opportunities for growth in other segments of the economy—contributing to business diversity and a more resilient overall macroeconomic environment. As a result of agricultural activity, economic benefits ripple through the economy and have a positive effect on people and businesses beyond the boundaries of the Greenbelt.

There are over 30 key subsectors of the economy that are linked to primary agricultural production. A regional assessment estimates that there are well over 500,000 businesses operating in the GGH that fall into these 30 subsectors of the economy. These businesses are not exclusively servicing the needs of agriculture businesses, but many of them do however benefit from the business that agriculture generates.

For instance, while primary agricultural activity occurring within the boundaries of the Greenbelt generated an estimated \$727.8M in direct GDP and 5,132 jobs, secondary agricultural production associated with Greenbelt agriculture generated an estimated \$653.6M in direct GDP and close to 5,000 jobs in 2020. And downstream from the manufacturing sector are the wholesale and retail operations associated with Greenbelt farm production, which generated over \$1.2B in direct GDP and close to 29,000 jobs within the province in 2020.

Within the Greenbelt alone, farm purchases of goods and services were valued at \$900M in 2017, with over 70% of this economic activity taking place within the GGH. Agricultural activity is not limited to farm purchases either, there are approximately 3,300 food processing businesses in the GGH with many of them relying on agriculture as an input for their own production.



Overall, Ontario's agri-food value chain generated an estimated \$46.3B in provincial GDP and over 700,000 jobs in 2020. Looking specifically at the Greenbelt, the agri-food sector generated \$4.1B in GDP and close to 59,000 jobs that are linked back to agricultural activity in the Greenbelt.

Population growth in the GGH presents opportunities for the agriculture sector to meet the growing demand for food, however, regional dynamics also present threats to the industry. Without effective growth management in the region, the agricultural land base will continue to be eroded. Land fragmentation can impact the economies of scale that traditional farming operations need. This means loss of production and a reduction in economic activity throughout the value chain. Fragmentation of the agricultural system impacts many businesses and impedes their ability to take advantage of the potential growth in production and demand for local food. The ability of the agricultural sector to adapt and innovate will determine whether market growth can be captured by local producers.

List of Acronyms

B	Billions
ESG	Environmental, Social, and Governance
GDP	Gross Domestic Product
GHFFA	Golden Horseshoe Food and Farming Alliance
GGHA	Greater Golden Horseshoe Area
GTHA	Greater Toronto Hamilton Area
M	Millions
NAICS	North American Industry Classification System
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
TBL	Triple Bottom Line
TFW	Temporary Foreign Workers



Introduction

The Greater Golden Horseshoe (GGH) covers an area of over 32,000 square kilometers wrapping around the western end of Lake Ontario. It includes the Greater Toronto Hamilton Area (GTHA) and 10 other jurisdictions which surround the GTHA. Home to almost a quarter of the total Canadian population (9 million people), the Ministry of Municipal Affairs and Housing forecasts the region will grow to 13.5 million people by 2041.

A strong and stable farming and food sector is critical to Ontario's economy, now and into the future. The key to maintaining farming and other businesses along the multiple and varied supply chains is the same as it is in every country around the world: the permanent protection of the agriculture land base. In the case of the Greenbelt and the GGH, this protection is particularly important given the combination of attributes that support the region's production of higher value crops: fertile soils, a moderate climate, access to water, farmer expertise, availability of multi-modal transportation and a variety of technical services including research and development, processing capacity, as well as proximity to local, provincial, national, and international markets.

Population growth in the GGH region is a double-edged sword. On the one hand, it presents opportunities for the agriculture sector to grow and thrive in response to a favourable shift in the demand curve. On the other hand, to the extent it threatens the regional agricultural system, it represents a risk to agribusiness in the area as suitable land becomes increasingly rare. Governments must therefore carefully manage regional growth and land use.

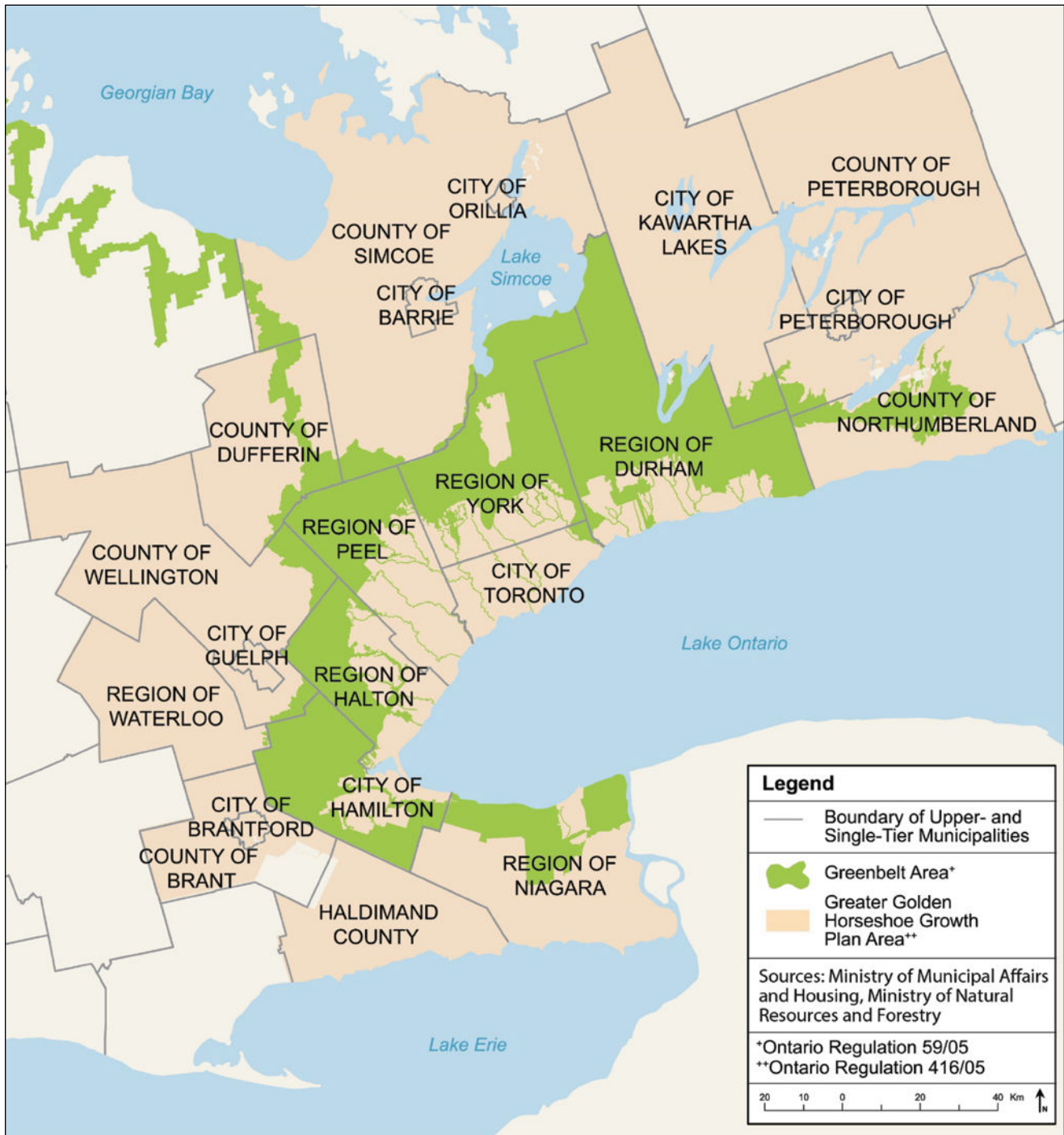
Within the GGH are natural spaces and productive farmland that are permanently protected under the 2005 Greenbelt Plan. One of the purposes of this plan is to provide a policy tool that guides development in the GGH and protects agricultural areas, natural areas, and areas of human settlement. In the 15 years since the Plan was established, it has protected farmland in the Greenbelt from conversion to development, providing farmers with the certainty to continue to invest in their operations, whether to modernize, expand, or diversify them, and to plan for succession. However, as population pressures in the region grow, these protected areas will become increasingly important to the economic, social, and environmental well-being of the region.

The economic contribution of agriculture to the province has been well documented by the OFA ("Economic Contribution of the Ontario Farm Sector," 2013) as well as by the Greenbelt Foundation ("Dollars and Sense," 2014 and "Economic Impact Assessment," 2020) at the Ontario, southern Ontario, and Greenbelt levels.

Purpose of Study

The purpose of this study is to build on previous economic analysis to evaluate the significant contribution of agriculture in the GGH and Greenbelt to other sectors of the economy. This has involved analysis of the full agri-food sector, in order to describe the interrelationships within the value chain and an understanding of the value of the agri-food network. This is important when considering the opportunities associated with increased agricultural production and demand for local food in the region, as well as the vulnerabilities and potential losses associated with fragmentation of the agricultural system and continual erosion of the land base that it is built on.

Figure 1 Greater Golden Horseshoe and the Greenbelt



Source: Ministry of Municipal Affairs and Housing



Methodology

The process of quantifying the economic contribution of the Greenbelt begins with defining the analysis basin and the precise terminology that is used throughout this report. The following section defines the parameters and methodology used in the analysis.

2.1 Terminology

A number of key terms used within this report are defined below.

Agri-food Network

The Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) states that agriculture systems are composed of two components, the agricultural land base, and the agri-food network.¹ “The agri-food network includes the infrastructure, services and other agri-food assets needed to sustain and enhance the prosperity of the agri-food sector. For example, this includes transportation systems, agricultural services, farm markets, distributors and primary food processors.”²

This study explores the business sectors that make up the agri-food network, as well as the industries that provide goods and services to the agri-food network.

North American Industry Classification System

Otherwise known as NAICS codes, this classification system uses standardized business categories to aggregate and report data. The NAICS classification system allows for data to be represented in varying degrees of detail—from 2 to 6 digits—with the more digits in the code signifying greater classification detail (i.e., a narrower industry view).

1 Ontario Ministry of Agriculture, Food and Rural Affairs. n.d. <http://www.omafra.gov.on.ca/english/landuse/agsys-ggh.htm>

2 Ontario Ministry of Agriculture, Food and Rural Affairs. n.d. <http://www.omafra.gov.on.ca/english/landuse/agri-foodnetwork.htm>

Primary Agricultural Production

Farming activities that include crop production, horticulture, dairy production, raising of livestock, poultry, and bees.

Secondary Agricultural Manufacturing

The secondary sector depends on the primary sector for the raw materials necessary for production. The secondary agricultural manufacturing sector being evaluated relates to those goods that are treated, processed or prepared from primary agricultural products.

2.2 Regional Assessment Model

To support a regional overview of the Greenbelt regions and the GGH, data has been sourced from Statistics Canada's Federal Business Register which is a repository of Canadian business population information.³ The Register provides information on the number of active businesses by NAICS code. An important feature of this data is that it is sufficiently granular to facilitate a municipal level view of the specific industries and subsectors of the economy that are of importance to the analysis.

The Greenbelt covers an area of over two million acres and spans 56 different municipalities. Measuring economic activity within the Greenbelt can be problematic since its boundaries do not align with Statistics Canada boundaries used to present regional data. Furthermore, the proportion of Greenbelt territory within each municipality can vary significantly (e.g. less than 1% in the municipality of Trent Hills, to 100% in Uxbridge and King). To address this issue, the Regional Assessment Model uses geographic information provided in OMAFRA's county profiles to allocate economic activity to the Greenbelt pro rata based on the amount of Greenbelt area within each municipality.⁴

The business count data in the Regional Assessment Model has also been supplemented with other data sets such as Gross Domestic Product (GDP) and population demographics. This allows for further economic insight into specific geographic areas.⁵

3 Statistics Canada. Table 33-10-0267-01 Canadian Business Counts, June 2020.

4 Ontario Ministry of Agriculture, Food and Rural Affairs. County Profiles, Greenbelt, n.d.

5 Statistics Canada. Table: 36-10-0402-01 Gross domestic product (GDP) at basic prices, 2020.

2.3 Economic Analysis

The Agri-food Business Ecosystem Map in Figure 3 illustrates the linkages between agriculture and other segments of the economy. The economic assessment undertaken in this report quantifies the GDP and employment impact that each of these sectors experiences as a result of the linkage within the agri-food sector.

