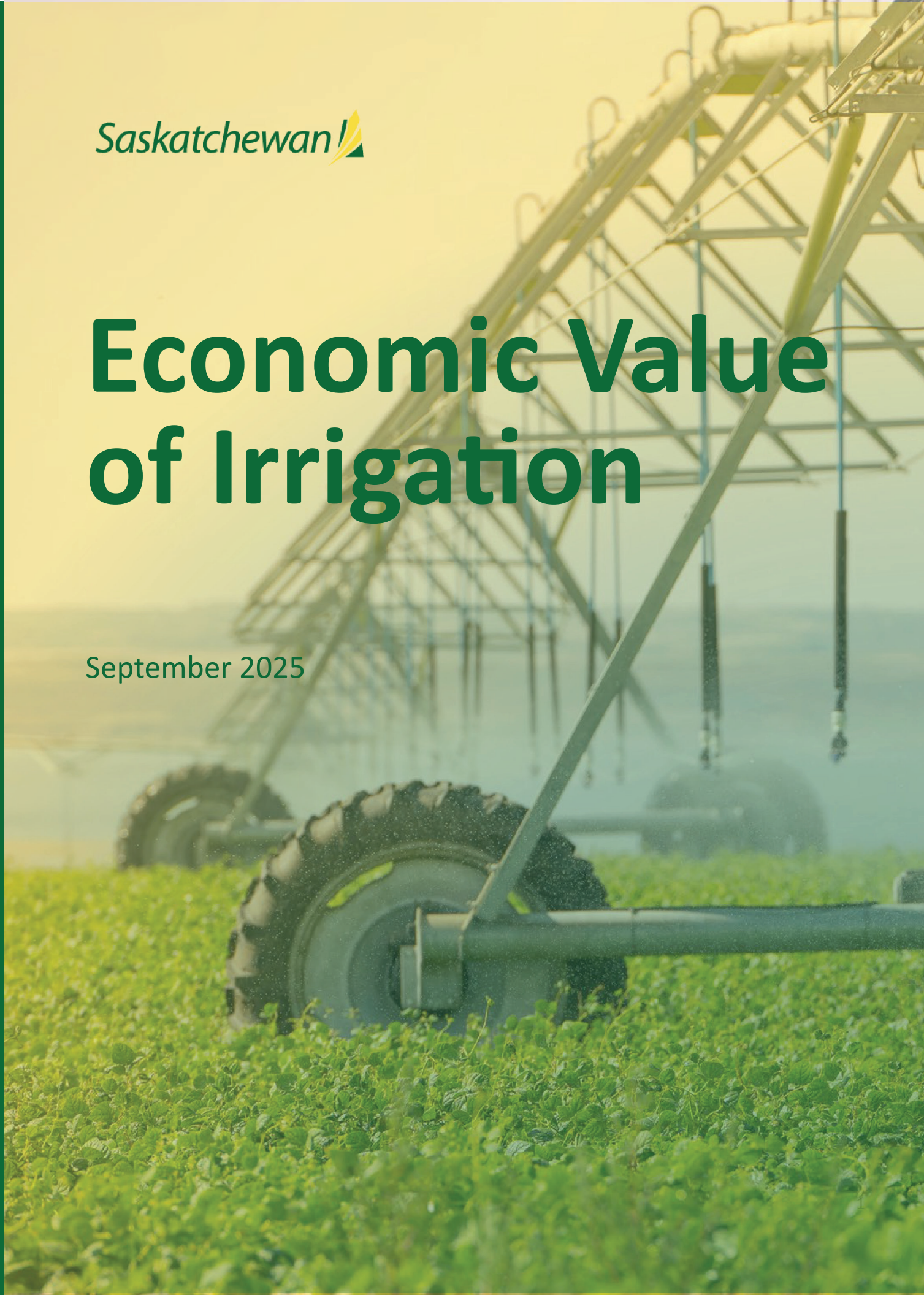
Saskatchewan

Economic Value of Irrigation

September 2025



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Purpose and Context

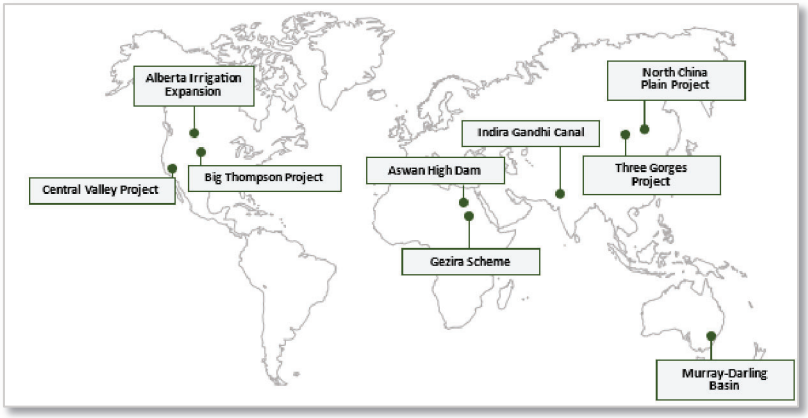
The report considers the general economic value of irrigation, with the findings applied to the illustrative example of the Westside Irrigation Rehabilitation Project ("**WIRP**") in Saskatchewan. The findings highlight the transformative potential of irrigation in enhancing agricultural productivity; catalyzing private investment; and fostering regional, provincial, and national economic growth.

The findings build on previous analyses while incorporating the latest insights and data, such as the addition of livestock impacts, capital gains from land value increases, and refined project definitions (lower capital cost estimates while covering a higher number of irrigable acres). Further research and analysis regarding irrigation's role in boosting food manufacturing activities were also conducted using regression analyses of irrigation-related economic activity across Canada and the United States, demonstrating stronger connections between irrigation and food manufacturing.

The Value of Irrigation

As of 2023, Saskatchewan had approximately 431,000 irrigated acres, 25% of which were within irrigation districts, with the remainder privately owned and operated.[1] By comparison, Alberta has nearly 1,800,000 irrigable acres (and growing). These irrigated acres contribute to outputs at significantly greater rates than dryland acres, with Alberta reporting irrigated acres (accounting for 4.4% of farmland) contribute more than 25% of primary agricultural sales.

There are numerous examples of irrigation projects around the world representing millions of acres, including the North China Plain Project in China, the Indira Gandhi Canal in India, the Central Valley Project in California, and Alberta's irrigation projects, which illustrate the transformative potential of irrigation. Whether by improving crop diversity, stabilizing yields, supporting livestock, or sustaining communities, these projects demonstrate the economic, social, and environmental benefits of integrating reliable water resources into agriculture and related industries.



Investments in infrastructure such as WIRP are typically regarded by governments as nation-building endeavors that aim to unlock long-term economic activity. By stabilizing yields, enabling agricultural diversification, and catalyzing private-sector growth, irrigation positions regions to sustain economic growth and food security, much like reliable transportation networks.

[1] Government of Saskatchewan. *Crops and Irrigation.* Retrieved from: https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/irrigation.

Summarized Findings by Category

- **Crops:** Irrigation significantly enhances agricultural productivity by providing reliable moisture levels and reducing risks associated with unpredictable weather, such as drought. Specific outcomes include improved yield stability, higher revenues, and the ability to cultivate high-value crop varieties that are not feasible without irrigation. Crops like potatoes, specialty grains, beans, and forages exhibit dramatic increases in yields and revenue under irrigation, compared to dryland. Beyond increased yields, irrigation supports improved crop quality, such as better uniformity and more consistent protein content – factors that benefit food processing industries and exports. A shift to higher-value crops also supports diversified agricultural production and greater economic return. The economic impact of irrigation scales with adoption over time, as producers transition to crops optimized for irrigated conditions.
- **Livestock:** Irrigation provides essential feed for livestock operations, increasing production stability and enabling expansion. For example, irrigated crops like alfalfa, silage, and barley provide nutritionally dense and consistent feed for beef and dairy operations, mitigating risks from drought and securing feed supply for Saskatchewan's livestock sector. The analysis is based on a conservative incremental expansion scenario to provide a realistic estimate of impacts, recognizing that larger feedlot development (as observed in southern Alberta) would likely require supplementary, coordinated investment that is not also assumed to be a cost factor in the analysis.
- **Food manufacturing:** Food manufacturing relies heavily on inputs from agriculture, and irrigation creates the foundation for robust processing industries by ensuring consistent supply and superior product quality. Irrigation enhances raw materials availability, enabling both product innovation and the processing of premium-grade goods. Comparative data across provinces and U.S. states show a correlation between irrigated acres and food manufacturing capacity, although other factors like population also play a role. Irrigation also bolsters diversification by enabling crops suited to more specialized food processing. Investments in complementary infrastructures (e.g., transportation, agri-tech, and tax credits) can help to maximize full sector benefits. Comparisons to provinces with stronger food processing industries suggest targeted incentives are needed to fully capitalize on irrigation's enabling capabilities.
- **Land values and capital gains:** Irrigated land is consistently valued higher than dryland due to greater productivity, reduced risk, and improved crop diversity. For Saskatchewan, irrigated farmland is worth approximately 2.7x more than dryland, with values as high as $8,200 per acre compared to $3,050 in comparable dryland regions. This aligns with irrigated land value multiples of 2.4x-3.8x in other provinces. The higher land values drive potential capital gains taxes for governments.

Implications for the WIRP

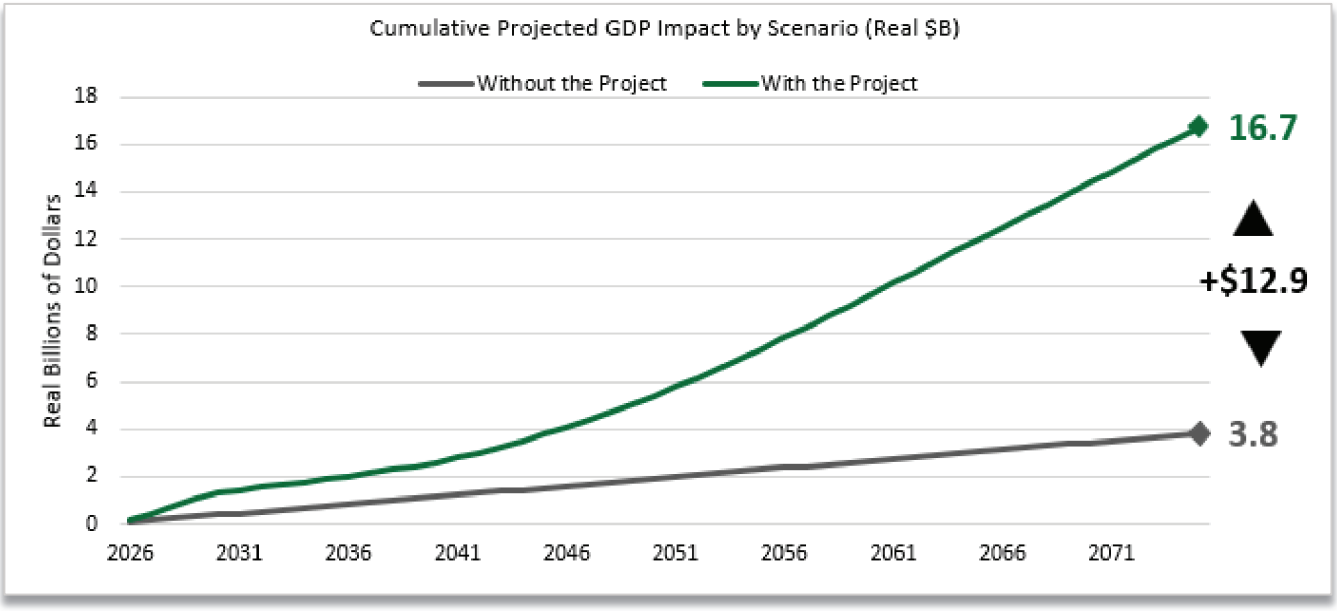
An analysis of the WIRP's economic impact was conducted, comparing a 'current state' scenario (continuing without irrigation) and a 'future state' scenario (irrigated with the WIRP). The analysis quantifies the direct, indirect, and induced impacts using multipliers from Statistics Canada's input-output modelling.

The analysis estimates the current state would result in $4B in Gross Domestic Product ("**GDP**") over the next 50 years, whereas the WIRP would result in $17B – an incremental increase of $13B. Further, the total output is estimated to increase from $10 billion to $42 billion over that time (an increase of $32 billion).[2] In addition to the GDP and total output impacts, $1.3B in incremental taxes are estimated to be generated from taxes on products, production, and capital gains on land values; along with an incremental increase of 80,000+ in person years of employment over the analysis period (an annualized average of approximately 1,650 additional jobs per year).