To minimize the risk of double counting, and thereby overstating the overall economic impact attributable to these linkages, it was necessary to isolate each of these ‘sub- economies’ from the economy as a whole. This was achieved by:

1. Removing the value of intermediate goods and labour from gross output estimates.
2. Restricting the scope of the analysis to direct economic multipliers only. In other words, the cumulative impact that indirect and induced effects have on the overall economy are purposely excluded from the assessment.

A key dataset for this project has been the output from OMAFRA’s Agri-food Attribution Model.⁶ Basing this study and the underlying calculations on OMAFRA’s data ensures that the analysis has a consistent starting point with other Government of Ontario agriculture related economic impact assessments. It can also accommodate comparisons between different regions within the province, and it can be easily updated over time to provide insight into changing market factors or the impact of policy decisions.⁷

The components of the agri-food value chain being evaluated are as follows:

- Primary agriculture (crop and animal production).
- Secondary agricultural manufacturing that includes value added activities related to food, beverage and tobacco manufacturing, and the production of leather products.
- Retail and wholesale activities.

The expense profiles for the above three sectors of the agri-food network have also been evaluated and the related economic impact in terms of GDP and jobs has been calculated using Statistics Canada economic multipliers.⁸ This exercise has been completed for the following categories:

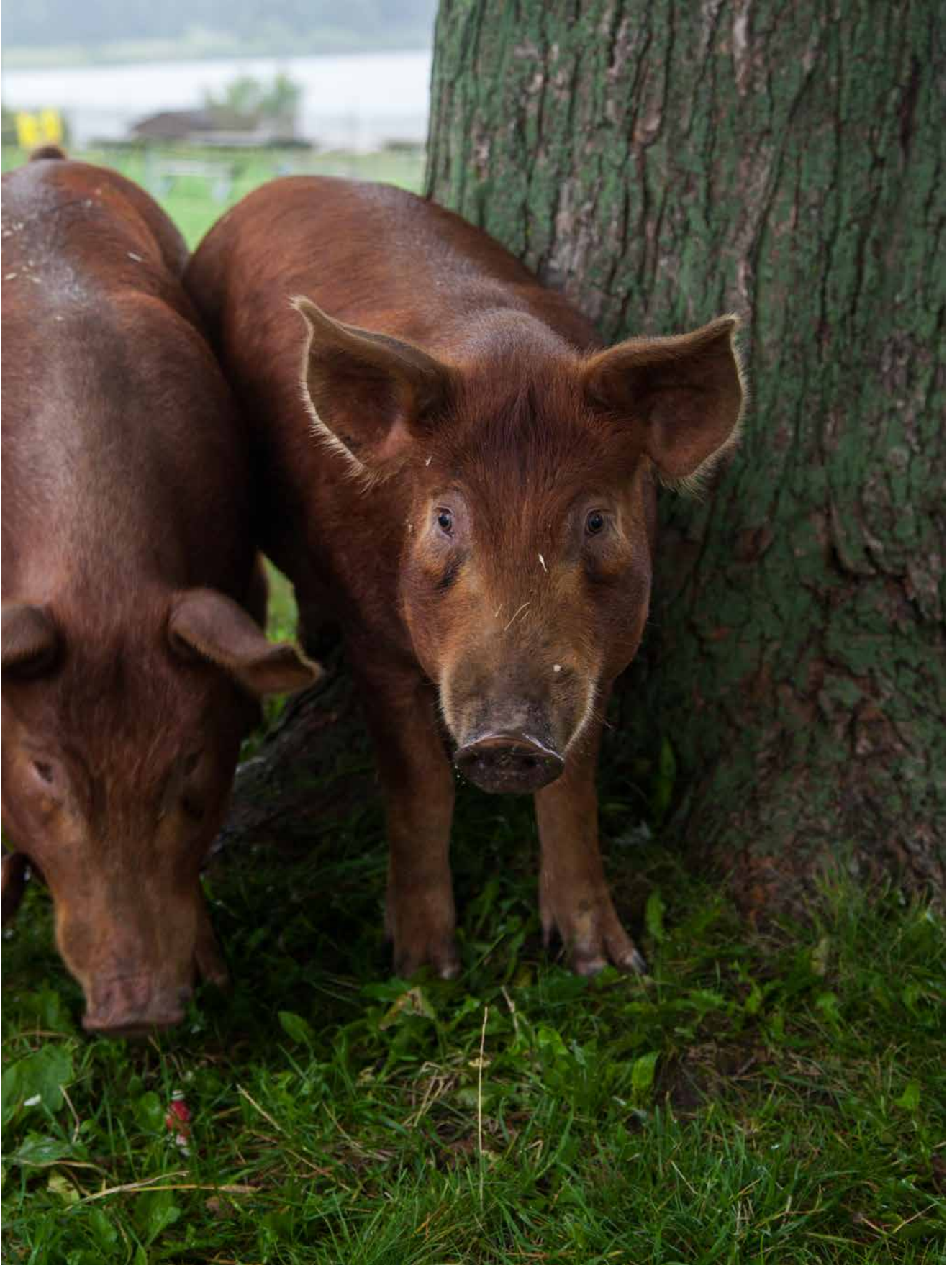
- Energy, Water, Utility and Fuel
- Materials and Supplies
- Services and Other Expenses

In summary, the economic analysis identifies the level of agriculture production in the Greenbelt and follows that production through the value chain, tracing downstream economic activity to its source—Greenbelt agricultural production. This approach facilitates an understanding of how both the province of Ontario and individual segments of the economy benefit from primary agriculture in the Greenbelt.

6 Ontario Ministry of Agriculture, Food and Rural Affairs. Ontario Gross Domestic Product (GDP) for Agri-Food Sector (Attribution Model Output), 2007-2020. http://www.omafra.gov.on.ca/english/stats/economy/gdp_agrifood.xlsx

7 Future updates and comparisons are contingent on the ongoing publication of OMAFRA’s Agri-food Attribution Model.

8 Statistics Canada. Table 36-10-0595-01 Input-output multipliers, provincial and territorial, detail level, 2018.



Agri-food Business Ecosystem

Food and agriculture are broad and dynamic industries which are not well understood. Much of modern agriculture is invisible to the consumer and public perceptions are frequently based on outdated ideas and images. Agri-food activity spans a business ecosystem that includes relationships, connections, and networks that are not always obvious, yet are important to a healthy agriculture sector.

As the value chain becomes more integrated, each link in the chain increases in importance. The result of these network externalities are economic benefits that ripple through the business ecosystem and have a positive effect on people and companies beyond the boundaries of the Greenbelt.

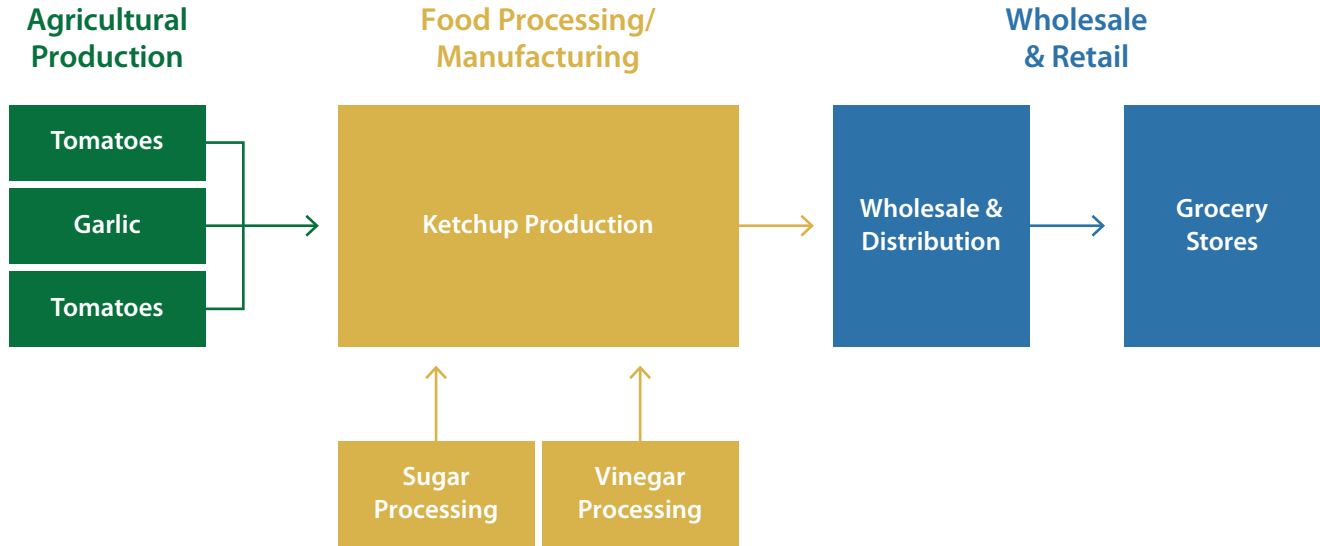
A robust agriculture sector generates opportunities for employment and business growth in other segments of the economy, contributing to business diversity and a more resilient overall macroeconomic environment. The results are mutually beneficial relationships between producers and the upstream and downstream businesses within the value chain. The three key components of the agri-food value chain are as follows:

- Primary Agriculture Production
- Secondary Agricultural Manufacturing
- Wholesale and Retail

It is also important to note that the agri-food sectors in the Greenbelt and GGH region operate at a variety of scales, accessing markets, locally, provincially, nationally and internationally.

Although the agri-food sector requires inputs and services from around the world, the large population base and extensive business ecosystem can also support products that are made and sourced locally. Figure 2 provides insight into the value chain for a food product that is manufactured in the GGH (North York) and for which the manufacturer states that many of the ingredients come from southern Ontario.

Figure 2 Ketchup Manufacturing in the GGH



Building on this simple example, an agri-food business ecosystem map has been created to provide an expanded view of the complex linkages between agriculture and other segments of the economy. Included are the additional industries that play a vital role in supporting the agri-food value chain. These support industries fall within the following categories:⁹

- Energy, Water, Utility and Fuel
- Materials and Supplies
- Services and Other Expenses

Collectively, the agri-food business ecosystem evaluated in this report encompasses all of the components of the agri-food sector and the related support industries. Figure 3 and 4 illustrate the agri-food business ecosystem and provide descriptions of the activities taking place.

⁹ Presentation of support industries have been categorized in order to align with the data used to evaluate economic impact in Section 6. This allows for a consistent qualitative and quantitative view of economic activity.

Figure 3 The Agri-food Value Chain

Primary agricultural production drives an extensive ecosystem of economic activity.