[2] While the total output (the overall value of goods and services, including both final and intermediate goods) is important to consider, GDP is more critical from a perspective of economic impact, as GDP specifically measures the value of final goods and services sold to end users, avoiding the double counting of intermediate goods and services.

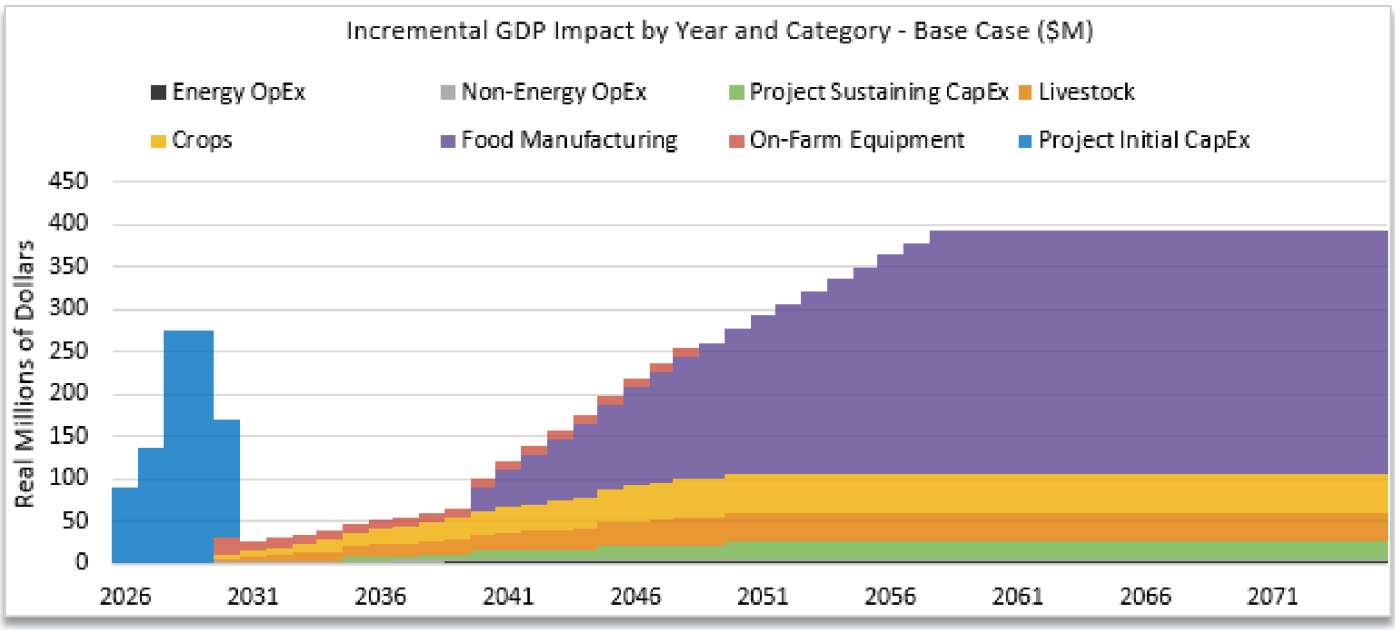
The table and chart below illustrate the estimated economic impact associated with the current and future state scenarios over the 50-year analysis period, indicating that the WIRP is estimated to drive almost $13B in incremental GDP impact. This is the difference between the total GDP if the WIRP were to never occur (approximately $3.8B) and the estimated GDP assuming the WIRP does occur (approximately $16.7B).

Figure 1: Cumulative projected GDP over time by scenario ($B)



The chart below shows the key drivers of the incremental GDP impact by year and category. In the earlier years, it would primarily be driven by the project's initial development or capital expenditures ("**CapEx**"). Over time, as producers begin to irrigate, there would be incremental gains in the areas of on-farm irrigation equipment purchases, livestock, crop production, and project operating / maintenance costs. Over time, investments in food manufacturing are projected to scale up, based on observed relationships between irrigation and food manufacturing across the United States and Canada, driving significant value-add GDP impacts. This project is estimated to increase Saskatchewan's output in the food manufacturing sector from $6.3 billion to $6.6 billion at full absorption.

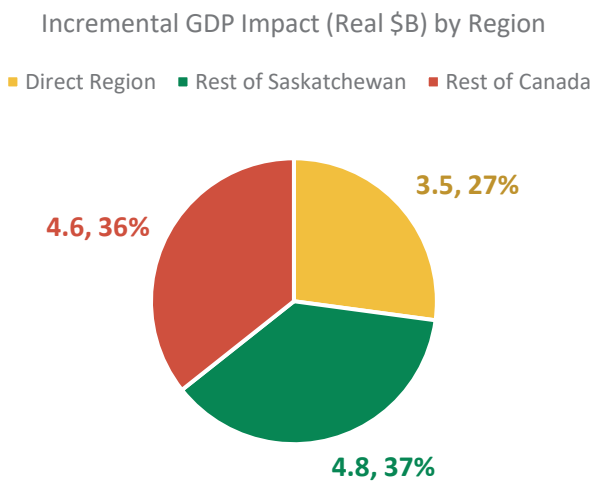
Figure 2: Incremental GDP impact by year and category ($M)



Jurisdictional Impacts

Approximately two-thirds (64%) of these benefits would occur within Saskatchewan, with the remainder (36%) occurring throughout the rest of Canada, but not all of the benefit is projected to be realized directly in the WIRP region itself; in fact, 27% the total impact is projected to be in the region, with the other 37% (totaling 64%) throughout the rest of Saskatchewan.

Figure 3: Incremental GDP impact ($B) by region

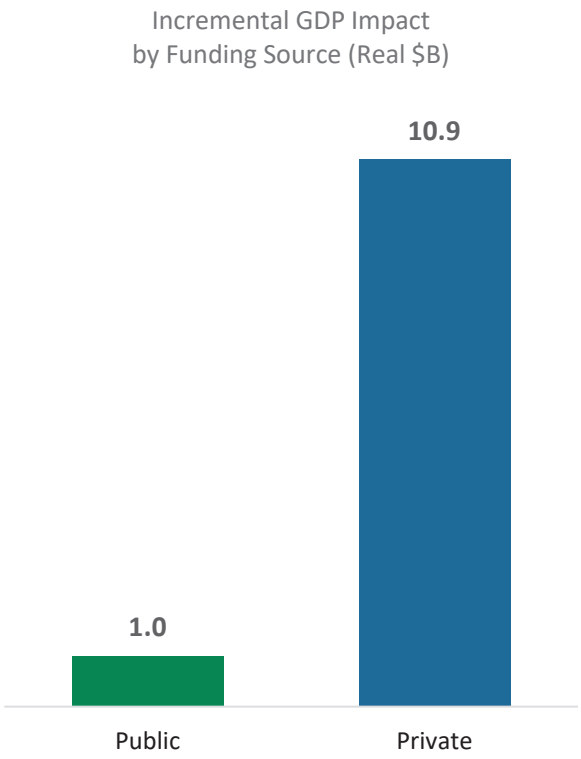


Catalyzing Private Investment

The irrigation infrastructure project exemplifies the kind of nation-building investment the federal government has committed to under its strategy to catalyze private investment and grow a high-value, resilient Canadian economy.

Funding proportions have not yet been determined. However, for illustrative purposes, if it is assumed that governments will cover a portion of the initial capital costs and sustaining capital costs (100% of conveyance and 30% of distribution for illustrative purposes), then the remaining GDP contributors would be covered by private investment – including livestock and crop farmers and food manufacturers. This includes irrigation equipment purchased by new irrigators, on-farm crop and livestock activity, food manufacturing construction and operations, irrigation operating costs, and a portion of the initial capital and lifecycle costs.[3]

Figure 4: Incremental GDP impact by funding source ($B)



In real dollars, this is equivalent to **$1.0 billion in government costs** over the analysis period and **$10.9 billion in private investment**. In other words, catalyzing $11 of private investment for every $1 of public investment.

Irrigation as Enabling Infrastructure

One of the benefits of irrigation infrastructure is in the economic activity it unlocks beyond the direct return in tax revenues. By providing reliable water access, irrigation supports agricultural diversification, stabilizes yields, and enables higher-value production. This, in turn, can catalyze private investment across the agri-food value chain, from primary production to processing and export. It can be similar to transportation networks in the way that irrigation infrastructure is an enabler, laying the foundation with the right conditions for long-term economic growth.

[3] This includes the direct project costs only and would not factor in any investments from government (at any level) in infrastructure or related incentives outside of the direct project.

1 Introduction

1.1 Background and Context

Introduction

As of 2023, Saskatchewan had approximately 431,000 irrigated acres, 25% of which were within irrigation districts, with the remainder privately owned and operated.[4] By comparison, Alberta has nearly 1,800,000 irrigable acres (and growing). These irrigated acres contribute to outputs at significantly greater rates than dryland acres, with Alberta reporting irrigated acres (accounting for 4.4% of farmland) contribute more than 25% of primary agricultural sales (i.e., irrigated acres contribute approximately 7x more economic output per acre in Alberta). Irrigation also advances agricultural production by providing unique advantages; most notably:

- **Increases production yield:** Data from Lake Diefenbaker Development Area indicates increased yield by nearly 2x for common crops such as spring wheat (1.9x), canola (1.8x) and flax (1.2x) when irrigated in a normal year. This means that more crops can be grown on less land, providing more efficient land use, higher productivity of equipment and workforce, and a greater ability to meet demand for food.
- **Enables production of new and higher value crops:** Irrigation enables producers to shift their crop mix, introducing higher value crops such as specialty crops (e.g., corn or potatoes), forages (e.g., to expand livestock production), and pulses (e.g., dry beans). These crops present greater opportunities for value-added production (e.g., processing and manufacturing) resulting in new job creation as well as greater profitability for producers, local businesses and suppliers, and individuals (directly and indirectly).
- **Provides greater production stability and reduces risk:** Irrigation allows producers more control of soil moisture content, reducing one of the many risks associated with agriculture production. This is particularly critical given weather patterns indicating the likelihood for droughts to be more severe and with greater frequency than historically experienced. The stability enabled by irrigation is also critical to achieving value-added activities, which relies on consistent year over year supply of crops to sustain operations (e.g., related industries for sorting, finishing, manufacturing, and packaging). Moderate to extreme droughts are expected to increase in number and intensity and cover wider regions. In addition, with the warmer temperatures, the atmosphere will be able to hold more moisture. With each degree of warming, the amount of water the air can hold increases by 7%. This implies increases in intensity and frequency of extreme precipitation events in places like Saskatchewan. Based on these climatic change scenarios, the wet times are expected to become wetter and dry times to become drier. There will be more frequent and more intense droughts similar to the 1800s when they were decade-long but mixed with severe storms and extreme precipitation events.[5]
- **Increases economic activity to invest into other public and private services:** Increases in production means more exports (and associated tax revenues to fund public services), more jobs to fulfill production and downstream or value-added needs, increased tax revenue through enhanced profitability and greater disposable income for businesses and individuals to invest in community activities.

[4] Government of Saskatchewan. *Crops and Irrigation.* Retrieved from: https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/irrigation.
[5] Saskatchewan Research Council, prepared for the Ministry of Government Relations in collaboration with R. Halliday & Associates, Walker Projects Consulting Engineers, EWheaton Consulting, and Environment and Climate Change Canada. Saskatchewan Flood and Natural Hazard Risk Assessment (2018). Retrieved from: https://www.saskatchewan.ca/-/media/news-release-backgrounders/2018/dec/saskatchewanfloodandnaturalhazardriskassessment-2.pdf.

1.2 Global Examples

Irrigation projects around the world play a pivotal role in enhancing agricultural productivity and resource management. These initiatives focus on improved agricultural practices and promote socio-economic resilience and community connectivity. Below are examples of notable irrigation projects globally.

Figure 5: Locations of example global irrigation projects

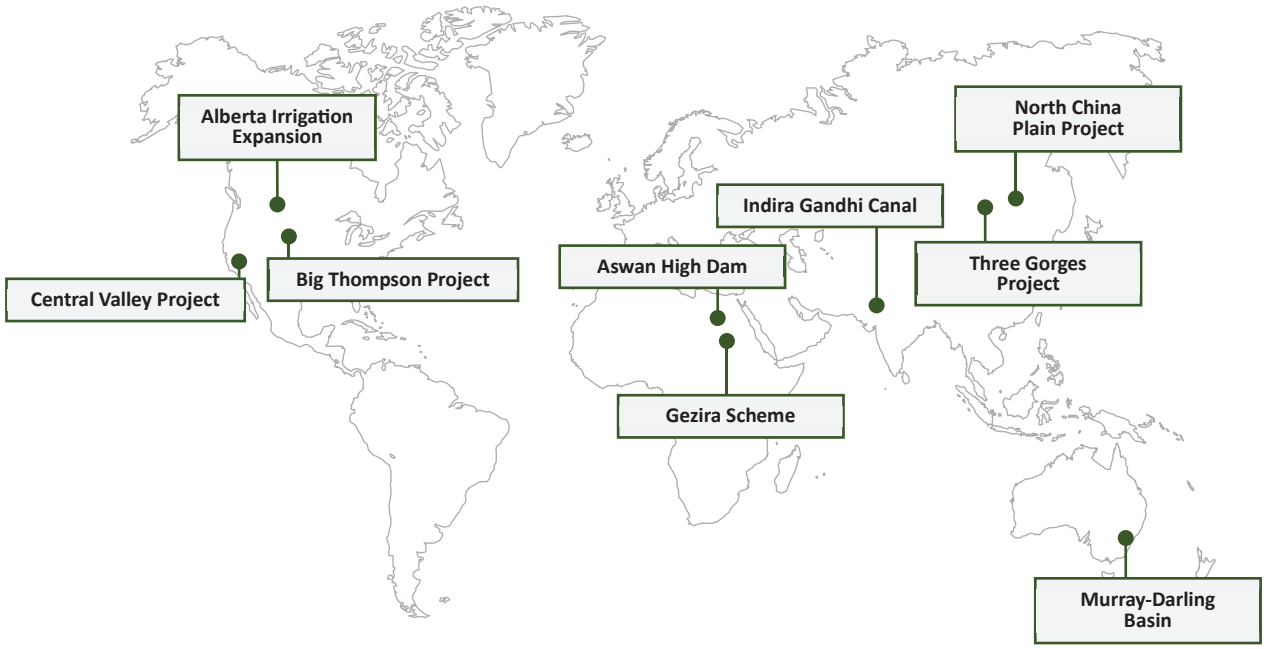


Table 1: Examples of global irrigation projects

Name of the Project	Country	Area (Acres, Millions)	Approximate Completion Year
North China Plain Project[6]	China	6.0	1987
Murray-Darling Basin[7]	Australia	5.7	2024
Three Gorges Project[8]	China	5.0	2006
Indira Gandhi Canal[9]	India	4.5	1983 (Phase 1)
Central Valley Project[10]	USA	3.0	1979
Gezira Scheme[11]	Sudan	2.5	1925 (Initial Phase)
Aswan High Dam[12]	Egypt	2.1	1970
Big Thompson Project[13]	USA	0.7	1956
Alberta Irrigation Expansion[14]	Canada	0.2	2028 (Forecasted)

[6] World Bank. *North China Plain Agriculture Project*. Retrieved from: https://documents1.worldbank.org/curated/en/116481468217154630/pdf/multi-page.pdf
[7] Australian Government | Murray Darling Basin Authority. *Basin Plan timeline and history*. Retrieved from: https://www.mdba.gov.au/water-management/basin-plan/basin-plan-timeline-and-history
[8] China Three Gorges Corporation. *Three Gorges Project*. Retrieved from: https://www.ctg.com.cn/ctgenglish/business/clean_energy/hydropower7/2024080621171845881/index.htm
[9] Auburn University. *India Gandhi Canal*. Retrieved from: https://www.auburn.edu/cosam/departments/geosciences/geosciences-faculty/chaney/ibtwater/indira_gandhi.htm
[10] US Bureau of Reclamation. *CVP*. Retrieved from: https://www.usbr.gov/projects/
[11] University of Gezira. *The Gezira Scheme*. Retrieved from: https://www.files.ethz.ch/isn/27931/2004-02.pdf
[12] National Geographic Society. *Aswan Dam Completed.* Retrieved from: *https://education.nationalgeographic.org/resource/aswan-dam-completed/*
[13] Colorado Encyclopedia. *Colorado Big Thompson Project*. Retrieved from: https://coloradoencyclopedia.org/article/colorado-big-thompson-project
[14] Alberta Water. *Alberta Irrigation Modernization (AIM) Program.* Retrieved from: https://registrydocumentsprd.blob.core.windows.net/commentsblob/project-83563/comment-58674/AIM_Program_SACPA.pdf

Qualitative benefits of the select international irrigation projects are provided below:[15]

- **The North China Plain Agricultural Project (China):** The North China Plain Agriculture Project of the late 1980's was an extensive initiative aimed at improving agricultural productivity across approximately 500,000 acres in nine counties, specifically targeting environmental issues such as soil salinity and waterlogging. This project was reported to impact over 1.2 million people, including 280,000 farming families, by enhancing irrigation and drainage systems. The project also incorporated a robust training and research component, promoting sustainable agricultural practices and models for future developments in similar regions. The social benefits of the project included improved food security, increased economic opportunities and reduced environmental impacts.[16]
- **Murray-Darling Basin Plan (Australia):** The Murray-Darling Basin Plan is a collaborative effort between the federal and state governments designed to manage water sustainably within Australia's most extensive river system. Covering 14% of Australia's landmass, the Basin is crucial for agricultural production, supporting rural communities, and meeting the cultural needs of Traditional Owners. The Plan imposes Sustainable Diversion Limits (SDLs) to regulate water extraction for various uses, supporting a balance between human needs and environmental health. It also incorporates initiatives like the Sustainable Diversion Limit Adjustment Mechanism (SDLAM) to enhance environmental outcomes while potentially reducing water extraction. By investing in innovative water management, the plan aims to deliver 2,750 gigalitres (GL) of water annually to sustain the ecosystem, with projects underway to facilitate this target, thus securing the Basin's health for future generations.[17]
- **Three Gorges Project (China):** The Three Gorges Project serves as a cornerstone for the management, development, and conservation of the Yangtze River. Recognized as one of the largest water conservancy and hydropower initiatives globally, it provides extensive benefits in flood prevention, energy production, navigation, and the utilization of water resources. Its construction and operational activities have significantly improved flood control along the middle and lower sections of the Yangtze River. Moreover, the steady generation of clean electricity has been crucial in creating a clean, low-carbon, safe, and efficient energy framework, while also supporting China's initiatives for green electricity production and environmental conservation. The first series of units was connected to the power grid in 2003, contributing to a total installed capacity of 22.5 GW. [18]
- **Indira Gandhi Canal (India):** The Indira Gandhi Canal project has led to substantial benefits that extend beyond purely agricultural and economic value. It has significantly improved microclimatic conditions in Western Rajasthan, transforming formerly harsh environments into more hospitable regions for both vegetation and human habitation. This has resulted in a reduction of temperature extremes and wind effects, fostering a better quality of life. The project has stimulated massive afforestation efforts, contributing to pastureland development and the stabilization of sand dunes, which in turn benefits local livestock and agricultural practices. Moreover, the canal has played a vital role in enhancing groundwater levels by approximately 0.8 meters per year, effectively eliminating drought conditions, which assures a more reliable supply of water for both agricultural and domestic needs. This increased access to water promotes a rise in local communities, as reflected in the rapid population growth and establishment of new villages and colonies. As a result of these changes, the local populace has exhibited a greater urge for education and improved communication, indicative of a cultural shift towards modernization and development. Collectively, these benefits highlight the Indira Gandhi

[15] Projects selected for further explanation were selected based on information availability and relevance to this project.
[16] World Bank. *North China Plain Agriculture Project*. Retrieved from: https://documents1.worldbank.org/curated/en/116481468217154630/pdf/multi-page.pdf
[17] Victoria Government. *Murray Darling Basin Plan*. Retrieved from: Murray%20Darling%20Basin%20Plan-%20Victoria%20Government
[18] China Three Gorges Corporation. *Three Gorges Project*. Retrieved from: https://www.ctg.com.cn/ctgenglish/business/clean_energy/hydropower7/2024080621171845881/index.html

Canal's crucial role in not only reclaiming degraded land but also in fostering a resilient and connected community, underscoring its far-reaching impacts beyond agriculture.[19]

- **Central Valley Project (USA):** The Central Valley Project (CVP) spans 400 miles across central California and consists of a complex network of dams, reservoirs, canals, hydroelectric power plants, and additional facilities. It mitigates flood risks in the Central Valley while supplying water for domestic, industrial, and agricultural uses. The CVP also caters to major urban areas in the Greater Sacramento and San Francisco Bay regions, provides electrical power, and offers recreational activities. Furthermore, it plays a crucial role in the restoration and protection of fish and wildlife and enhances water quality. With long-term agreements, the CVP supplies water to over 250 contractors across 29 of California's 58 counties, delivering an average of five-million acre-feet annually for agriculture, 600,000 acre-feet for municipal and industrial use (sufficient for 2.5 million people), and water for wildlife refuges and the Sacramento-San Joaquin Delta.[20]
- **Alberta Irrigation Expansion (Canada):** The Alberta expansion project is a two-phase project. The primary objectives of Phase 1 are to enhance water delivery efficiency, expand irrigation opportunities, and minimize water loss. Phase 2 focuses on improving water security and supply in the South Saskatchewan River Basin, allowing for an earlier start to the irrigation season. By modernizing irrigation infrastructure, the project aims to boost crop production, increase water storage capacity, and support long-term food processing businesses. This initiative represents the largest irrigation expansion in Alberta's history, contributing to economic growth and job creation. The Alberta government will invest $245 million, while irrigation districts will contribute $163 million toward the development of modern irrigation infrastructure and the expansion of irrigable land.[21]

Key Takeaways

To augment the growth potential, Saskatchewan could draw lessons from international irrigation projects to complement agricultural and economic impact with social and environmental aspects. For example, the North China Plain Agricultural Project highlights the potential improve the overall outcomes by coupling irrigation expansion with targeted training and research to promote sustainable practices and improve soil conditions, while the Murray-Darling Basin Plan demonstrates how sustainable water management can balance human needs with environmental health. Additionally, similar to the Three Gorges and Indira Gandhi Canal initiatives, Saskatchewan could enhance water resource management, flood control, and microclimatic conditions, thereby sustaining Saskatchewan's landscape. Modern infrastructure inspired by the Alberta Irrigation project will support efficient water delivery, boost local economies, create jobs, and improve rural quality of life. Overall, a focus on an integrative approach that connects water resource management with community development and environmental conservation for future sustainability could be beneficial to the province.

[19] International Journal of Advanced Research in Arts, Science, Engineering & Management. *Impact of Indira Gandhi Canal Irrigation.* Retrieved from: https://ijarasem.com/admin/img/34_Impact.pdf
[20] US Bureau of Reclamation. *CVP*. Retrieved from: https://www.usbr.gov/projects/index.php?id=506%23
[21] Canada Infrastructure Bank. *Alberta Irrigation*. Retrieved from: https://cib-bic.ca/en/projects/trade-and-transport/alberta-irrigation/

2 Crops

2.1 Introduction

Introduction

Irrigation enhances crop production by providing greater control over moisture levels throughout the growing season. This improves crop reliability and reduces the risks associated with drought and variable weather conditions. As a result, producers are better positioned to achieve consistent yields, enabling more predictable revenues and long-term planning.

Beyond yield stability, irrigation supports higher revenues by facilitating the cultivation of higher-value or water-sensitive crops that would not otherwise be viable in dryland systems. It also allows for more intensive cropping systems and double-cropping in some regions, increasing land-use efficiency.

Additionally, access to irrigation can lead to improved crop quality. By minimizing water stress during critical growth stages, producers can achieve better uniformity, size, and marketability of crops, which is particularly important for food processing and export markets.

While irrigation systems involve higher capital and operating costs, the overall returns on investment are often higher due to improved yields, greater crop diversity, and increased resilience to climate variability. In many cases, it can transform farming to a more commercially viable and scalable enterprise.