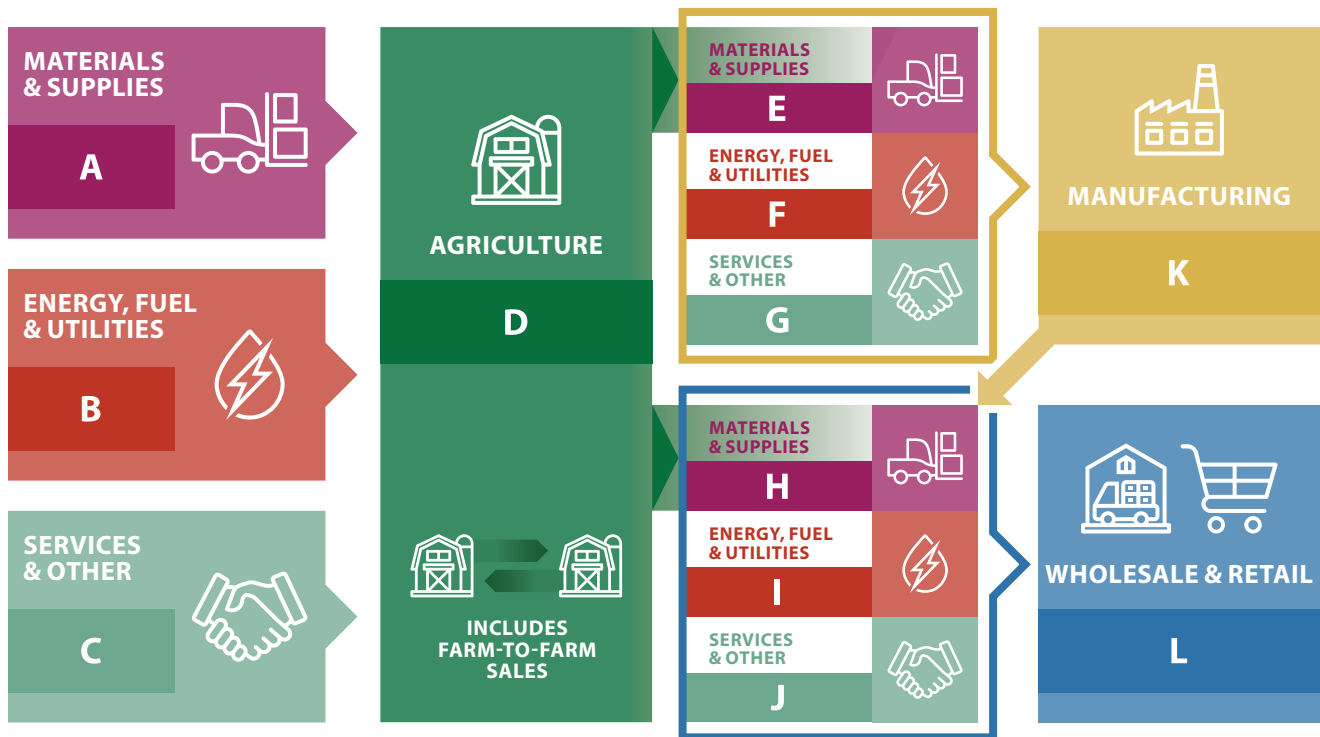


Figure 4 Value Chain Industry Assessment

REF.		ECONOMIC CATEGORY	NAICS CODES	GGH BUSINESSES
A		MATERIALS & SUPPLIES – INPUT TO PRIMARY AGRICULTURE Extensive list of agricultural input provides that include seeds, fertilizer, and chemicals for crop production, or replacement stock, feed and veterinarian services for livestock producers.	111, 112, 115, 212, 311, 325, 326, 333, 418, 444	2,300
B		ENERGY, FUEL & UTILITIES – INPUT TO PRIMARY AGRICULTURE Goods and services that include distribution and sales of natural gas, electricity, water, as well as sewer utilities. Also included in this category are retail and wholesale fuel businesses.	211, 221, 324, 447, 517	900
C		SERVICES & OTHER – INPUT TO PRIMARY AGRICULTURE Covers a wide range of business services that are directly related to agricultural production, as well as professional services such as accounting, legal, marketing, and financial.	115, 238, 484, 522, 524, 532, 541	79,000
D		PRIMARY AGRICULTURE PRODUCTION Farming activities that include crop production such as grains and oilseeds, horticulture, dairy production, raising of livestock, poultry, and bees.	111, 112	18,000
E		MATERIALS & SUPPLIES – INPUT TO MANUFACTURING Extensive list of businesses needed to support the ongoing operation of manufacturing facilities as well as the raw inputs used in the processing of food, beverages, and leather.	111, 112, 212, 311, 312, 322, 325, 326, 333, 411, 413, 445	4,100
F		ENERGY, FUEL & UTILITIES – INPUT TO MANUFACTURING Goods and services that include distribution and sales of natural gas, electricity, water, as well as sewer utilities.	211, 221, 324, 517	900
G		SERVICES & OTHER – INPUT TO MANUFACTURING Covers a wide-range of business services that are directly related to manufacturing, as well as professional services such as accounting, legal, marketing, and financial.	238, 482, 484, 493, 522, 524, 533, 541, 551, 561	103,000
H		MATERIALS & SUPPLIES – INPUT TO WHOLESALE & RETAIL Includes fruits, vegetables, and meats that originate with agriculture producers, and the products that are produced through secondary agricultural manufacturing.	111, 112, 114, 311, 312, 322, 326, 332, 333, 336, 413	3,500
I		ENERGY, FUEL & UTILITIES – INPUT TO WHOLESALE & RETAIL Goods and services that include distribution and sales of natural gas, electricity, water, as well as sewer utilities.	221, 324, 517	900
J		SERVICES & OTHER – INPUT TO WHOLESALE & RETAIL Covers a wide-range of business services that are directly related to wholesale and retail sales, as well as professional services such as accounting, legal, marketing, real estate, and financial.	238, 484, 492, 493, 522, 524, 531, 533, 541, 551, 561, 713	337,000
K		SECONDARY AGRICULTURAL MANUFACTURING Goods that are processed, treated, or prepared from primary agricultural products. Includes value added activities related to food, beverage and leather production.	311, 312, 316	3,300
L		WHOLESALE & RETAIL Broad range of services that include distribution networks, wholesale intermediaries, grocery stores, and establishments involved in preparation of meals and beverages.	411, 413, 445, 722	40,000

As illustrated in Figure 4, there are over 30 key subsectors of the economy that are linked to primary agricultural production (listed by 3-digit NAICS code). To provide further understanding into the business ecosystem, full descriptions and example businesses have been provided in Appendix A.

A regional assessment estimates that there are well over 500,000 businesses operating in the GGH that fall into these 30 subsectors of the economy.^{10, 11} These businesses are not exclusively servicing the needs of agriculture businesses, but many of them do however benefit from the business that agriculture generates.



A single agriculture business like a farmer, has dozens of business relationships with professional service providers, equipment retailers, and an array of input suppliers. Many of these relationships are within the region but some would extend to other parts of the province, country or internationally depending on the specific operation.

A food processor can have an even more complex network surrounding them. Local and/or imported ingredient providers, packaging providers, brokers, wholesalers, and distributors all play a direct role in food processing. Indirect support services are also important and can include professional services like insurance providers, accountants, legal services, and marketing professionals. Additionally, food safety and compliance also play a significant role in food processing, resulting in an entire network of consultants and contractors that help to ensure that food processors remain compliant with mandated food safety programs.

The insight gained from the agri-food business ecosystem mapping provides a qualitative illustration of the linkages in the agriculture value chain continuum. The following sections build upon this exercise to quantify the contribution that these segments of the agri-food sector make to the economy.

¹⁰ Summit72 Regional Assessment Model, 2021.

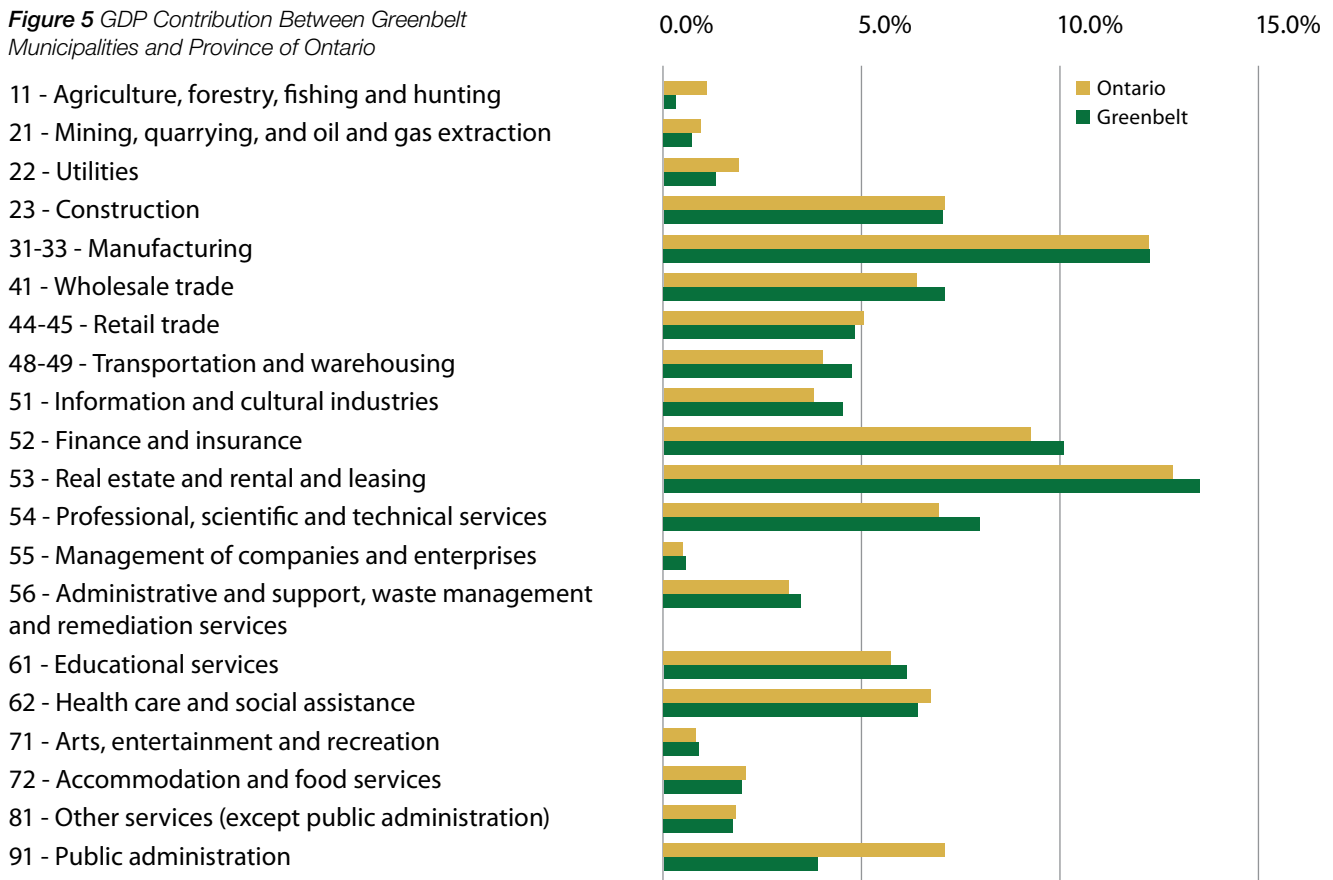
¹¹ Business number estimates have been adjusted down to account for multiple instances of the same NAICS code (i.e. 111 and 112 are listed under primary agricultural production, as well as materials and supplies for manufacturing.).



Gross Domestic Product by Economic Sector

The following table provides a comparison of 20 different NAICS sectors of the economy in terms of overall contribution to GDP. A comparison is made between the economic activity taking place within the municipalities that include Greenbelt territories as compared to the province of Ontario.

Figure 5 GDP Contribution Between Greenbelt Municipalities and Province of Ontario



Source: Summit72 Regional Assessment Model, 2021.

The Regional Assessment Model shows that the Agriculture, Forestry, Fishing and Hunting (11) sector in Ontario represents over 3% of the business counts, but is responsible for just over 1% of GDP. Conversely, the Manufacturing (31-33) sector, while representing just 3% of the business counts, contributes over 12% of Ontario's GDP. This indicates that there are industries that contribute more to the economy on a per business basis than agriculture, but it does not imply that agriculture is not an important contributor to the local economy. In fact, this underscores the importance of understanding the broad economic impacts that are predicated on primary agricultural production.

There are over 3,300 food processing businesses in the GGH. This manufacturing subsector relies heavily on the primary agricultural production in the region.

The following sections of this report investigate and quantify the economic impacts that the agri-food sector has on the economy. First the provincial perspective is evaluated and then the remainder of this report focuses on the agricultural activities taking place in the Greenbelt.

Provincial Economic Impact of Agri-food



Photo: Dan Meyers



Photo: Daria Volkova



Photo: Franki Chamaki

The provincial economic impact assessment identifies the level of agriculture production in Ontario and follows that production through the value chain, tracing downstream economic activity to its origin. In this way, it is possible to calculate the total economic value of the agri-food sector that can be attributed back to farm production.

Table 1 provides insight into the economic benefit of Ontario's agriculture value chain by showing each sector's contribution to GDP. In total, an estimated \$46.3B in provincial GDP and over 700,000 jobs can be tied back to agricultural production in the province.