Examples

The table below summarizes the benefits that producers gain from additional acres of irrigation in Saskatchewan using examples of crop varieties. The increase is driven not only by an increase in yields, but also a producers' ability to grow more valuable crops that could not otherwise be grown without irrigation. The table is based on 2024 data, and the revenue figures have been rounded to the nearest $5 per acre.[22]

Table 2: Prices, yields, and revenues by crop variety and scenario (2024 data, rounded)

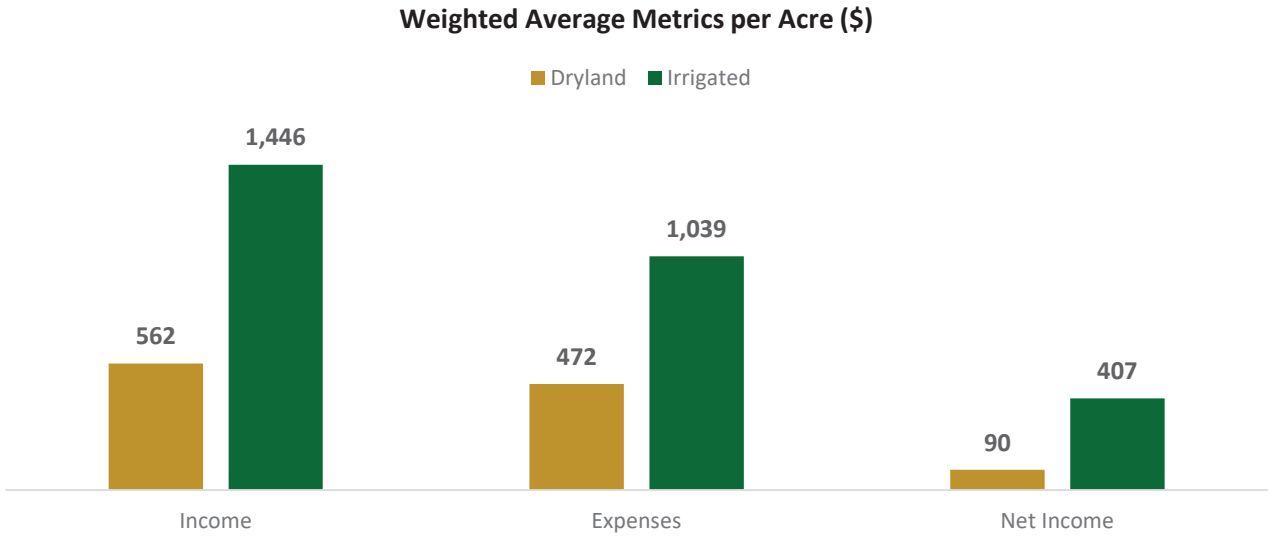
Crop Variety	Price ($ / acre)	Dryland		Irrigated	
		Yield	Revenue ($)	Yield	Revenue ($)
Wheat	11.77 / bu	40	470	85	1,000
Malt Barley	6.45 / bu	58	375	100	645
Canola	16.06 / bu	43	690	60	965
Peas	17.00 / bu	44	750	55	935
Flax	15.00 / bu	28	420	40	600
Black Bean	0.62 / lb	1,200	745	2,700	1,675
Alfalfa	100.00 / MT	-	-	4	400
Potato	395.00 / ton	-	-	14	5,530
Red Lentil	0.30 / lb	1,808	540	2,000	600

[22] Based on an analysis of crop revenue and expense data for irrigated crops, from Irrigation Crop Diversification Corporation (ICDC)'s *Economics and Agronomics* annual reports (https://irrigationsask.com/irrigation-economics-agronomics/), and dryland crops from the Government of Saskatchewan's *Crop Planning Guide* annual reports – dark brown soil regions (https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/farm-business-management/crop-planning-guide-and-crop-planner). Durum Wheat was used as the basis for Wheat, Malt Barley for Barley, Dry Beans – Black for Black Beans, Seedling Alfalfa for Alfalfa, and Table Potatoes for Potatoes. Units include bu = bushels, MT = metric tonnes, tons, and lb = pounds.

2.2 Potential Increase with Irrigation

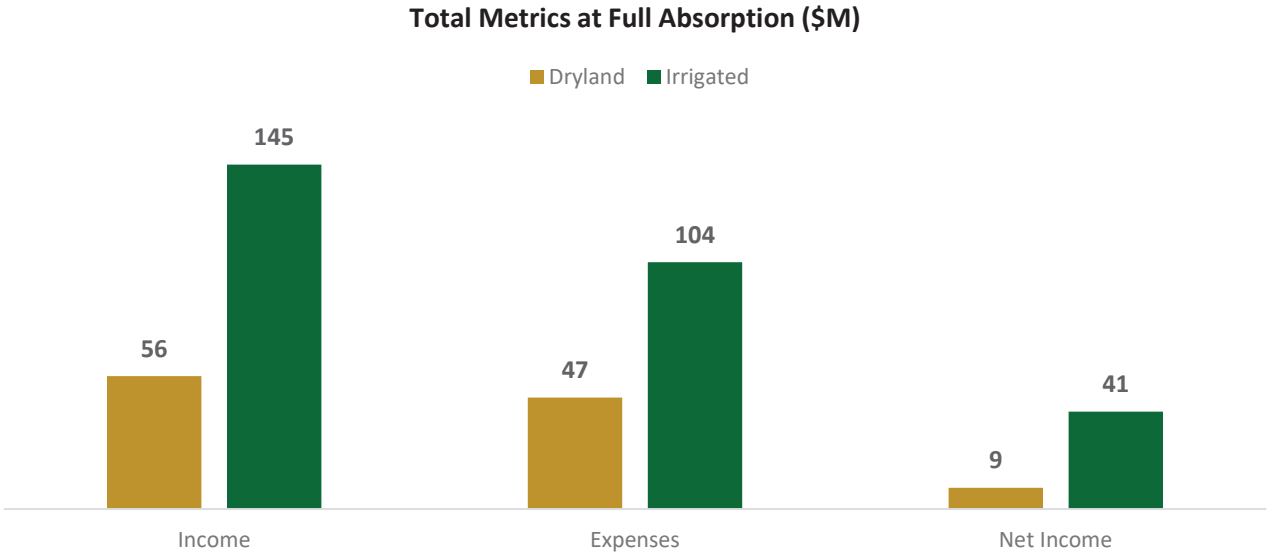
Based on the assumed proportions of crops in the current state (dryland) and future state (irrigated), it is estimated that the weighted average income and expenses will more-than-double, and the net income would be approximately 4-5x higher with irrigation.

Figure 6: Weighted average metrics per acre ($, 2024 data)



Extending the per-acre figures above to the entire region of 100,000 acres results in income increasing from $56 million to $145 million, expenses increasing from $47 million to $104 million, and net income quadrupling from $9 million to $41 million at full absorption. However, this would scale up over time, as absorption occurs, and it would also take time for producers to introduce new crop varieties into their rotations that were not previously able to be grown, so the increase in economic productivity would not occur immediately.

Figure 7: Total metrics at full absorption of 100,000 acres (2024 data)



3 Livestock

3.1 Introduction

Background

Livestock plays a significant role in Saskatchewan's economy and culture. The province has a wide range of livestock operations, contributing to the local and national agricultural landscape. Despite the robust livestock sector, farmers in Saskatchewan face several challenges. These include variations in climate, disease pressures, production losses, market volatility, input costs, and regulatory changes. The impacts of climate change, such as extreme weather events, can affect feed availability and water quality. Additionally, global trends in trade policy and consumer preferences can impact Saskatchewan's livestock industry, requiring adaptability from producers.

The agri-food system provides one in nine jobs in Canada and generated $150 billion of Canada's GDP (about 7%)[23]. The system represents an integrated supply chain with primary agriculture (work performed within the boundaries of a farm, nursery, or greenhouse) contributing $32 billion in GDP, food and beverage processors (transforming raw food materials into products for consumption or further manufacturing) contributing $35 billion, food retailers and wholesalers contributing $37 billion, and food service providers contributing $31 billion in GDP in Canada. In Saskatchewan, the top three crop and livestock commodities from 2019 to 2023 included canola ($6.3 billion in GDP), wheat ($3.4 billion in GDP), and cattle and calves ($1.7 billion in GDP).

According to a Statistical Briefer from Canfax Research in June 2025, the total Canadian Cattle inventory was 10.9 million head. Alberta contains the most of any province with 43% of the total cattle. Saskatchewan ranked second with 19% of the total cattle.[24]

Given the range of potential outcomes, two scenarios were considered. The first considers an incremental expansion of cattle activity based on existing ratios of livestock in irrigated areas of the province, which is used as the basis for livestock impacts as a more conservative estimate. The second scenario considers the impact that the introduction of feedlots could have as a point of comparison.

Feedlots

The feedlot is reportedly the most intensive component of the beef production chain. Cattle spend most of their lives on pasture, while spending only 60 to 200 days in a feedlot. Feedlots focus on efficient growth and weight gain, reducing the need for cattle to forage for food. Over two-thirds of fed cattle (different from total cattle referred to above) production occurs in Alberta (68%), followed by Ontario (21%).[25] Combined, British Columbia, Saskatchewan, and Manitoba account for 8%. Alberta's feedlots are also located close to the country's largest beef processors. Over 70% of federally inspected cattle slaughter capacity is in Alberta.[26] When weaned calves arrive at the feedlot, they typically weigh 450 to 600 lbs and end with a target weight of around 1,400 lbs. They are fed a very precise diet comprised of primarily grain (barley, corn or wheat) and forages (a mix of silage and hay) gradually increasing the proportion of grain and decreasing the proportion of forage over time.[27]

[23] Statistics Canada. *Overview of Canada's agriculture and agri-food sector*. Retrieved from https://agriculture.canada.ca/en/sector/overview
[24] Canfax. *Statistical Briefer Prepared by Canfax Research - June 2025.* Retrieved from: https://canfax.ca/media/attachments/2025/06/06/statbrf-june-2025.pdf
[25] Fed cattle have been raised in feedlots and are ready for beef markets, while total cattle inventory would include breeding stock, calves, dairy and others.
[26] Alberta Cattle Feeders' Association. *A Closer Look- Our Industry*. Retrieved from: https://cattlefeeders.ca/industry/
[27] Alberta Cattle Feeders' Association. *What goes in a feedlot.* Retrieved from: https://cattlefeeders.ca/feedlot-101/

Most of Alberta's feedlots are in a region known as 'Feedlot Alley' in southern Alberta. It is located around Lethbridge County and the town of Picture Butte, housing 2.3 million cattle. Additionally, the area has considerable pork production and is home to 180,000 hogs. This region is supported by proximity to irrigation, access to processing facilities (reducing transportation costs and improving efficiency), and established infrastructure (transportation networks, veterinary services, etc.). The irrigation district that supports this region is the Lethbridge Northern Irrigation District ("LNID"). It services approximately 200,000 acres of irrigated cropland, additional forage production, and provides water for much of Alberta's feedlot alley, which has the largest concentration of cattle in Canada. LNID has supported irrigation for over 100 years and comprises 230 km of canals, 700+ km of pipeline, 100 km of drainage canals, and 116 km of natural drains.[28]

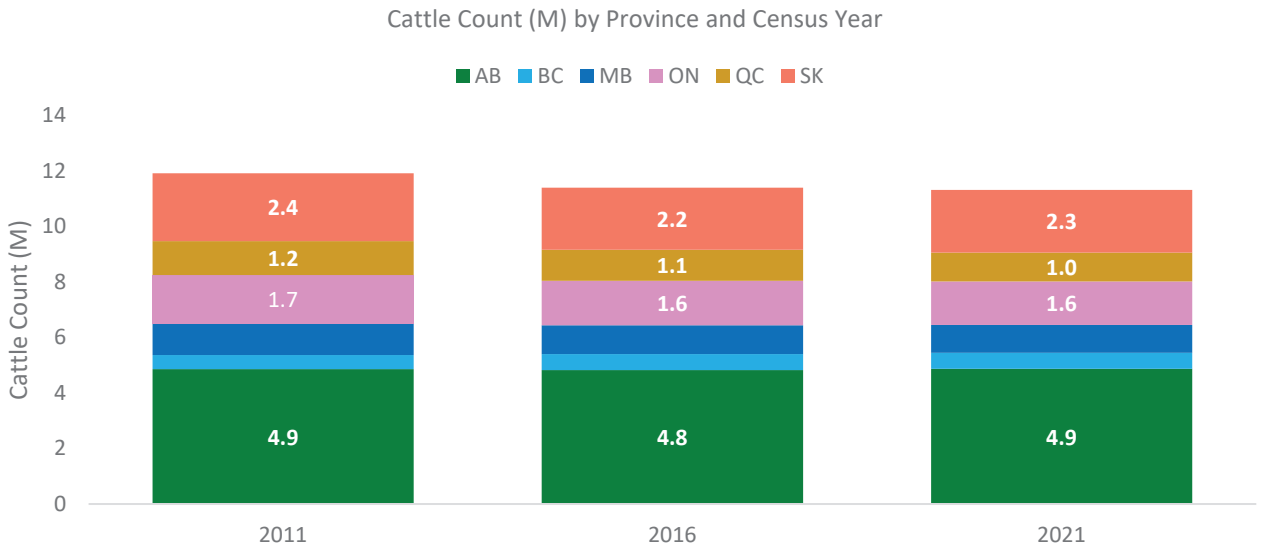
3.2 Comparators

As of January 2023, there were 11.3 million cattle, 13.9 million hog, and 0.9 million sheep in Canada. Among the provinces, Alberta held 43% of the national total of cattle, followed by Saskatchewan (19%) and Ontario (14%). For hogs, Quebec, Ontario, and Manitoba held over 80% of the national total, with Quebec accounting for nearly one-third of Canadian hog inventories at 4.4 million head. As for sheep, these are primarily in Ontario (274K), Quebec (176K), Alberta (171K), and Saskatchewan contributing approximately 80K to the national total.[29]

Cattle

The chart below shows the total number of cattle over time across the provinces (excluding Atlantic provinces), indicating that the distribution has been generally stable and consistently strongest in Alberta.

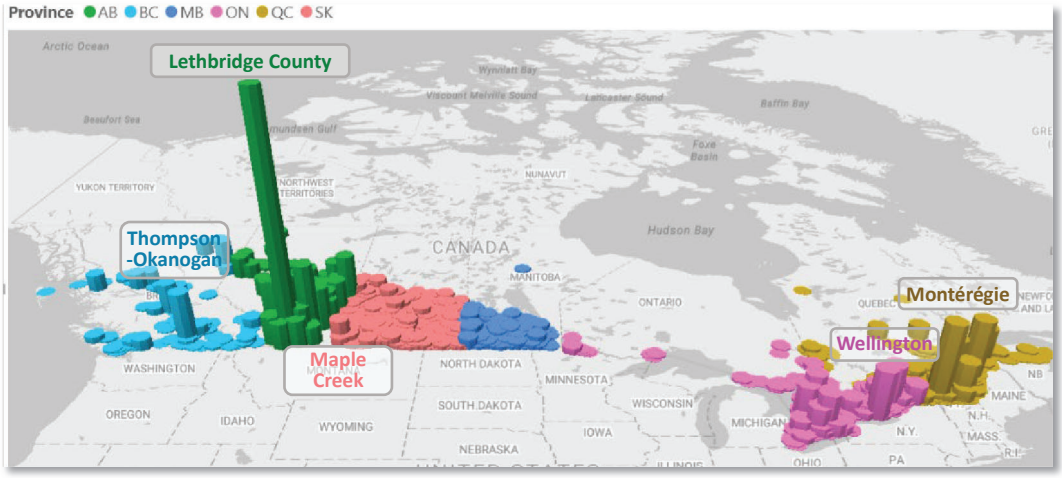
Figure 8: Cattle count (millions) by province and census year



[28] Lethbridge Northern Irrigation. *District*. Retrieved from: https://www.lnid.ca/
[29] Statistics Canada. *Livestock estimates, January 1, 2023*. Retrieved from: https://www150.statcan.gc.ca/n1/daily-quotidien/230228/dq230228e-eng.htm

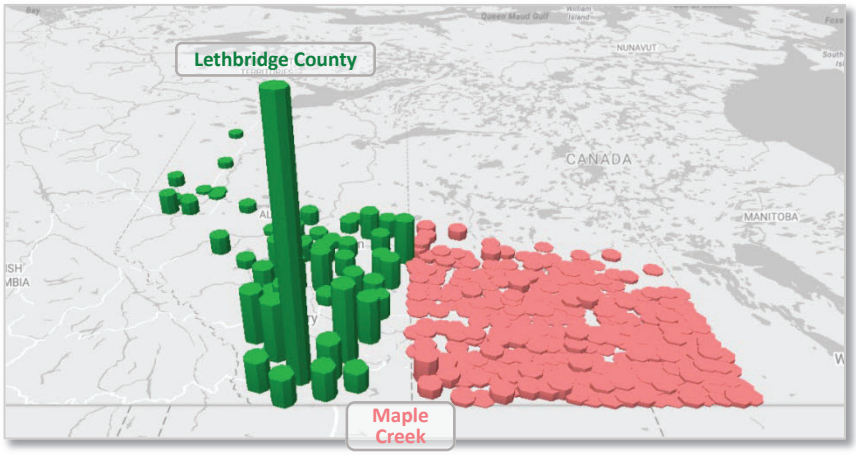
The image on the right shows the total number of cattle across Canada by census division, with the relative height representing the size of the number.[30] This shows that a significant number of cattle can be found in the Lethbridge region. The clusters of columns in Quebec and Ontario are largely driven by dairy cows.

Figure 10: Total cattle count by census division in Canada (height represents quantity)



While Saskatchewan has the second-largest number of cattle in Canada, they are dispersed across the province. This reflects the fact that Saskatchewan has large swaths of grazing land, which Alberta is unable to benefit from given its mountainous terrain to the west, but the dispersion reduces economies of scale and support of a broader ecosystem.

Figure 9: Total cattle count by census division in (AB and SK only)



Zooming in further on Alberta and Saskatchewan in particular shows how concentrated the cattle farming is in the Lethbridge region and surrounding areas with irrigation. A large part of the reported economic benefits of irrigation that are reported for Alberta can be traced back to this geographically small region with the feedlots and the downstream processing that goes with it.[31]

[30] Statistics Canada. *Number of cattle, by class and farm type (x 1,000)*. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210013001
[31] The observation regarding the impact of feedlots being a large driver of the economic benefits of irrigation across Alberta was shared through engagement with livestock representatives in Saskatchewan's Ministry of Agriculture.

Pigs

The image below shows the total number of pigs across Canada by census division, with the relative height representing the size of the number.[32] This shows that most of the pigs are found in Quebec, Ontario, and Manitoba. While Alberta's feedlot area appears to support pigs as well, it is not to the same extent as cattle. The highest columns in Saskatchewan can be found in Humboldt and Leroy, east of Saskatoon.

Figure 11: Total pig count by census division in Canada (height represents quantity, locations represent the location of company offices)

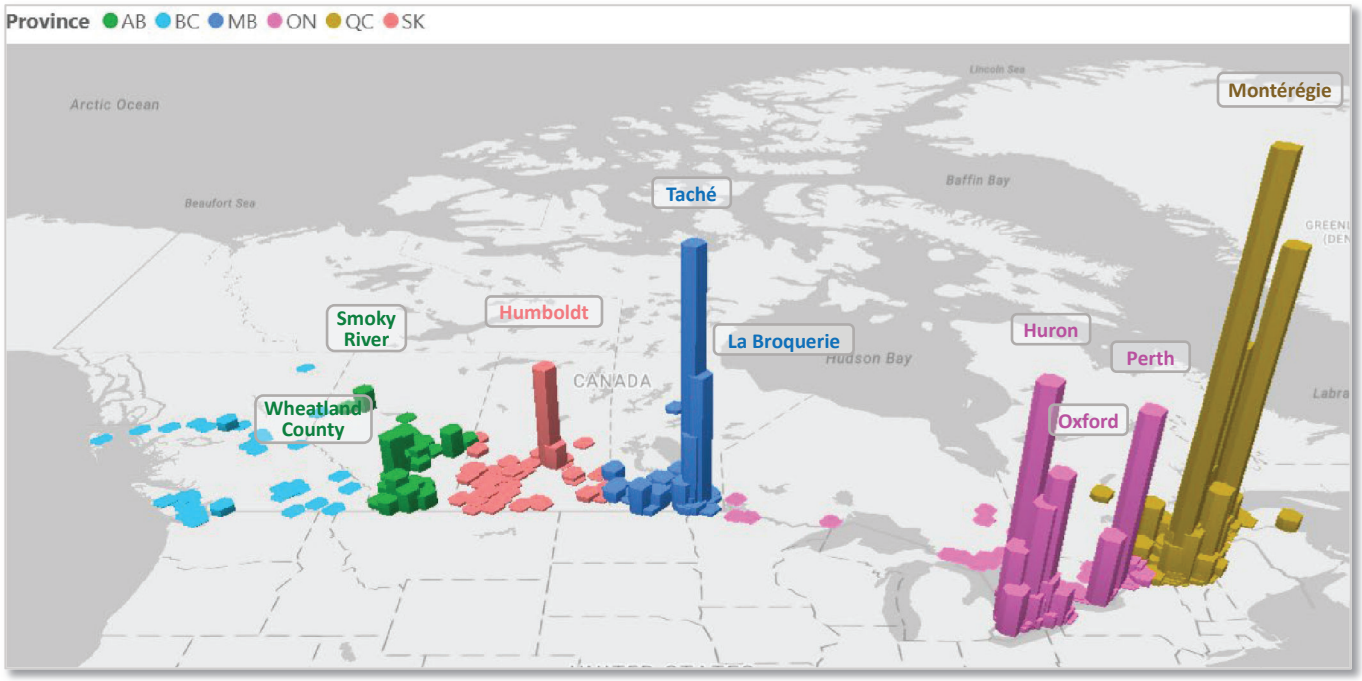
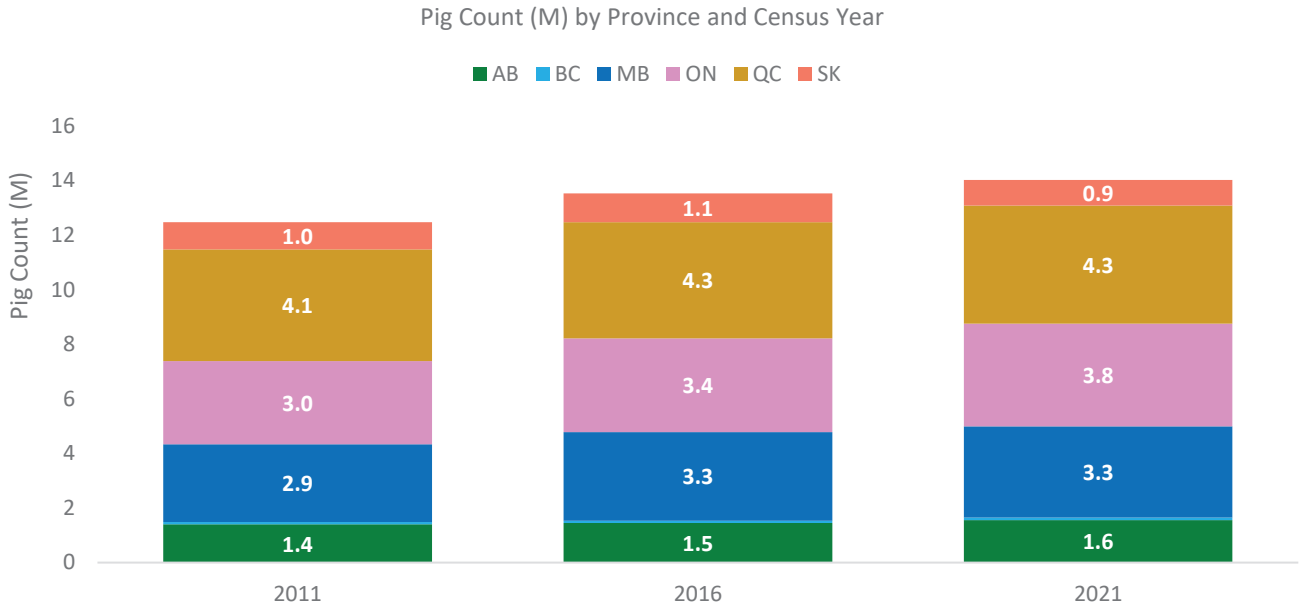