Table 1 Provincial GDP and Employment Attributed to Agriculture (2020)¹²

Sector	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Agriculture	10,005.3	71,800
Food Processing	14,004.9	104,827
Wholesale & Retail	22,241.8	546,619
Total	46,252.0	723,246

Source: OMAFRA, 2020

The above table highlights the importance of evaluating the economic integration of the full agri-food value chain. Agriculture and food processing are capital intensive industries that generate relatively few jobs per dollar invested, but as the output from these sectors flows upstream into the wholesale and retail sectors, labour becomes an increasingly important factor of production.



An estimated \$46.3B in provincial GDP and over 700,000 jobs can be tied back to agricultural production in Ontario.

¹² Employment estimates are based on the Statistics Canada Labor Survey and represent both full and part time employment.

Greenbelt Economic Impact of Agri-food

In order to provide expanded economic insight, the provincial approach has been regionalized to facilitate a Greenbelt specific economic impact assessment. Furthermore, the analysis is expanded to also include the economic activity that supports the agriculture value chain. For instance, energy is a vital component of everyday life and a facilitator of economic activity. This includes a range of uses such as tractors requiring diesel, natural gas fired boilers, and electricity powering offices to name a few.

The business ecosystem mapping in Figure 3 provided an illustration of the agri-food value chain and the related inputs required by each sector. The following sections of this report provides analysis that quantifies this economic activity within the value chain. Each component of the value chain is evaluated independently to provide insight into support activities as well as the sum of the individual parts.

6.1 Primary Agricultural Production

For the purpose of this analysis, farm production is represented by the following NAICS subsectors:

- Crop Production (111)
- Livestock Production (112)

These subsectors encompass all farming activities, including crop production, horticulture, dairy production, raising of livestock, poultry, and bees. The Greenbelt region supports a vibrant mix of farms that are responsible for a diverse set of agricultural products. In 2020, primary agricultural activity occurring within the boundaries of the Greenbelt generated an estimated \$727.8M in direct GDP and 5,132 jobs.



In 2020, primary agricultural activity occurring within the boundaries of the Greenbelt generated an estimated \$727.8M in direct GDP.

Table 2 *Economic Impact of Primary Agriculture in Greenbelt Regions*

Sector	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Crop Production (111)	320.5	2,260
Livestock Production (112)	407.3	2,872
Total Primary Agriculture	727.8	5,132

Source: OMAFRA Attribution Model, 2020

1.8 million people live in the Greenbelt, and agricultural employment comprises 0.3% of the population, as compared to 0.5% for the province of Ontario, and 0.7% nationally.¹³ These comparisons are not so much an indication of low levels of agricultural activity in the Greenbelt, as they are reflective of the strength of the highly diversified economy in the GGH (and with it, a highly diverse labour force).

Not included in the Greenbelt employment data are temporary foreign workers (TFW) who make a significant contribution to the agriculture sector. In the province of Ontario, there are an estimated 23,000 TFWs employed in agriculture.¹⁴ Although a regional perspective is not provided in the dataset, it is reasonable to expect that a substantial number of these workers are employed in the GGH region.

The agricultural activity represented in Table 2 is localized within the Greenbelt, but it does not occur in isolation. Considerable amounts of inputs are required in order to sustain this agricultural production. Well known examples include seeds, fertilizer and chemicals for crop production, or replacement stock, feed, and veterinarian services for livestock operations, but the list is much more extensive.

Consider a farming operation that directly markets their products (i.e., sells directly to consumers). This requires a range of business development services such as graphic design, photography, and marketing support. Another example might be a fruit grower that decides to expand into agri-tourism. Such a business venture would require professional services that include architecture and design, legal, and financial. The economic impact associated with these types of activities is investigated next.

Table 3 examines the estimated economic contribution which can be attributed to all the industries that support primary agricultural production. In order to maintain the focus on the Greenbelt, economic impact has been calculated specifically as it relates to the production taking place within the region.

¹³ Calculations based on Statistics Canada 2016 Census, and OMAFRA County Profiles.

¹⁴ Statistics Canada. Table 32-10-0218-01 Temporary foreign workers in the agriculture and agri-food sectors, by industry, 2020.

Table 3 *Economic Impact of Input Industries into Primary Agricultural Production*

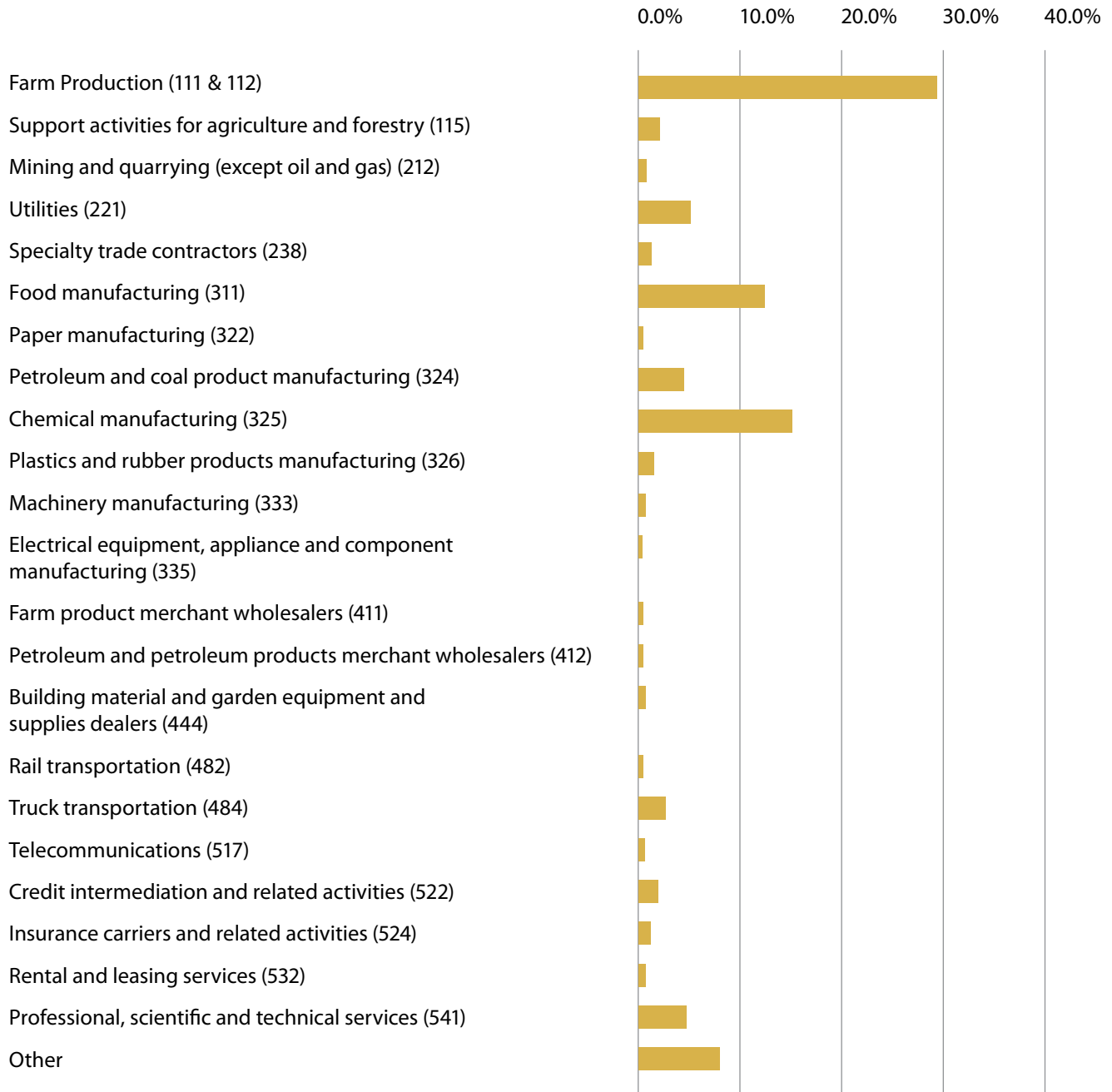
Agricultural Input Industries	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Energy, Water, Utility and Fuel	12.0	163
Materials and Supplies	80.6	1,096
Services & Other Industries	97.7	872
Total Agriculture Input	190.3	2,131

Source: OMAFRA 2020, Summit72 calculations

To allow for additional understanding of how these economic impacts are distributed across sectors, a value chain assessment has been completed by 3-digit NAICS code. Figure 6 provides a breakdown of the average farm's expenses. In other words, it is a view of the subsectors that farms purchase goods and services from (expressed as a percentage of total farm expenses).

This provides valuable insight into the types of businesses that agriculture production is reliant on and also the sectors of the economy that benefit from agriculture.

The data shows that purchases from other farms make up a significant proportion of farm expenses. Transactions may include a livestock producer purchasing hay from a nearby forage crop producer, or a feedlot purchasing cattle from livestock producers. These farm purchases highlight the interrelationships between producers and the importance of a healthy agriculture sector with a diverse set of farm activities.

Figure 6 Farm Purchases by Subsector

Source: Emsi Analytics 2021, Summit72 calculations

In the agriculture sector, purchases from other farms (111 & 112), chemical manufacturers (325), and food manufacturers (311) make up 57% of all purchases. The remaining farm expenses are spread across a broad swath of subsectors, which highlights the relevance of agriculture to the overall economy. For example, livestock producers incur significant costs related to feeding animal herds. As stated earlier, some feed purchases may come from other farms, but animal feed can also be purchased from companies within the food manufacturing subsector. The animal feed market in Canada is significant at an estimated \$10.1B in 2020, and includes a number of large multinational companies such as Cargill and ADM (both companies have animal feed facilities in southern Ontario).¹⁵

The Farm Purchase by Subsector data indicates that over 70% of farm purchases are concentrated within the Greenbelt and GGH region. This supports the notion of the farmer that lives and works on the same piece of land, developing business relationships with not only local farm input providers, but also other professional business support services such as accountants, lawyers and financial institutions.

The “Other” category comprises approximately 70 additional subsectors of the economy. Individually, these businesses are on average less than 0.5% of total expenses, however, collectively they contribute significantly to overall economic activity.

6.2. Secondary Agricultural Manufacturing

Manufacturing is a broad sector that is representative of many different types of activity. Included in this sector is the production of secondary agricultural products defined as goods that are treated, processed or prepared from primary agricultural products. This encompasses facilities like flour milling, oilseed refining, cleaning and packaging salad leaves, as well as fruit and vegetable canning. It is also not limited to food, as leather production is another subsector of the manufacturing sector.

Secondary agricultural manufacturing is represented by the following NAICS subsectors:

- Food Manufacturing (311)
- Beverage and Tobacco Manufacturing (312)
- Leather Manufacturing (316)

The following analysis focuses on the manufacturing activity that is attributed to primary agricultural production occurring within the Greenbelt. In 2020, secondary agricultural production associated with agricultural products originating in the Greenbelt, generated an estimated \$653.6M in direct GDP and close to 5,000 jobs.



In 2020, secondary agricultural production associated with agricultural products originating in the Greenbelt, generated an estimated \$653.6M in direct GDP.

¹⁵ IBIS World. Animal Feed Production in Canada, 2021.

Table 4 *Economic Impact of Secondary Agricultural Manufacturing*

Subsector	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Food Manufacturing (311)	519.8	3,812
Beverage and Tobacco Manufacturing (312)	131.6	965
Leather Manufacturing (316)	2.2	51
Total Secondary Agricultural Manufacturing	653.6	4,827

Source: OMAFRA, 2020

Comparing the economic impact of food, beverage and tobacco, and leather manufacturing in the Greenbelt (Table 4) to the total provincial economic activity of this subsector (14.0B in Section 5, Table 1), approximately 5% of this manufacturing activity can be traced back to Greenbelt agricultural production. Once again, the analysis seeks to understand the economic impact of the industries that support secondary agricultural manufacturing.