Figure 12: Pig count (millions) by province and census year

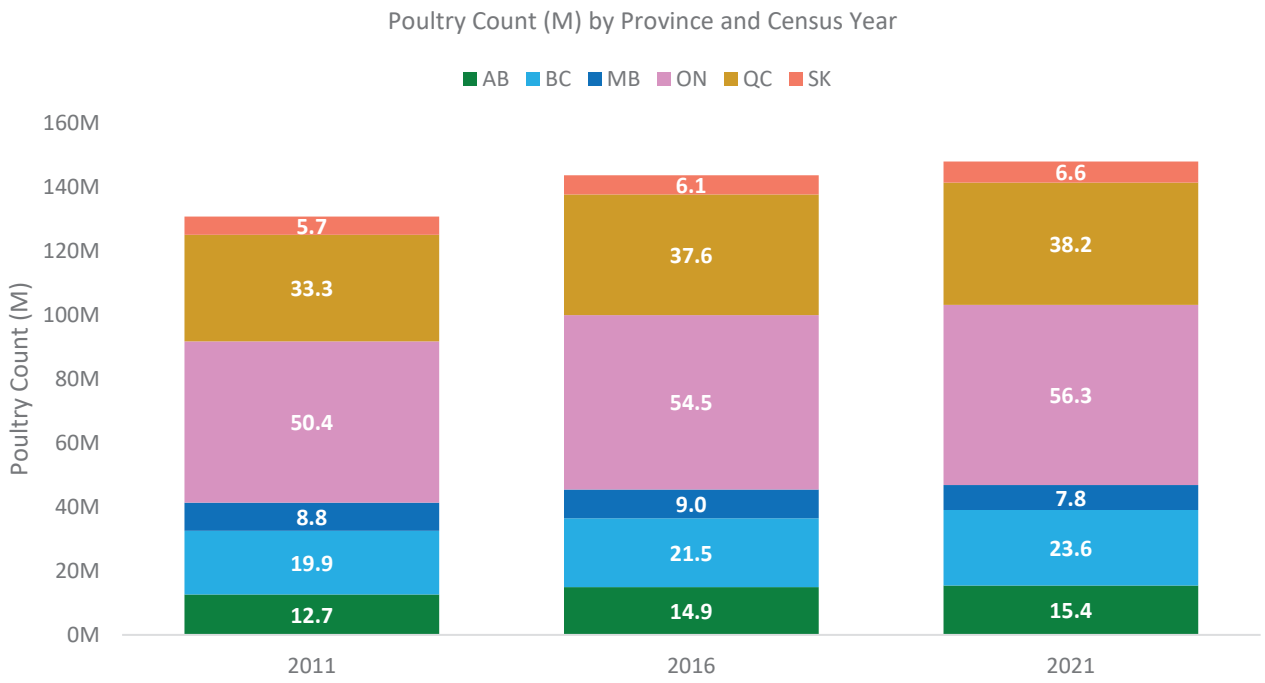


[32] Statistics Canada. *Hog statistics, number of hogs on farms at end of semi-annual period (x 1,000).* Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210016001

Poultry

The table below showing chicken, hens, and turkey count by year and province. There appears to have been a slight increase over time, but Saskatchewan is a small contributor on a national scale. Ontario and Quebec have held dominant positions in this area across the country.[33]

Figure 13: Poultry count (millions) by province and census year



[33] Statistics Canada. *Selected livestock and poultry, Census of Agriculture historical data.* Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210015501

3.3 Potential Increase with Irrigation

Introduction

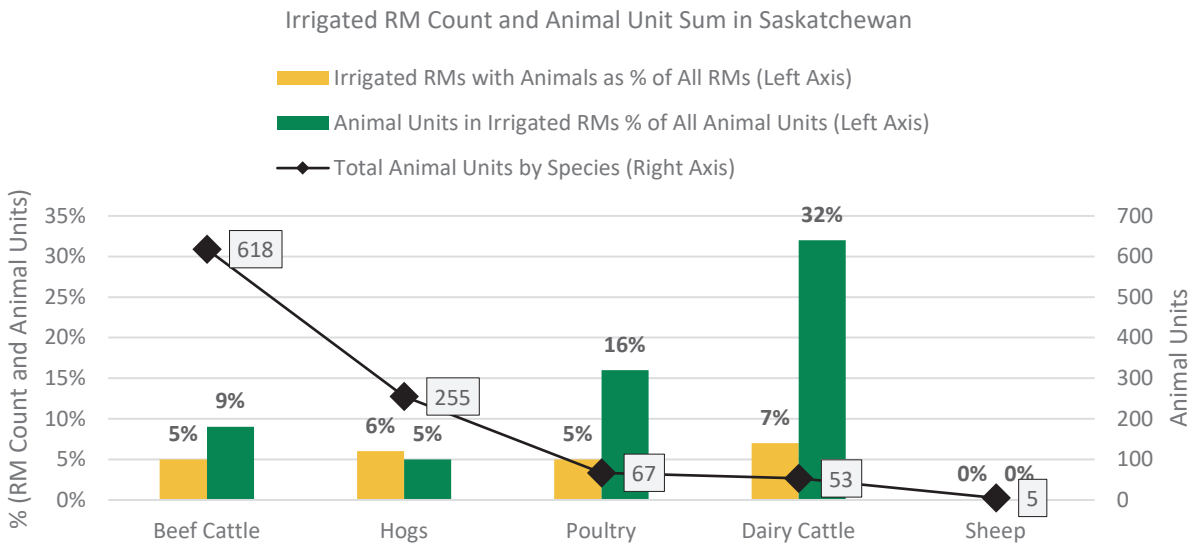
Irrigation supports the production of high-yield and high-quality forage, such as alfalfa, corn, silage, and barley, which are essential feedstocks for beef and dairy operations. Feedlot operators depend on consistent, nutritionally dense feed to fatten cattle quickly and efficiently, and irrigation reduces crop failure risk. More consistent feed availability can support feedlot expansion, buffers against drought and forages, and helps to stabilize herd sizes with greater feed and water availability and quality.[34]

Considerations

To estimate the potential impact of irrigation on the livestock sector in Saskatchewan, two distinct approaches were used. First, a modest, incremental increase was applied based on the current distribution of intensive livestock operations (ILOs) and total livestock, recognizing that irrigated regions today tend to have higher concentrations of livestock (particularly cattle) than non-irrigated areas.[35] Second, a transformative scenario like Alberta's feedlot alley was modelled, where irrigation catalyzes a concentrated ecosystem of feedlots and related infrastructure. Cattle are the primary focus in both cases, given their substantial feed requirements and lower transportation costs compared to other species, making them more dependent on feed base and proximity.

- **Intensive Livestock Units**: When comparing the number of animal units in RMs with irrigation versus those without, the data generally supports the idea that irrigation is associated with higher concentrations of livestock. However, it is important to acknowledge outliers. For example, Corman Park has a high number of cattle that is not due to irrigation but rather its proximity to Saskatoon and existing infrastructure that supports intensive livestock operations. As dairy products spoil easily, and their transportation is costly, they are located closer to processors for enhanced supply chain efficiency.[36]

Figure 14: Irrigated RM count and animal unit sum in Saskatchewan by animal type



[34] While irrigation is expected to increase livestock capacity, it is not expected to displace existing marginal grazing lands, which remain unsuitable for irrigation due to salinity and topography.
[35] According to the Ministry of Agriculture, there are nine rural municipalities ("**RMs**") with material irrigation activity. These include 284 (Rudy) and 254 (Loreburn) served by the South Saskatchewan River Irrigation District ("**ID**") and private irrigation in the Elbow Area; 224 (Maple Bush) served by Riverhurst and Grainland IDs; 255 (Coteau) served by Luck Lake ID and private irrigation; 344 (Corman Park) served by Moon Lake ID and private irrigation; 168 (Riverside) served by Miry Creek ID; 111 (Maple Creek) and 51 (Reno) served by Consul-Nashlyn ID, Lodge Creek ID, Middle Creek ID, and Vidora ID; and 166 (Excelsior) served by Rush Lake ID, Herbert ID, and North Waldeck ID. While there are some other RMs with irrigation, the amount of irrigation is insignificant (e.g., a single quarter section) so these are not considered to be irrigated RMs for the purpose of the analysis.
[36] This analysis is based on approved animal units reported through Intensive Livestock Operations (ILO) data, which are used due to its quality and availability. However, these figures reflect approved animal units rather than total actual animals in the province.

Table 3: RM count and sum of animal units in Saskatchewan by animal type

Livestock Type	Unit of Measure	RM Count (#) with Animals			Sum of Animal Units (K)		
		Dryland	Irrigated	Total	Dryland	Irrigated	Total
Beef Cattle	#	167	8	175	561	57	618
	%	95%	5%	100%	91%	9%	100%
Dairy Cattle	#	63	5	68	36	17	53
	%	93%	7%	100%	68%	32%	100%
Poultry	#	69	4	73	56	11	67
	%	95%	5%	100%	84%	16%	100%
Hogs	#	95	6	101	241	14	255
	%	94%	6%	100%	95%	5%	100%
Sheep	#	7	-	7	5	-	5
	%	100%	0%	100%	100%	0%	100%

- **All Cattle (also including non-Intensive Livestock Operations):** Looking at all cattle data for the province, there are 291 rural municipalities (RMs) or cities with cattle, of which nine have irrigation (3.1%) and 282 do not (96.9%). Those nine regions with irrigation represent 3.1% of the regions by count but contain 7.1% of the total cattle head with over 185,000 across the province.[37] This indicates that there are more total cattle in regions with irrigation than regions without.
- **All Pigs (also including non-Intensive Livestock Operations):** Looking at all pig data for the province, there are 44 rural municipalities (RMs) or cities with pigs, of which three have irrigation (6.8%) and 41 do not (93.2%). Those three regions with irrigation represent 6.8% of the regions by count but contain only 2.8% of the total pig count across the province. This indicates that irrigation may not be as essential for pigs as it is for cattle.

Potential Increase with Irrigation

There are two main pathways for growth in livestock based on irrigation. The first is an incremental expansion of existing operation, involving scaling up current cattle operations by improving feed availability and reliability, leading to modest but widespread increases across the province. The second, more transformative scenario, involves the establishment of a feedlot ecosystem, which could significantly shift the structure of the industry in Saskatchewan. Feedlots benefit from economies of scale and act as anchors for a broader value chain – supporting grain producers, feed mills, processors, and transportation networks. Both scenarios are plausible, but the scale of impact, infrastructure needs, and economic multipliers differ substantially between them.

1. **Incremental expansion:** An analysis of ILO animal units shows that Saskatchewan has approximately 3.6 million of cattle and pigs, of which about 40,000 (1.1%) are located in the nine RMs that would be impacted by the irrigation project. Applying these proportions to the provincial livestock industry, the project area currently supports an estimated $37 million in annual livestock output out of a provincial total of $3.3 billion.[38] Comparisons across RMs indicate that irrigated RMs have about twice as many cattle and pigs (measured in ILO animal units) as non-irrigated ones, suggesting that receipts in the impacted area could increase to approximately $77 million with full uptake. This is an incremental gain of about $40 million per year, although this growth would occur gradually over time.[39]
2. **Feedlot economic ecosystem:** If a large-scale irrigation project in Saskatchewan could enable a feedlot system like Alberta's, this could result in much larger economic benefits. Lethbridge Northern Irrigation

[37] 'Animal units' is a concept is often used in regulations; codes of practice and municipal by-laws related to livestock production and is based on the number of animals that would produce the 73 kilograms of nitrogen required to fertilize one acre of corn for one year. One cow, for example, equals approximately one animal unit, while four sows or 125 broiler chickens will be required for one unit. Retrieved from: https://www150.statcan.gc.ca/n1/en/pub/21-601-m/2001047/4193596-eng.pdf?st=lLLDHu8y
[38] Statistics Canada. Farm cash receipts by industry and geography. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210004501.
[39] These outputs figured have been adjusted to calculate GDP impacts separately from total output in subsequent sections of the report.

District (LNID) has approximately 200,000 acres and contains 2.3 million cattle (over half of the province's total of 4.5 million) and 180,000 hogs (about 15% of the province's total of 1.5 million). If Saskatchewan were to create a 100,000-acre region that enables a similar proportion of cattle operations, this would then support up to 1.15 million cattle (half of the number in the LNID given the contemplated area of 100,000 in Saskatchewan acres compared to LNID's 200,000 acres). This would be approximately a 50% increase over the current head of cattle in Saskatchewan (2.2 million as of 2021). As the feedlots are primarily used for cattle, this species is used as the basis for the analysis. In 2019, the cattle industry contributed $473 million to Alberta's GDP with 4.5 million head of cattle. This is equivalent to $105 in GDP per head, which would mean $231M is attributable to LNID. If a 100,000-acre region in Saskatchewan could support 1.15 million head of cattle with a similar extent of processing and related activities, this would mean the GDP could be as much as $121M for cattle alone. Adjusting for inflation, this becomes $143M in annual output in 2024 dollars (as compared to $40M increase in the 'incremental expansion' scenario). This also excludes any further economic impacts associated with the broader ecosystem, such as veterinary services, transportation and logistics, or construction.

While feedlots would have a significant contribution, the more conservative 'incremental expansion' scenario (1) has been assumed throughout the remainder of this report and impact analysis. The rationale for this is to provide a realistic assessment that does not potentially overstate impacts. While feedlot development is a potential outcome, it would require significant coordinated investment, and it may be inaccurate to assume that level of activity without also accounting for the associated costs.

Creating an equivalent feedlot area in Saskatchewan would require more than merely irrigation infrastructure. Alberta's success in the Lethbridge area came from a deliberate, multi-faceted strategy over decades. The feedlots are clustered along major transportation corridors with proximity to feed mills, slaughter facilities, rendering plants, and other facilities that can make use of the related byproducts. The geographic concentration lowered operating costs and created a network effect. Alberta also has a defined and predictable regulatory framework for intensive livestock operations, including a clear approval process to give confidence to private investors.[40] The provincial government and private sector facilitated the development of large-scale meat processing plants, anchoring demand for fed cattle, and Alberta invested heavily in agricultural research and development, supporting feed efficiency, nutrition, and animal health.

[40] Alberta has one body (NRCB) responsible for reviewing and approving confined feeding operations, with criteria that are followed to determine setback distances. Saskatchewan has a less consistent approach given the differences among rural municipalities.

4 Food Manufacturing

4.1 Introduction

Industries in the food manufacturing sub-sector transform livestock and agricultural products into products for human or animal consumption (e.g., grain / oilseed milling, dairy product manufacturing, bakeries / tortilla manufacturing, animal food manufacturing, etc.). Food processors rely on agricultural inputs, including crops that would require irrigation for several reasons listed below. Each of these factors plays a role in the operational success and viability of these businesses.

- **Consistent supply of inputs:** Food processors depend on agriculture for a steady supply of raw materials, as the quality and availability of these inputs can directly impact production. This is particularly important in regions facing water scarcity or variable weather conditions.
- **Improved quality of inputs:** Irrigation gives farmers control over water, which affects crop growth and development, protein content, size and uniformity, and the timing of maturity and harvest. This can reduce stress on crops (from drought or heat), results in more uniform ripening, leads to higher and more stable protein content (for human food, such as pasta, bread, and processed foods), and reduces the occurrence of discoloured grain. Improving the quality enables outputs that are more suitable for human food processing, reducing the need for blending and enabling premium-grade supply chains. This can drive investment in food manufacturing facilities by ensuring a dependable source of raw material.
- **Improved crop yields:** Irrigation plays a vital role in enhancing crop yields, which is crucial for food processors that seek high volumes of raw materials. According to Farm Credit Canada ("**FCC**"), "recent dry conditions across the Prairies led to a robust demand for irrigated land, with interest growing each year."[41]
- **Product diversification:** The ability to grow different types of crops under irrigation systems allows food processors to innovate and bring new products to market.

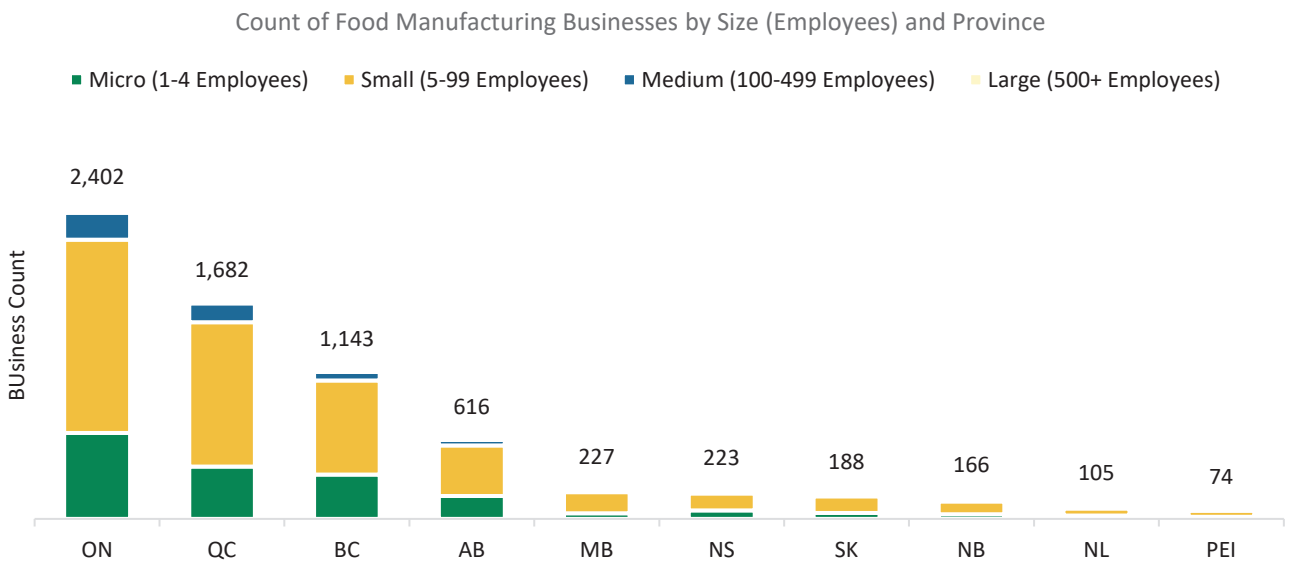
4.2 Comparators

Manufacturers by Province

As of 2023, there were 188 food manufacturing businesses in Saskatchewan. This includes 47 micro food manufacturing businesses (1-4 employees), 128 small (5-99 employees), 12 medium (100-499 employees), and one large (500+ employees). The chart below shows the food manufacturing businesses by size and province.

Figure 15: Count of food manufacturing businesses by size (employees) and province

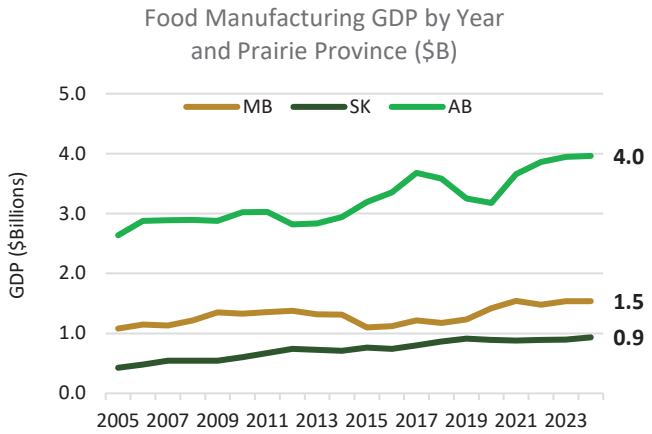
[41] Farm Credit Canada. *2024 FCC Farmland Values Report.* Retrieved from: https://www.fcc-fac.ca/en/reports/2024-farmland-values-report.



Food Manufacturing Over Time

The chart below shows the food manufacturing GDP over time across the prairie provinces. Between 2005 and 2024, the GDP grew by 42% in Manitoba, 118% in Saskatchewan, and 50% in Alberta.[42]

Figure 16: Food manufacturing GDP by year and province ($B)



Food Manufacturing by Industry

The table below shows GDP by food manufacturing industry group and province as of 2024 (in millions of dollars).[43] The following are observations regarding Saskatchewan's output compared to the other provinces:

- **Grain / oilseed milling strength:** Saskatchewan is relatively strong in GDP in the grain / oilseed milling industry group with $609M in GDP, surpassing Alberta's $524M and nearing Ontario's $720M in GDP.
- **Meat product weakness:** Alberta has nearly 10x Saskatchewan's GDP in meat products ($1.8B compared to $195M). According to Saskatchewan's Ministry of Agriculture, there are several feedlots in Alberta that are supported by irrigation, contributing to their livestock sector. The meat product industry group includes pork, which is less dependent on irrigation based on the data.
- **Bakeries and tortillas:** Alberta has $239M in GDP in this industry versus Saskatchewan's $1M. These manufacturers typically require a variety of inputs that Saskatchewan should be able to produce. An important factor that may be driving Alberta's competitiveness in this area is its Agri-Processing Investment Tax Credit, which provides a 12% tax credit when businesses invest $10 million or more in a project to build or expand a value-added agri-processing in Alberta. Eligible agri-processors have at least ten years to claim the tax credit against their provincial income tax.[44]

[42] Statistics Canada. *Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000)*. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3610040201
[43] Statistics Canada. *Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000).* Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3610040201
[44] Government of Alberta. *Alberta Agri-Processing Investment Tax Credit*. Retrieved from: https://www.alberta.ca/alberta-agri-processing-investment-tax-credit

Table 4: GDP ($M) by food manufacturing industry group and province as of 2024 (in chained 2017 dollars)[45]

GDP $M	PEI	NL	NS	SK	NB	MB	BC	AB	QC	ON	Total
Saskatchewan's Relative Strengths *Industry groups where Saskatchewan's GDP is relatively strong compared to other provinces*											
Grain / oilseed milling	0	0	1	**609**	1	208	56	524	139	720	**2,258**
Saskatchewan's Relative Weaknesses / Opportunities *Industry groups where Saskatchewan has room to grow with limited natural constraints or barriers*											
Meat products	3	25	41	**195**	69	669	608	1,805	1,914	2,331	**7,660**
Bakeries / tortilla	4	15	61	**1**	41	74	326	239	962	3,271	**4,994**
Dairy products[46]	51	14	85	**58**	30	86	336	324	1,280	1,482	**3,746**
Animal food	3	1	15	**39**	56	65	137	245	237	756	**1,554**
Other Industry Groups *Industry groups where Saskatchewan has natural barriers or constraints that could limit its competitiveness*											
Sugar / confectionery products	0	0	2	**1**	19	6	107	39	719	1,104	**1,997**
Fruit / vegetable preserving / specialty food	162	0	21	**3**	319	328	217	177	561	675	**2,463**
Seafood product preparation / packaging	79	416	416	**0**	348	6	115	2	94	50	**1,526**
Other food	1	3	162	**10**	72	72	333	524	1,524	1,889	**4,590**
Total	**304**	**475**	**805**	**916**	**953**	**1,513**	**2,235**	**3,878**	**7,430**	**12,278**	**30,787**

4.3 Potential Increase with Irrigation

Introduction

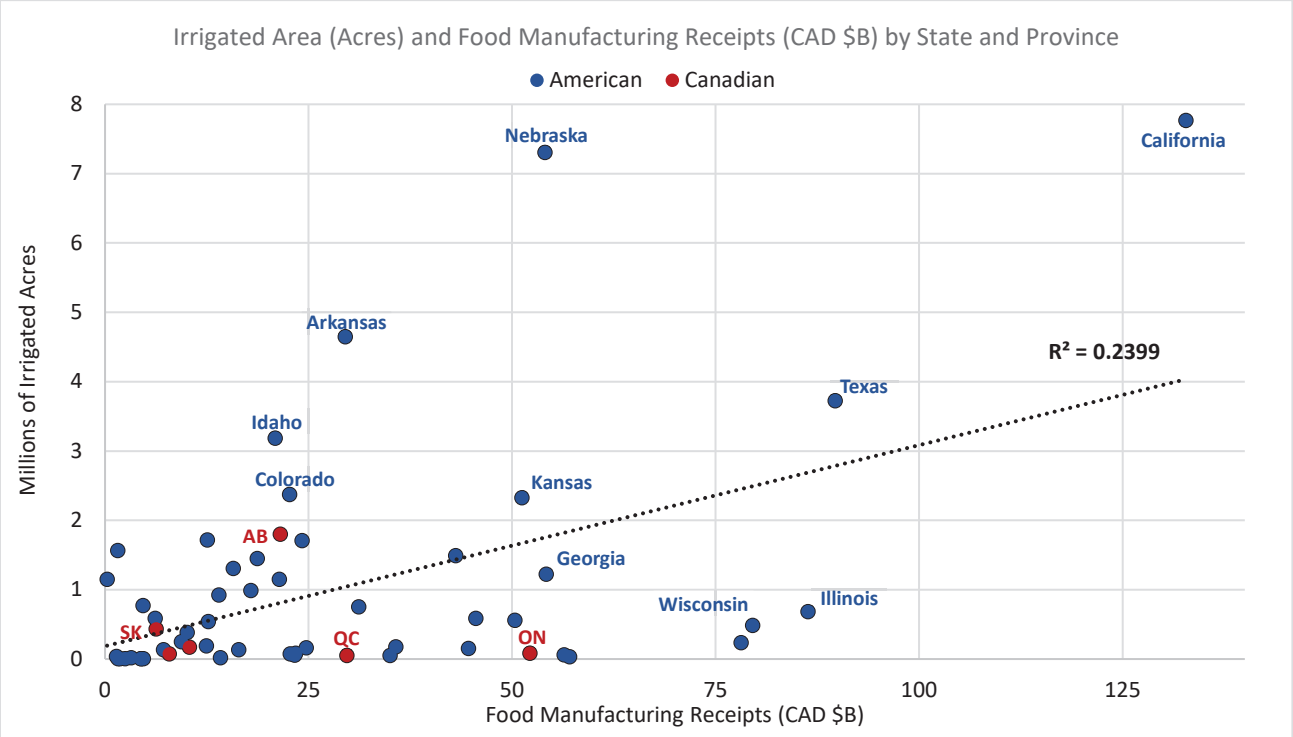
The chart below includes all 50 U.S. states and six Canadian provinces (excluding the Atlantic provinces with insufficient data to support the analysis).[47,48] It plots the number of irrigated acres (in millions) and the food manufacturing receipts (in billions). As there are only six Canadian provinces with sufficient data, the U.S. states were included in this analysis to provide more reliable insights and enable the identification of relationships across a larger number of regions. The R^2 of 0.24 (i.e., the proportion of variance in the dependent variable that can be explained by the independent variables in the regression model) indicates that approximately 24% of the variance in food manufacturing receipts (i.e., more food manufacturing activity is generally associated with more irrigated acres). However, the R^2 value (0.24) and correlation (48%) are only moderate, and many states and provinces deviate from the trendline, which demonstrates that irrigation is one of several contributing factors to food manufacturing strength, not the sole driver. Interesting state and province-level observations include:

- California and Nebraska: High in both food manufacturing and irrigation (especially California), supporting the theory that irrigation infrastructure enables a strong food processing sector, with population also contributing to its processing numbers.
- Texas: High on both dimensions, suggesting less dependency on irrigation or a more industrial base.
- Arkansas, Idaho, and Colorado: High in irrigation relative to their modest food manufacturing, implying potential underdevelopment of downstream processing.
- Ontario: Higher in food manufacturing than irrigation, indicating that irrigation is not a universal requirement for food processing. Ontario benefits from rainfall, strong infrastructure, population, and proximity to markets, and more capital or labour-intensive industries (e.g., dairy).