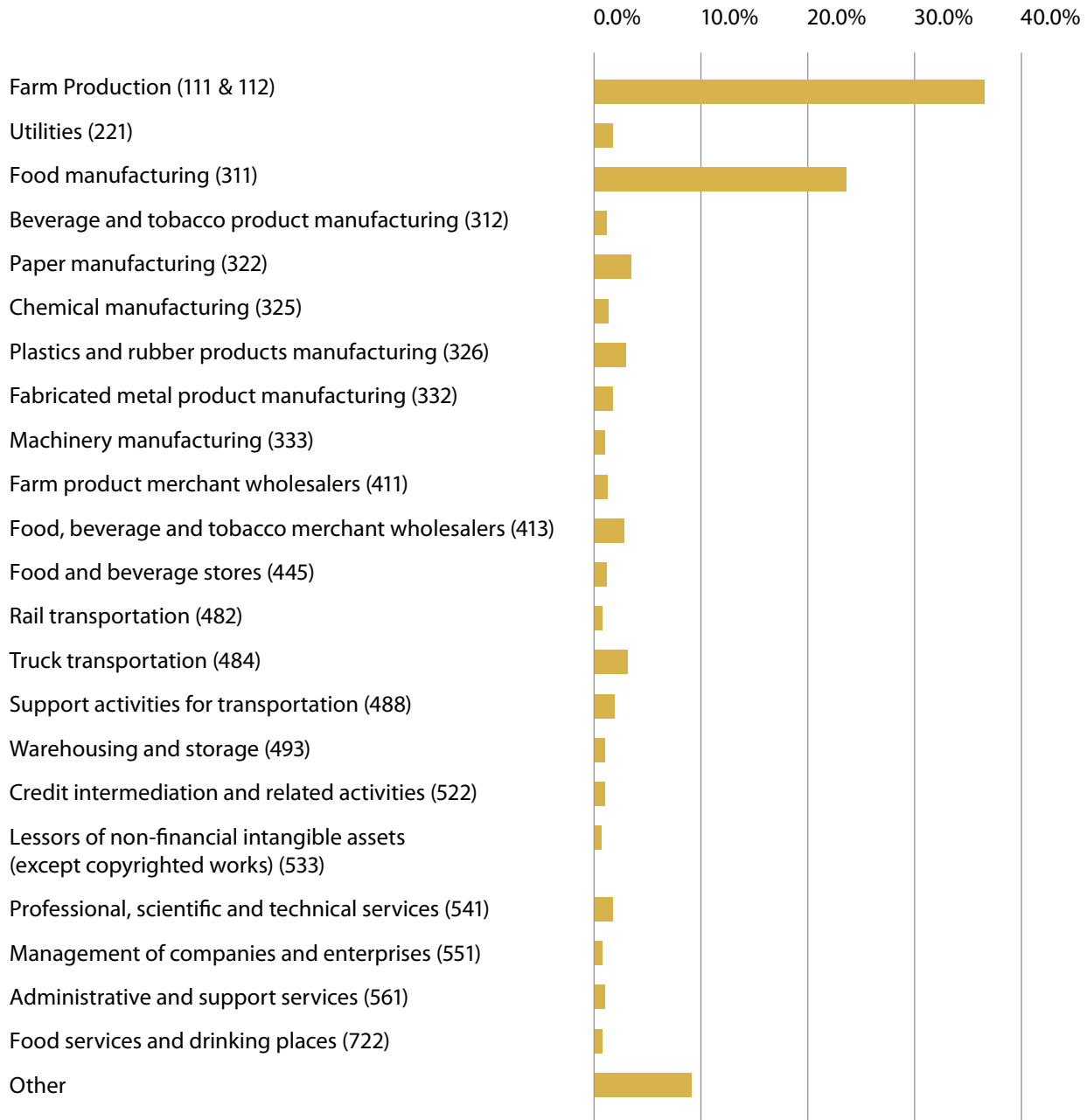
Table 5 *Economic Impact of Secondary Agricultural Manufacturing Inputs*

Secondary Agriculture Manufacturing Input Industries	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Energy, Water, Utility and Fuel	9.3	127
Materials and Supplies	262.6	3,571
Services & Other Industries	97.7	1,329
Total Secondary Agricultural Manufacturing Input	369.7	5,027

Source: OMAFRA 2020, Summit72 calculations

As expected, materials and supplies represent a significant amount of economic impact in the sectors supporting secondary agricultural manufacturing. The value chain assessment in Figure 7 shows the subsectors of the economy where this activity is concentrated.

Figure 7 Secondary Agriculture Manufacturing Purchases by Subsector



Source: Emsi Analytics 2021, Summit72 calculations

In the secondary agricultural manufacturing sector, a significant proportion of expenditures are related to the purchase of farm products (35%), pointing to the importance of a strong manufacturing sector which makes use of regionally produced farm products.

Local food processing helps reduce producer's exposure to international commodity markets and the risk of trade disruptions. Furthermore, a strong manufacturing sector can also increase demand for local farm production and present opportunities for producers to earn increased profit margins on farm products. The Farm Purchase by Subsector data also supports these statements, showing that close to 70% of this economic activity is concentrated within the Greenbelt and GHH.

In the secondary manufacturing sector, purchases from farms and purchases from other food manufacturers are 57% of expenses. The sector also relies heavily on a number of other types of manufacturing, including paper (322), plastic and rubber (236), fabricated metal (332), beverages (312), chemicals (325), and machinery (333). In total, purchases from other manufacturing businesses comprise 35% of all secondary agricultural manufacturing expenses. This represents significant economic activity that is linked to agricultural production and generates revenue for a variety of manufacturing businesses in the GGH.

As an illustration, consider cookie manufacturing. Industrial scale food production requires a large facility with equipment such as mixing vats, conveyors, ovens and packaging equipment, all of which are either sourced from equipment manufacturers or fabricated by tradespeople on site. Large quantities of inputs such as flour, flavour additives and food grade chemicals, sugar, milk, and canola oil are required. In many cases these products may be sourced from other food manufactures such as flour and oil milling facilities in the region. Once the cookies have been produced, packaging activities require additional inputs such as paper and plastic. From there the finished goods are transported to a wholesale facility and ultimately sold in grocery stores.

6.3. Wholesale & Retail

Downstream from the manufacturing sector are wholesale and retail operations. For the purpose of this analysis, these activities are represented by the following NAICS subsectors:

- Farm Wholesalers (411)
- Food, Beverage, Tobacco Wholesalers (413)
- Food & Beverage Stores (445)
- Food Service Places (722)

The approach taken once again, focuses on attributing economic impact at this stage of the value chain to Greenbelt farm production. The following table shows that wholesalers and retailers generate over \$1.2B in direct GDP and close to 29,000 jobs within the province.

Table 6 *Economic Impact of Wholesale & Retail Activities*

Subsector	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Farm Wholesalers (411)	36.8	857
Food, beverage, Tobacco Wholesalers (413)	319.5	7,428
Food & Beverage Stores (445)	428.6	9,967
Food Service Places (722)	454.0	10,556
Total Wholesale & Retail	1,238.9	28,808

Source: OMAFRA, 2020



Wholesalers and retailers generate over \$1.2B in direct GDP and close to 29,000 jobs within Ontario.

Compared to the total provincial wholesale and retail economic activity of \$22.2B (in Section 5, Table 1), approximately 5% of the overall economic impact of this subsector can be traced back to Greenbelt agricultural production.

The below table shows that nearly \$950M of economic activity and close to 13,000 jobs can be attributed to the industries that support the wholesale and retail industries.

Table 7 *Economic Impact of Wholesale & Retail Inputs*

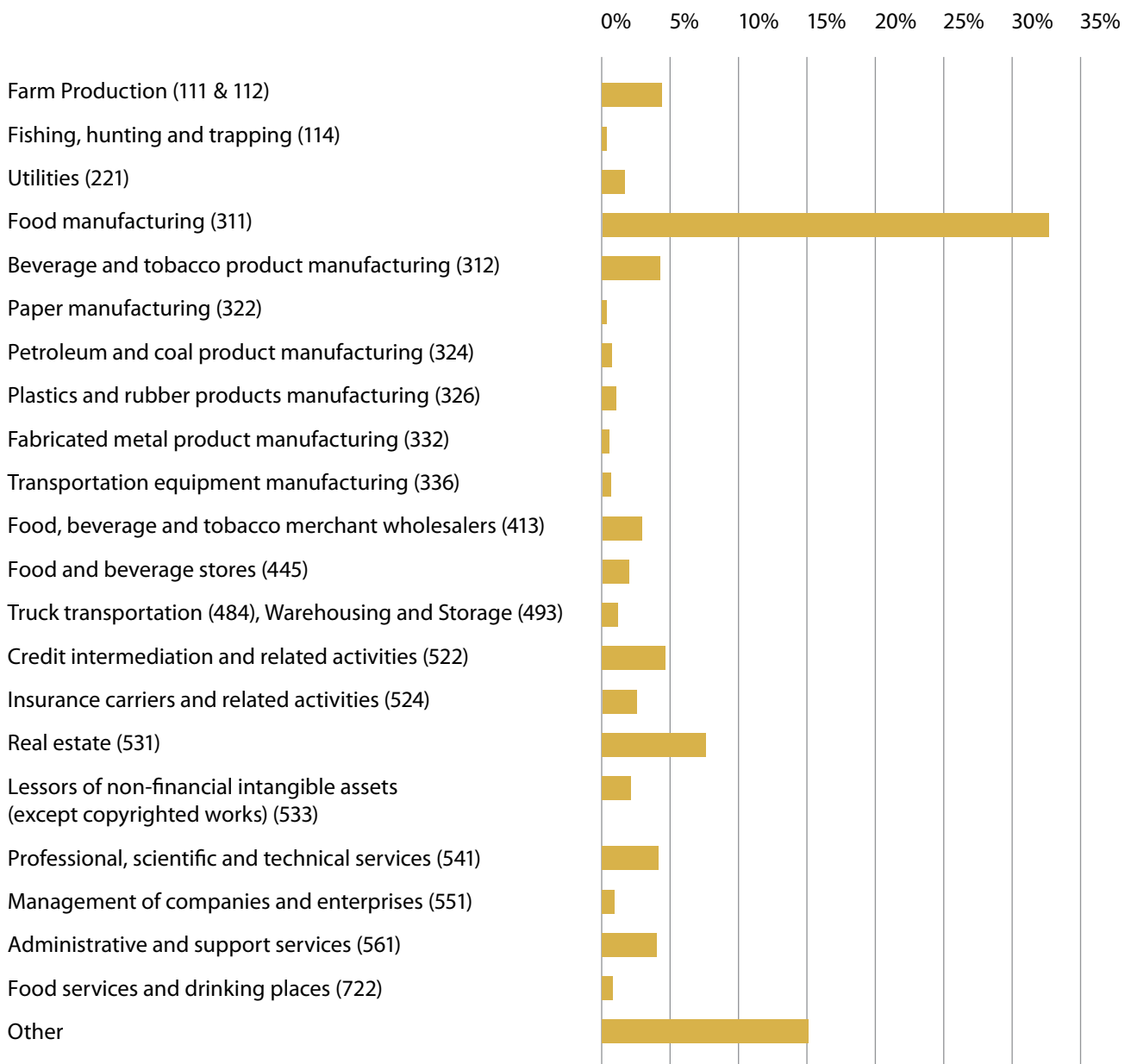
Wholesale & Retail Input Industries	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Energy, Water, Utility and Fuel	27.8	378
Materials and Supplies	692.6	9,419
Services & Other Industries	229.2	3,117
Total Wholesale & Retail Input	949.6	12,913

Source: OMAFRA 2020, Summit72 calculation

The value chain assessment on the following page provides insight into the specific segments of the economy where this estimated \$950M of activity takes place.

The Farm Purchase by Subsector data also indicates that an estimated 89% of the purchases that are made by wholesale and retail subsectors occur within the GGH. This is the lowest level of economic leakage of the three agri-food components of the value chain and represents economic activity that is remaining in the region.

Figure 8 Wholesale and Retail Purchases by Subsector



Source: Emsi Analytics 2021, Summit72 calculations

The above chart illustrates that over 40% of the purchases that food related wholesalers and retailers make come from four subsectors - food and beverage manufacturing (311 and 312) and agricultural production (111 and 112). Two sectors of the economy, Real Estate (52) and Finance & Insurance (53) are responsible for close to 20% of the economic activity listed above. Included in this are the significant costs grocery stores incur when leasing large commercial spaces within urban areas.

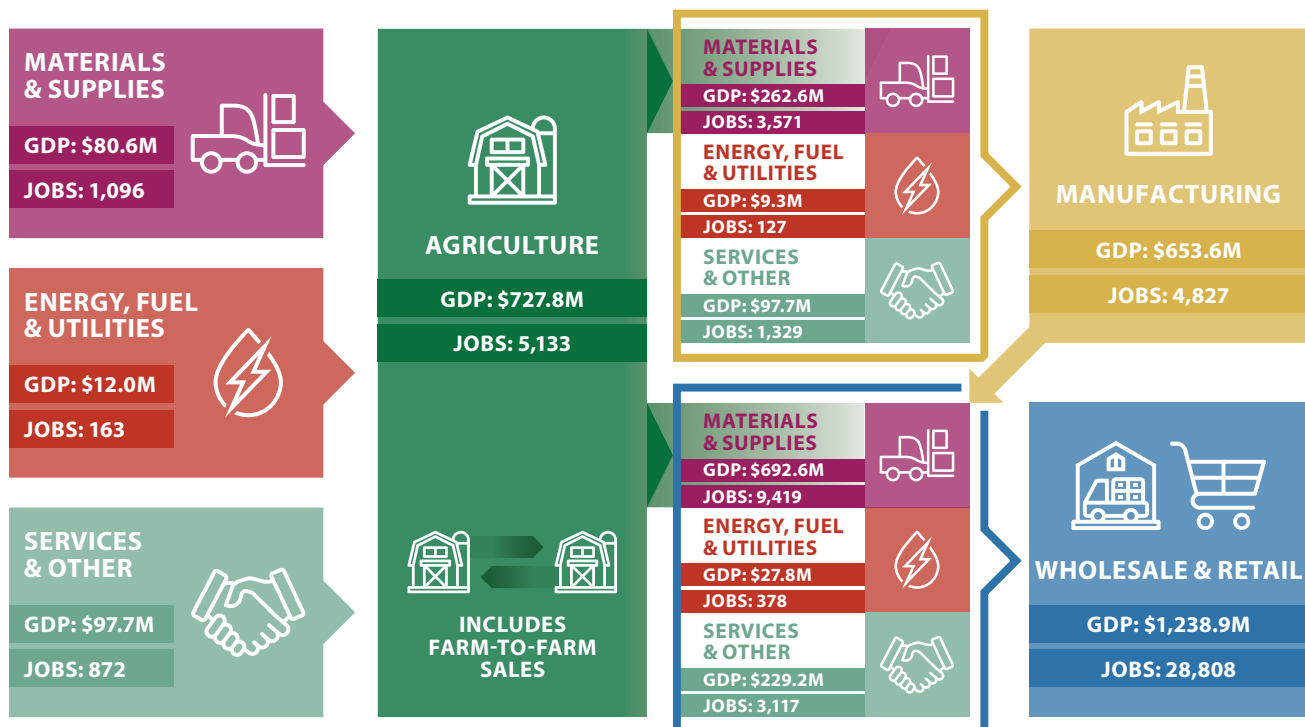
6.4. Total Agri-Food Assessment

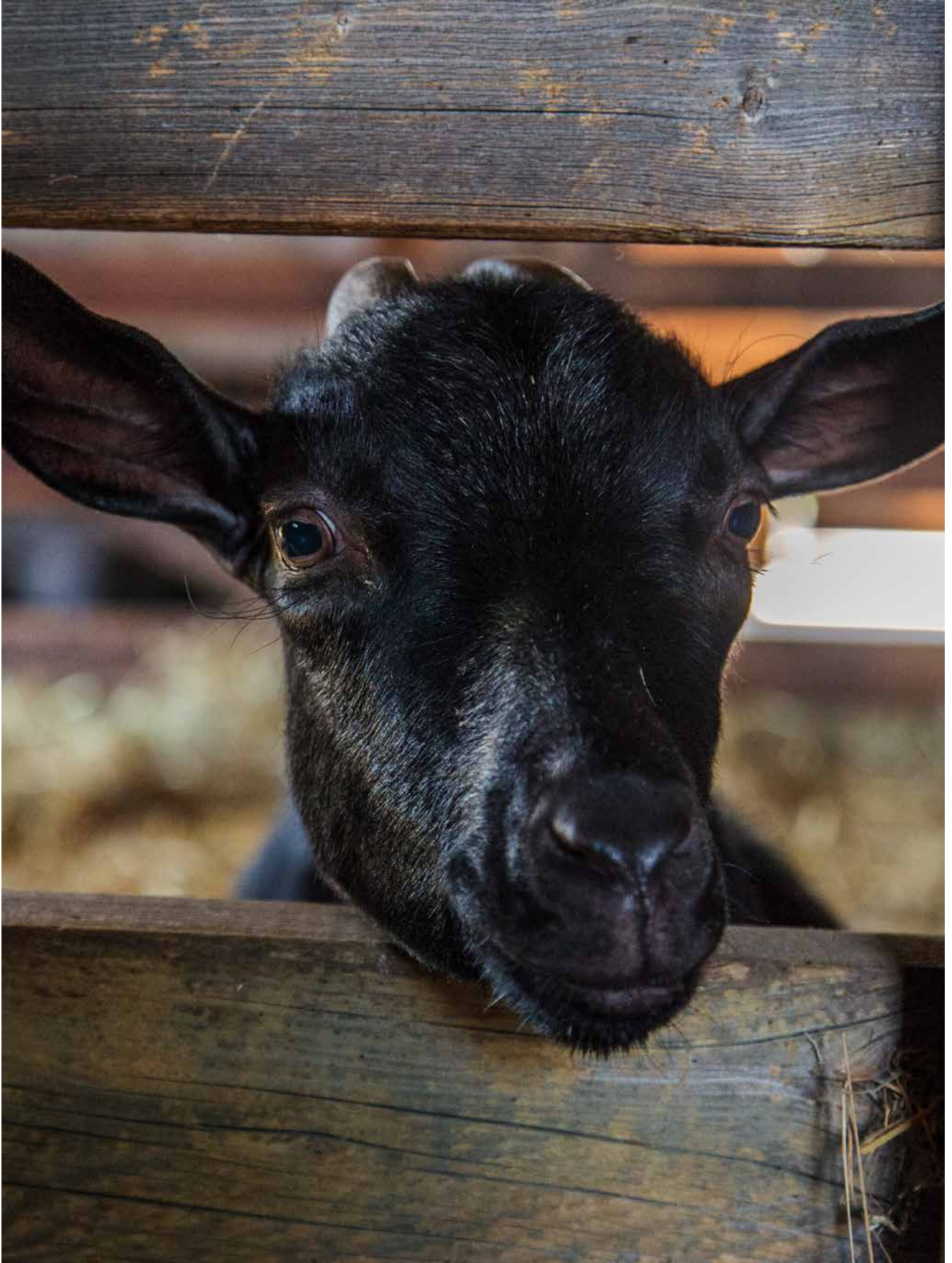
The economic impact assessment in the preceding sections has evaluated key components of Ontario's agri-food value chain as they relate to the primary agricultural production occurring in the Greenbelt. The figure on the following page represents the same flow of goods and services as the earlier ecosystem map, as well as each subsector's economic contribution.

Looking specifically at the Greenbelt, the agri-food sector generated \$4.1B in GDP and close to 59,000 jobs that are linked back to agricultural activity in the Greenbelt.

Figure 9 Agriculture's Economic Contribution in the Greenbelt and Greater Golden Horseshoe

TOTAL GDP: **\$4,129.9M** TOTAL JOBS: **58,840**





Region and Farm Assessment

Photo: Dan Copeland



The previous sections provided a review of the macroeconomic activity associated with Greenbelt agricultural production and the economic value flowing throughout the full agri- food network. Also worth investigating is the changing Greenbelt landscape and the related economic implications. The following table provides a visual ranking of farms within the Greenbelt as compared to the GGH. Data is from the 2016 Census of Agriculture and has been customized to provide insight into farming activities within greenbelt territories.

Table 8 Farm Production within the Greenbelt and GGH

Farm Type	Greenbelt Farm Counts	GGH Farm Counts
Beef Cattle	497	2,452
Dairy Cattle	169	1,140
Hogs	19	304
Eggs	55	227
Chicken	93	471
Turkey	8	66
All Other Poultry	12	69
Sheep and Goat	97	426
Honey	79	271
Horse	591	1,640
All Other Animal Production	200	878
Soybeans	268	1,499
Oilseeds (except soybeans)	2	9
Dry Pea	3	21
Wheat	75	436
Corn	216	1,024
Other Grain	294	1,462
Potato	22	88
Other Vegetable	269	784
Fruit	586	894
Mushroom	22	49
Greenhouse Vegetables	38	88
Nursery	275	662
Floriculture	161	371
Tobacco	3	131
Hay	407	1,598
Other Fruit and Vegetable	39	109
Maple Syrup	21	98
All other	170	743
Total	4,693	18,010

Source: Statistics Canada 2016 Census of Agriculture, OMAFRA County Profiles

Within the Greenbelt, the predominant types of farm production are beef (11%), horses (13%), grains and oilseeds (18%), fruit (13%), and hay (9%). Although Greenbelt farm counts are significantly lower than the overall GGH, generally speaking, the distribution of farm types is similar across both regions (in other words, the proportions of agricultural activity occurring in the Greenbelt is representative of the overall GGH). The two exceptions are horse production and fruit farms, both of which are a higher share of total Greenbelt production than what is seen in the GGH.

Also of interest are the changes that have occurred in the Greenbelt over time and where the loss of farm production is the greatest. Tables 9.1 and 9.2 provide the estimated number of farms and farm acreage in each of the 56 Greenbelt municipalities and the change that has occurred between 2006 and the most recent Census of Agriculture in 2016.

Table 9.1 *Agricultural Activity within the Greenbelt (Municipalities 1 - 24)*

Census Subdivision	Total Farms (2016)	Farm Change from 2006 - 2016	Total Acreage (2016)	Average Change from 2006 - 2016
Adjala-Tosorontio Township	32	-17%	8,749	-5%
Alnwick/Haldimand Township	73	-3%	19,071	-1%
Amaranth Township	3	-16%	471	-20%
Bradford West Gwillimbury	21	-29%	4,861	-26%
Brampton Township	2	-17%	151	-47%
Brock Township	237	-27%	68,317	0%
Burlington Township	34	-16%	3,313	-39%
Caledon Township	277	-11%	62,646	-4%
Cavan Monaghan Township	37	-23%	6,456	-25%
Chatsworth Township	19	-17%	3,620	-15%
Clarington Township	291	-18%	60,895	-9%
Clearview	50	-23%	16,445	-2%
Cramahe Township	7	-14%	1,988	-8%
East Garafraxa Township	17	-16%	4,692	3%
East Gwillimbury Township	93	-15%	19,014	-9%
Erin	86	-28%	11,846	-33%
Georgian Bluffs Township	62	-16%	15,730	-19%
Georgian Township	99	-19%	23,044	-19%
Grey Highlands Township	85	-7%	18,673	-10%
Grimsby Township	71	-39%	4,432	-46%
Halton Hills Township	115	-13%	23,687	-10%
Hamilton Division	626	-17%	99,257	-4%
Hamilton Township	43	-3%	9,008	8%
Innisfil	1	8%	309	45%

Source: Statistics Canada 2016 Census of Agriculture, OMAFRA County Profiles

Table 9.2 *Agricultural Activity within the Greenbelt (Municipalities 25 - 56)*

Census Subdivision	Total Farms (2016)	Farm Change from 2006 - 2016	Total Acreage (2016)	Average Change from 2006 - 2016
Kawartha Lakes Division	49	-18%	12,025	-13%
King Township	241	-17%	40,149	-13%
Lincoln Township	289	-25%	18,773	-19%
Markham Township	15	-17%	6,829	52%
Meaford Township	69	-5%	15,748	4%
Milton Township	127	-27%	14,171	-32%
Mono Township	58	-28%	10,118	-21%
Mulmur Township	42	-16%	7,239	-14%
New Tecumseth	15	1%	4,338	19%
Newmarket Township	10	N/A	1,907	N/A
Niagara Falls Township	2	-27%	211	-36%
Niagara-on-the-lake Township	320	-13%	18,792	-6%
North Dumfries	3	-8%	536	-31%
Northern Bruce Peninsula Township	22	-15%	9,418	-23%
Oakville Township	2	-33%	547	-35%
Oshawa Township	14	-31%	2,541	-36%
Pelham Township	101	-21%	10,324	-7%
Pickering Township	23	-13%	4,807	-5%
Port Hope Township	28	-8%	5,915	-17%
Puslinch	33	-18%	4,488	-2%
Scugog Township	301	-21%	62,415	-14%
South Bruce Peninsula Township	7	-15%	2,460	-20%
St. Catharines Township	32	-19%	1,528	-14%
The Blue Mountains Township	62	-15%	13,362	-3%
Thorold Township	15	49%	3,427	56%
Toronto	4	N/A	299	N/A
Trent Hills Township	1	-3%	168	1%
Uxbridge Township	271	-20%	53,055	-4%
Vaughan Township	16	-60%	2,181	-61%
West Lincoln Township	4	-9%	613	-1%
Whitby Township	23	-26%	5,588	-39%
Whitchurch-Stouffville Township	114	-27%	16,828	-25%
Greenbelt Average/Total	4,693	-17%	837,474	-12%

Source: Statistics Canada 2016 Census of Agriculture, OMAFRA County Profiles

There has been a substantial reduction in the estimated number of farms in the Greenbelt over the past decade of available data, also coinciding with a reduction in farm acreage over the same period. It is possible that a portion of the reduction in farms is related to consolidation within the industry, but the fact that there has been a reduction in both the number of farms (17%) and the number of farm acres in production (12%), indicates an overall loss of agriculture production capacity in the Greenbelt.



Photo: iStock

In Table 9.2, the township of Vaughan represents the largest reduction (in percentage terms) in both farms and acreage. Although the magnitude of the decrease is relatively small compared to other regions (a decrease of 24 farms and 3,400 acres), a trend is evident. The loss of farmland in the region has been linked to a number of factors that include intensification and density targets and infrastructure development.¹⁶ Moreover, in 2021, York Region approved the redesignation of 3,500 acres of protected Greenbelt land in Markham and Vaughan to allow for certain types of development.¹⁷ The provincial government has yet to decide on whether to allow the approval to proceed.

Hamilton Division located on the western end of Lake Ontario is comprised the City of Hamilton and over 200,000 acres of Greenbelt space which includes the Niagara Escarpment, Grindstone Creek, and Fifty Creek. The region also includes prime agricultural land where there are substantial development pressures, and while there has been a reduction in the number of farms, acreage has not decreased significantly.¹⁸ For this reason, the region provides an interesting contrast to Vaughan.

Within the Hamilton Division are a range of agricultural activities that include crop production, tender fruit and grape orchards, as well as a significant number of livestock operations. The farms in the region also record significantly higher than average gross farm receipts. There may be many reasons for the strength of the agriculture sector in the Hamilton region, but it is likely that the nearby urban population and proximity to the means of production are two important factors. It is also worth considering the possibility that the strength of the agricultural sector in this region has incentivized actions that ultimately protect agricultural regions. In this way, actions that support, sustain, and promote agriculture in the region are additional tools that can contribute to the continued protection of the Greenbelt.



Proximity to nearby urban populations and to the means of production are two important factors contributing to the strong agriculture sector in Hamilton region.

16 Tahmid Khan. Shrinking Farmland in Vaughan: The Causes, Consequences and Potential Solutions, 2017. <https://yorkspace.library.yorku.ca/xmlui/bitstream/handle/10315/35156/MESMP02841.pdf?sequence=1&isAllowed=y>

17 The Canadian News. The York region approved development in the protected green belt. Will the Doug Ford government stop him?, 2021. <https://thecanadian.news/2021/11/09/the-york-region-approved-development-in-the-protected-green-belt-will-the-doug-ford-government-stop-him/>

18 Neptis Foundation. Where are significant agricultural lands located?, n.d

Vaughan and Hamilton provide an example of the diversity within the GGH and the regional and economic complexities that influence land use and planning decisions. Also, an important consideration is the economic consequences of growth and expansion, particularly when they result in a reduction in agricultural production. Utilizing the Census of Agriculture farm data in conjunction with the economic impact analysis completed in Section 6 allows for quantifying the loss of specific types of farmland. Table 10 provides a breakout of GDP and employment on a per farm basis.¹⁹

Table 10 *Economic Impact per Greenbelt Farm*

Production Type	Number of Farms	Direct GDP per farm (\$)	Employment per Farm
Grains & Oilseed	859	161,468	0.2
Potato	22	338,460	1.5
Greenhouse Vegetables	38	466,844	8.3
Field Vegetables	269	144,988	0.7
Tender Fruit	463	14,224	0.2
Other Fruit	123	43,576	0.6
Nursery & Floriculture	436	219,900	3.6
Maple	21	21,871	0.7
Tobacco	3	242,157	0.0
Cattle	497	20,744	0.8
Hogs	19	165,333	2.6
Sheep	70	15,301	0.0
Dairy	169	110,784	3.2
Eggs	55	52,665	0.8
Chicken	93	138,028	2.0
Turkey	8	62,764	0.9
Honey	79	8,466	2.9

Source: OMAFRA 2020, Summit72 Calculations

Agriculture covers a broad range of activities and Table 10 provides a view of how production in the Greenbelt is segmented. The volume of grain and oilseed operations along with the moderate levels of GDP on a per farm basis, makes it overall the largest economic contributor in the region.

On a per farm basis, greenhouse vegetables have the highest GDP per operation and while this sector is characterized by technology that is increasingly allowing for automation, it also has the highest levels of employment per farm within the group. Also worth noting is the fact that greenhouse operations typically require significantly less land than traditional field crop production.

¹⁹ While this is representative of the average farm, it bears noting that farm sizes and economic activity may vary across regions.

Agri-food Network Supply Chain



Photo: Marcin Jozwiak

The previous sections have outlined the economic impact that the province experiences as a result of agricultural production in the Greenbelt. However, it is possible that important factors can be lost within the numbers. One key consideration is the significant role that proximity to suppliers plays in improving productivity and operational efficiency in the agriculture, manufacturing, wholesale and retail sectors.

8.1. Agriculture Supply Chain

The value of goods and services purchased by Greenbelt farms is estimated at \$900M.²⁰ Figure 6 in Section 6, categorizes the subsectors of the economy that benefit from these farm purchases and as mentioned earlier, over 70% of this economic activity takes place within the GGH. This data provides a window into the agriculture supply chain and indicates that in many cases, businesses that provide goods and services to agriculture producers have emerged within relatively close proximity to agricultural land.

20 OMAFRA. Attribution Model Output, 2020. http://www.omafra.gov.on.ca/english/stats/economy/gdp_agrifood.xlsx



The value of goods and services purchased by Greenbelt farms is estimated at \$900M, with over 70% of this economic activity taking place within the GGH.

Another important consideration (closely related to the supply chain) is proximity to a key factor of production—the agricultural land base. The redesignation of land previously devoted to agriculture can negatively impact producers, particularly those operations that rely on large scale operations leveraging economies of scale. Land fragmentation occurs when the agricultural land base becomes divided into separate areas isolated from each other by non-agricultural land uses. The result can be smaller, segregated areas that fall below the minimum area required for efficient agricultural use.²¹ Farm inefficiencies that arise out of fragmentation can include inadequate monitoring, increased travel time, difficulties related to transportation of farm machinery, and a reduction in farmable areas due to land set-back requirements.

While urban development pressure can create challenges for the continued protection of the Greenbelt, there are locational advantages that primary agricultural producers in the region enjoy. A previous study commissioned by the Greenbelt Foundation states the following:

“[Proximity to a] large nearby urban population supports the ability of Greenbelt farmers to sell directly to consumers with ready to eat products through farmer’s markets and on-site retail sales, with 19.2% selling directly to consumers in 2016. Furthermore, Greenbelt farms are ideally located to engage in high value agri-tourism goods and services activities, with the nearby population enjoying the attributes of the Greenbelt.”²²

This rate of direct-to-consumer sales is significantly above the national average of 10% and can be attributed in large part to the unique locational characteristics of the Greenbelt.²³

8.2. Manufacturing, Wholesale and Retail Supply Chain

Short supply chains lower transportation costs, facilitate supplier integration, and lead to strong relationships between different segments of the value chain. The same supply chain dynamics that are evident in agricultural production are relevant to other segments of the agri-food value chain as well. For instance, there are over 3,300 food processing businesses in the GGH with many of them relying on agriculture as an input for their own production.²⁴

One study in the manufacturing sector showed that there is a correlation between supply chain proximity and lower defect rates in component parts.²⁵ In the case of perishable goods, optimizing the supply chain can reduce financial loss due to spoilage and provide consumers with fresher fruits and vegetables. As companies seek to reduce supply chain risks and manage costs, locating near other companies in the value chain becomes increasingly important. A fitting example is provided by a brewing industry case study:

21 Victoria Robson. Land Fragmentation in Southern Ontario: A Tragedy of the Spatial Anticommons, 2012. <https://journal.lib.uoguelph.ca/index.php/surg/article/view/1328/2496>

22 Greenbelt Foundation. Ag Trends and Updates, 2018.

23 Statistics Canada. Table 32-10-0022-01, Channels of distribution for horticulture product sales and resales, 2020.

24 Summit72 Regional Assessment Model, 2021.

25 Bray, Robert & Colak, Ahmet & Serpa, Juan. Supply Chain Proximity and Product Quality. SSRN Electronic Journal, 2016.

“Geographic proximity may involve locating supplier facilities adjacent to [equipment manufacturing] operations. For example, long-term relationships between beverage producers and container manufacturers led container suppliers to locate their fabrication plants adjacent to breweries.”²⁶

Manufacturing processes clearly benefit from close proximity to input providers and this highlights the important role that agriculture plays in the Greenbelt and GHH

In the same way that human settlements developed around fertile agricultural regions in the past, today food manufacturing companies make capital investment decisions based on the location of production inputs. This drives further business activity within support industries and the ongoing economic impacts circle through all stages of the value chain.

COVID-19 created significant shifts in consumer behaviour resulting in global supply chain shocks. Regional access to locally grown and processed foods can help mitigate the impact of these kinds of events. Integrated supply chains and local production of key inputs can reduce the impact of supply chain disruptions and shorter supply chains can help local producers shift market access points when needed.

8.3. Environmental, Social, and Governance

Short supply chains may be important to a company’s bottom line, but there are broader considerations as well. As companies increase their focus on ESG (Environmental, Social, and Governance) targets, sustainability and carbon considerations are becoming increasingly important. Local food production can drastically reduce transportation costs and thereby help companies and consumers reduce their carbon footprint. Furthermore, Canada has some of the highest environmental and safety standards in the world and local production provides assurances that agricultural activity is balanced with the need to protect natural ecosystems.

26 National Academics of Sciences, Engineering, and Medicine. Surviving Supply Chain Integration: Strategies for Small Manufacturers, 2000. <https://www.nap.edu/read/6369/chapter/12>

Photo: Shutterstock



Opportunities for Growth



Photo: David Henrichs



Photo: National Cancer Institute



Photo: Katrien Van Crombrughe

The GGH is home to over 9 million people and the population is projected to grow by nearly 50% over the next 20 years.²⁷ Currently, there are almost 100,000 fewer acres of farmland in production compared to 2012. There are many reasons why protected land can fall out of production. The United Nations Convention to Combat Desertification (UNCCD) states that on average, 2.4M acres of prime agricultural land is being lost every year. As the world's population increases, efforts will be needed to address global food security.

Canadian farmers and the industries that support them, have a role to play, not only feeding a growing Canadian population, but the rest of the world as well. In the past, crop science research and development has resulted in technologies that have helped farmers increase productivity and achieve the ultimate goal of producing more with less. In Canada, yields for traditional crops such as wheat, barley and canola have doubled over a 50-year period.²⁸ While fertilizer application, irrigation, and improved farming practices have all contributed to this increase, plant breeding and genetics technology has also played an important role. Crop science will undoubtedly continue to advance, but new farm technologies such as precision agriculture are also emerging.

27 Ontario Ministry of Municipal Affairs and Housing, n.d. <https://www.ontario.ca/document/performance-indicators-growth-plan-greater-golden-horseshoe-2006/overview#:~:text=By%202041%2C%20the%20Growth%20Plan,full%20range%20of%20community%20amenities>.

28 Terrence S. Veeman and Richard Gray. Choices Magazine, Agriculture Productivity in Canada, 2009. https://www.choicesmagazine.org/UserFiles/file/article_92.pdf



The agri-food sector faces one of our world's most critical problems: as our global population continues to grow, the amount of food, land and water available becomes more constrained. Never has it been more essential to find new ways to produce more with less.

Dr. Cornelia Kreplin, Canadian Agri-Food Automation and Intelligence Network

Precision agriculture utilizes advanced technology including GPS guidance, drones, sensors, soil sampling, and precision machinery. These tools can improve farm efficiency and have the potential to reduce labour costs. For example, crops damaged by disease or pests emit infrared light. Drones and imaging technology can be used to capture aerial images of crops, allowing producers to identify the issue and act quickly to mitigate the damage.²⁹ Another promising technological advancement is related to autonomous vehicles and the prospect of integrating this technology into crop seeders and harvesting equipment. Globally, the precision agriculture market is currently valued at \$9.1B and it is expected to experience significant growth in the near term.³⁰

Recognizing that crop science and precision agriculture offers producers with opportunities to increase crop yields and overall profitability has led to an increased focus on agricultural technology (agri-tech). The Ontario Agri-Food Innovation Alliance, which is a collaboration between OMAFRA and the University of Guelph has the goal of advancing research and innovation that contributes to the success of the province's agri-food sector and promotes rural economic development. While the focus may be on local agriculture, there are potential economic spinoffs that include opportunities for the technology sector to be at the forefront of innovation in agriculture. In Toronto alone, there are 48 agri-tech start-up companies which focus on a range of products and services that include vertical farming, horticulture smart-tech, agricultural robotics, automation, and software.³¹

In the Greenbelt, proximity to significant urban populations ensures a strong local market. According to the 2016 Census of Agriculture, Greenbelt farm sales were pegged at \$1.5B, and population increases will increase demand for the goods and services provided by the agri-food sector. The ability of this sector to adapt and innovate will determine whether market growth can be captured by local producers. This could include an increased focus on direct-to-consumer sales and the growing market for niche ethnic food products. Furthermore, farming operations within an hour or two of large populations have the opportunity to develop agri-tourism or agriculture education programs, which can help diversify farm operations and encourage increased farm revenue.

29 University of Guelph Research. Precision Agriculture, 2016.
https://www.uoguelph.ca/research/sites/default/files/public/Research_PrecisionAg_4pager_Web.pdf

30 Precision Farming Market by Technology-Global Forecast, Markets and Markets, n.d.
<https://www.marketsandmarkets.com/Market-Reports/precision-farming-market-1243.html>

31 Tracxn. AgriTech Startups in Toronto, n.d. <https://tracxn.com/explore/AgriTech-Startups-in-Toronto>

Finally, the previous section mentioned the issues that can arise from urbanization and development pressures. Land fragmentation can impact the economies of scale that traditional farming operations need. However, those spaces where land fragmentation has already occurred present an opportunity to reinvent and reimagine agriculture. For instance, horticulture and greenhouse production can operate efficiently on a much smaller scale than traditional crop production. There is already an established market for these products and opportunities for growth have been identified. A 2021 Greenbelt Foundation study estimated that opportunities for expansion of nine existing fruit and vegetable crops had the potential to increase farm revenues in Southern Ontario by \$135M.³² While the importance of protecting the remaining agricultural land base stands, these options could be promoted in response to the fragmentation that has already occurred.

32 Greenbelt Foundation. Plant the Seeds: Opportunities to Grow Southern Ontario's Fruit and Vegetable Sector, Food & Farming, 2021.



Photo: Shutterstock

Conclusion



Summarizing the economic analysis from Section 6, the agri-food sector generates \$4.1B in GDP and close to 59,000 jobs that can be linked back to agricultural activity in the Greenbelt.

The following table provides a full summary of the economic analysis.

Table 11 *Economic Impact of Wholesale & Retail Inputs*

Agri-food Network Assessment	GDP – 2020 (millions, \$)	Employment - 2020 (persons)
Total Primary Agriculture	727.8	5,133
Total Manufacturing	653.6	4,827
Total Wholesale & Retail	1,238.9	28,808
Total Agriculture Input Industries	190.3	2,131
Total Manufacturing Input Industries	369.7	5,027
Total Wholesale & Retail Input Industries	949.6	12,913
Total Agri-Food Economic Impact	4,129.9	58,840

Exhibited in Table 11 is a significant level of economic activity that reflects more than just numbers, it represents real people and their families. From the farmer that has grown grain and oilseed crops on the same piece of land for the past 30 years, to the nearby family-owned fuel wholesaling business, to the 130 people that work at the Bunge oilseed processing plant in Hamilton, they can all trace their livelihoods back to agriculture production in the Greenbelt.

As stated at the outset, the premise for this report is the assertion that a strong agriculture sector generates opportunities for growth in other segments of the economy, contributing to business diversity and a more resilient overall macroeconomic environment. Similarly, the negative effects related to the loss of agricultural capacity will also cascade through the economy and have far reaching economic impacts.

Another finding of this report is the importance of a strong agri-food network. The Greenbelt Plan has played an integral role in protecting the agricultural land base, but the importance of market forces cannot be understated either. The more integrated that local agriculture is within the value chain, the more important it will become to all sectors of the regional economy. Similarly, consumer preferences and demand for specific fruits and vegetable crops have the potential to not only increase farm revenues but also strengthen the relationship between consumers and producers. Efforts to leverage market dynamics can be an effective strategy which further supports the goals and objectives of the existing Greenbelt policy.

Detailed within this report is the economic impact of agriculture in the Ontario Greenbelt, but the benefits are not limited to economic factors alone. Triple bottom line (TBL) analysis provides a holistic framework that could be used to quantify the social and environmental benefits that the Greenbelt affords to nearby residents and society at large. While outside the scope of this study, a TBL approach would ultimately look to capture the full value of the Greenbelt. Such an exercise would be another valuable tool in continued efforts to validate and communicate the importance of protected greenspaces.

The threat to agricultural land and greenspaces is not unique to the GGH. Many regions across the country face similar development pressures and recognize the importance of protecting agricultural land in order to ensure a range of agricultural products and services. What is unique to the GGH however, is the approach that Ontario has taken to entrench protection of specific areas within the Greenbelt Plan. Understanding how and why protected land can fall out of production is a critical undertaking. There are likely many factors at play. A detailed analysis of the data and locations of where these trends are happening can inform effective policy and programming responses.

This report and the supporting analysis have established the importance of a robust agricultural sector and highlighted the mutually beneficial relationships between producers and the thousands of businesses within the value chain. The Greenbelt is an important piece of Ontario's economic landscape and continued protection will enable smart and sustainable growth in this region's agri-food sector.

Appendix A

The following tables provide additional insight into the subsectors of the economy listed in the business ecosystem map in Section 4.

NAICS	Description	Business Activities
111	Crop production	Farms, orchards, groves, greenhouses and nurseries, primarily engaged in growing crops, plants, vines, trees and their seeds.
114	Fishing, hunting and trapping	Activities related to catching fish and other wild animals from their natural habitats.
112	Animal production and aquaculture	Ranches, farms and feedlots, primarily engaged in raising animals, producing animal products and feedlots that prepare animals for market.
115	Support activities for agriculture and forestry	Support services that are essential to agricultural production covering a wide range of crop and livestock activities, including crop and vineyard cultivation services, crop spraying services, tree pruning, fertilizer application, animal breeding services, genetics testing, equine boarding facilities, milk testing, and sheep shearing.
211	Oil and gas extraction	Activities involving the production and extraction of crude oil, petroleum products, and natural gas. Companies within this subsector can also include the energy supply/distribution sector.

NAICS	Description	Business Activities
212	Mining and quarrying (except oil and gas)	Activities involving extracting, quarrying, and processing naturally occurring minerals (e.g. coal) and ores (e.g. phosphorus). Businesses in this subsector support agriculture by producing aggregates such as gravel and sand, as well as chemical and fertilizer minerals. The Manufacturing sector also relies on this subsector for inputs to production.
221	Utilities	Operation of electric, gas, water, and sewer utilities and infrastructure.
238	Specialty trade contractors	Activities related to the construction of buildings and structures, such as masonry, painting, or electrical work.
311	Food manufacturing	Activities related to producing food for human or animal consumption. Referred to as secondary agricultural production within this report.
312	Beverage and tobacco product manufacturing	Businesses engaged in manufacturing beverages and tobacco products. Referred to as secondary agricultural production within this report.
316	Leather and allied product manufacturing	Manufacturing of leather and allied products by transforming hides into leather by tanning or curing and fabricating the leather into products for final consumption.
322	Paper manufacturing	Manufacturing of pulp, paper and paper products. Paper products are an important manufacturing input for packaging used in food and beverage production.
324	Petroleum and coal product manufacturing	Transforming crude petroleum and coal into intermediate and end products. The dominant process is petroleum refining.
325	Chemical manufacturing	Manufacturing of chemicals and chemical preparations from organic and inorganic raw materials. These activities produce a wide range of products that are important inputs for agricultural production (fertilizers, herbicides, and pesticides) and food manufacturing (food additives, enzymes, etc.).
326	Plastics and rubber products manufacturing	Processing of raw rubber and plastics materials. Plastic products are an important manufacturing input for packaging used in food and beverage production.

NAICS	Description	Business Activities
332	Fabricated metal product manufacturing	Forging, stamping, forming, turning and joining processes to produce ferrous and non-ferrous metal products, such as cutlery and hand tools, architectural and structural metal products, boilers, tanks and shipping containers, hardware, spring and wire products, turned products, and bolts, nuts and screws.
333	Machinery manufacturing	Manufacturing of industrial and commercial machinery. Businesses in this subsector tend to specialize in producing machinery designed for particular applications. This can include farm machinery such as tillage, seeding, and harvesting equipment, as well as specialized machinery used in manufacturing processes.
411	Farm product merchant wholesalers	Activities related to wholesaling livestock, grain and other farm products.
413	Food, beverage and tobacco merchant wholesalers	Activities related to wholesaling food products, beverages and tobacco products.
418	Miscellaneous merchant wholesalers	Businesses wholesaling goods such as paper, plastic products, agricultural supplies, chemicals and allied products, and wood chips.
444	Building materials and supplies	Retailing of specialized or general line of building and home improvement materials and supplies.
445	Food and beverage stores	Retail stores that sell a general or specialized line of food or beverage products.
447	Gasoline stations	Retail sales of motor fuels. Store may or may not include a convenience store, repair garage, restaurant or other.
482	Rail transportation	Includes Businesses engaged in operating railways.
484	Truck transportation	Includes businesses engaged in truck transportation of goods.
492	Couriers and messengers	Courier and delivery services.
493	Warehouse and Storage	Businesses operating merchandise, refrigerated and other warehousing and storage facilities. Included are third-party warehouses serving retail chains and wholesalers.
517	Telecommunications	Provision of telecommunications and/or video entertainment services over their own networks, or over networks operated by others.

NAICS	Description	Business Activities
522	Credit intermediation and related activities	Banks and Financial institutions that facilitate the lending of funds.
524	Insurance carriers and related activities	Provide a wide range of Insurance policies such as personal, commercial, and liability.
531	Real estate	Activities related to the renting and leasing real estate, managing real estate for others, acting as intermediaries in the sale and/or rental of real estate, and appraising real estate.
532	Rental and leasing services	Renting or leasing of equipment and other forms of tangible goods, such as automobiles, computers, consumer goods, and industrial machinery and equipment.
541	Professional, scientific and technical services	Broad range of services that include legal, accounting, tax preparation, bookkeeping, payroll services, architectural, engineering, and computer systems design.
551	Management of companies and enterprises	Management of companies and enterprises and/or holding the securities or financial assets of companies and enterprises. Also includes financial management and portfolio managers.
722	Food services and drinking places	Restaurants or other businesses involved in the preparation of meals, snacks and beverages.



FIELD
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HOME GROWN
\$3.00