[45] Statistics Canada. *Gross domestic product (GDP) at basic prices, by industry, provinces and territories.* Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3610040201.
[46] There are supply management barriers in the dairy sector, such as products that spoil relatively easily and are costly to transport, which generally results in dairy production being concentrated in regions with higher populations (e.g., Ontario and Quebec).
[47] United States Census Bureau. *The Number of Firms and Establishments, Employment, Annual Payroll, and Receipts by State, Industry, and Enterprise Employment Size: 2022*. Retrieved from: https://www.census.gov/data/tables/2022/econ/susb/2022-susb-annual.html.
[48] Statistics Canada. *Total Area that Received Irrigation by Province – Al Crop Types (2022).* Retrieved from https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3810024101

It is important to acknowledge that this regression model is used to explore how population, farmland, and irrigated acres are associated with food manufacturing activity across regions. While it does not establish causation, it helps isolate the relative strength of these relationships using available cross-sectional data. The cross-section cannot fully correct for historic policy, crop mix, logistics, or farm-level factors that may also co-vary with irrigation. Other unmeasured factors, such as labour availability, market proximity, utilities pricing, and historical policy support, also play important roles. The results should be interpreted as directional and indicative, not definitive. Nonetheless, the findings offer valuable insights into how irrigation and population contribute to food manufacturing potential, and highlight where complementary investments may be needed to fully realize irrigation's economic value in this area.

Figure 17: Irrigated area (acres) and food manufacturing receipts (CAD $B) by state and province



Isolating the Effects of Irrigation

While irrigation plays a role in enabling food manufacturing activity, the relationship is only moderate. This suggests that irrigation alone cannot explain the full picture. To better understand the distinct and combined effects of irrigation when controlling for population and total farmland, a multivariate regression analysis was conducted. Using this method enables the analysis to control for population and farmland within each region to isolate the potential independent contribution of irrigation to food manufacturing sales.

The image shows the results of the multivariate regression analysis, analyzing how irrigated acres and population together influence food manufacturing across 50 U.S. states and six Canadian provinces. This shows how much food manufacturing output **tends to** increase given the variables of irrigation, population, and total farmland.

Figure 18: Results of the multivariate regression analysis

Regression Statistics	
Multiple R	0.763724502
R Square	0.583275115
Adjusted R Square	0.559233295
Standard Error	18027564445
Observations	56

ANOVA

	df	SS	MS	F	Significance F
Regression	3	2.36538E+22	7.88461E+21	24.26085501	5.89912E-10
Residual	52	1.68996E+22	3.24993E+20		
Total	55	4.05535E+22			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	6915049275	3667588197	1.885448667	0.06496169	-444504862.4	14274603413	-444504862.4	14274603413
Population (#)	2,365	368.8803118	6.410417169	4.30481E-08	1624.464185	3104.889183	1624.464185	3104.889183
Total Farmland (Acres)	113	124.8481038	0.908041935	0.368045258	-137.1587348	363.8933622	-137.1587348	363.8933622
Irrigated Area (Acres)	3,503	1765.359365	1.984395305	0.052500464	-39.28189448	7045.623566	-39.28189448	7045.623566

The summary output above shows the results of the analysis with the following key figures:

- **Coefficient:** How much the outcome (annual food manufacturing sales) is expected to change when the variable (in this case: population, farmland, or irrigated area) increases by one unit, after the model has already accounted for the other variables. For example, if the irrigation coefficient is $3,503, then for each additional irrigated acre within the states and provinces, food manufacturing sales are expected to be approximately $3,500 higher on average. In simple terms, it explains *how much* of a change in food manufacturing sales to expect per unit of irrigation, after adjusting for total farmland and population.[49]
- **P-Value:** How likely it is that observed effect is real or due to random chance. A very low p-value (0.01 or lower) means it is unlikely to be random or that there is likely a real relationship. A high p-value means the effect could simply be noise / unreliable. The result is considered significant if the p-value is less than a chosen threshold, such as 0.05 or 0.10, which means the model is at least 95% or 90% confident the observed effect is real and not due to random chance. In this case, the p-value is 0.053, which should be interpreted alongside confidence intervals and replication evidence to form a reliable conclusion.
- **Standard error:** This represents how much the estimate of $3,500 could change if the study were repeated on many similar datasets. Based on the value of $1,765, two-thirds of hypothetical re-runs would land in the bracket of $1,700 to $5,300 ($3,500 +/- approximately $1,800). In other words, one standard error range is $1,700 to $5,300 (rounded to the nearest $100 per acre). Given the relationship is positive but not exact or deterministic, a range of indicative outcomes has been modeled with low ($1,700), base ($3,500), and high ($5,300) scenarios to demonstrate the sensitivity. Further, policy decisions should recognize that the results could be lower or higher than modeled depending on extraneous factors; and targeted policy can help to foster positive real-world outcomes.

The key takeaways include:

- **Major drivers:** The model **explains about 58% of the variation** in food manufacturing across the regions (R^2), meaning that over half of the differences can be explained by these three variables. Other potential factors may include market proximity, utilities pricing, policy support, labour availability, etc.
- **Population (number):** For every additional person in a state or province, food manufacturing sales are approximately **$2,400 higher** on average (the coefficient value), all else equal. Given a p-value of effectively zero, population is a strong and reliable driver (likely reflecting factors such as workforce, local demand, denser infrastructure). This explains why some regions, such as Ontario, Illinois, and Wisconsin, demonstrate strong food manufacturing despite minimal levels of irrigation.
- **Total farmland (acres):** Given a high p-value of **0.368** (considered to be not statistically significant), more farmland does not have a consistent or meaningful relationship with food manufacturing sales. This

[49] The regression results are subject to the usual limitations of the ordinary least squares (OLS) approach, including potential unobserved factors (e.g., crop type or crop mix) that could influence the relationship. Data to control for these effects were not available within the scope of this analysis.

possibly reflects low-value or extensive crops (e.g., hay, pasture), exported raw commodities that are not processed locally, and/or farmland in areas without adequate processing infrastructure.

- **Irrigated area (acres):** After controlling for population and total farmland, regions with larger irrigated areas **tend to** report higher food-manufacturing sales. The model suggests the increase is approximately **$3,500** higher on average, per additional irrigated acre. Given a p-value of **0.053**, irrigation is on the borderline of being statistically significant (i.e., there is an almost 95% chance the effect is real and measurable). The results should therefore be viewed as *directional* evidence of irrigation's enabling role rather than a precise $/acre return. Furthermore, the time delay between when irrigation was introduced to when there was an observed increase in the food manufacturing sales is not reflected, as the information represents a point in time as opposed to a time-based series of data points.

While an overall relationship between food manufacturing and irrigation exists, the impact is not observed to be consistent across all sub-groups within the food manufacturing industry. When disaggregated into smaller groups (e.g., dairy, grain milling, fruit and vegetable processing, meat processing, and others) the results vary, with some industries showing weak or even negative associations (dairy). The strongest and most consistent positive relationship is observed in the meat processing industry, suggesting that irrigation's benefits may be more concentrated in specific sub-groups and not evenly distributed across the entire food manufacturing industry.

Key Findings and Implications

Based on the observed relationship in the regression model, there is a statistical association between irrigated acreage and food manufacturing output at the state / provincial level. While this does not imply causation, the results suggest that regions with more irrigation tend to have higher levels of food manufacturing activity. For example, a 100,000-acre increase in irrigation is associated (in a historical, aggregate sense) with an estimated increase of $350 million in food manufacturing receipts. This should be interpreted as a correlation rather than a forecast, and it may also reflect a range of underlying factors including regional infrastructure, supply chains, and industry clustering that co-occur with irrigation. This is calculated as $3,500 in food manufacturing receipts per additional acre x 100,000 contemplated acres, with all else assumed to be equal. As a point of reference, Saskatchewan's food manufacturing sales were averaged $6.26 billion (nominal) between 2020 and 2024, so an increase of $350 million would be equivalent to approximately 5.6% of current annual sales.

Table 5: Irrigation and food manufacturing by prairie province and scenario

Prairie Province:	**Saskatchewan**		**Alberta**	**Manitoba**
Scenario:	**Current, as of 2023 (Actual)**	**+ 100,000 Acres (Potential)**		
Irrigation				
Irrigated Area (Acres)	431,000	531,000	1,800,000	73,195
Total Farmland	60,300,000	60,300,000	49,200,000	17,100,000
Irrigated % of Total	0.7%	0.9%	3.7%	0.4%
Food Manufacturing				
Total Annual Receipts ($B)[50]	6.26	6.61	21.52	7.90

Irrigation alone increases raw material reliability and crop diversity, but it will not automatically lead to food manufacturing growth. This means that irrigation is often a catalyst for further food manufacturing but not always a guarantee**.** It shows that irrigation independently boosts food manufacturing, but also that population and its proxies – market access, labour, and infrastructure – are bigger drivers overall. Irrigation must be paired with investment in targeted support, as proximity to urban centers and/or cost-effective and efficient transportation and export access, along with workforce availability, are all important factors to derive the maximum benefit from an irrigation project. In lower-population areas, irrigation can still be powerful if paired with the right regional development incentives and land use planning for food clusters.

[50] Statistics Canada. *Average annual sales in the Food Manufacturing industry (January 2020 through Dec 2024).*

5 Land Value and Capital Gains Taxes

5.1 Introduction

Irrigated land is typically worth more than dryland due to increased crop yields (enhancing productivity), consistent water supply (crucial for successful production and reduces risk of drought or irregular rainfall), extended growing seasons beyond the natural limitations of seasonal rainfall (potentially enabling more than one crop cycle), improved soil quality (preventing salinization or erosion), and the diversification of crops (enabling the introduction of higher-value crops that require specific watering schedules).

5.2 Comparators

The table below shows the historical price per acre by region in farmland values from 2010 to 2024 across the three prairie provinces, according to FCC, including cultivated land, irrigated land, and pastureland. The blue line items highlight the land values in irrigated regions. This indicates that irrigated land is worth approximately 2.4-3.8x as much as dryland when compared within the same regions as well as across the provinces, with a multiple of 2.7x in Saskatchewan specifically.[51] According to FCC, *"Recent dry conditions across the Prairies has led to a robust demand for irrigated land, with interest growing each year. The amount of irrigated land keeps increasing, but market availability of these acres is very limited. The money invested to add irrigation has always been significant, so owners tend to keep it in their portfolio. As a result, irrigated land transactions are limited and irrigated land that comes up for sale usually finds a buyer quickly."*

Table 6: Historical price per acre for farmland by region

Real $K per acre *Year:*	2010	2012	2014	2016	2018	2020	2022	2024
Alberta								
Central	1.9	2.5	2.9	3.6	4.1	4.7	5.5	6.4
Northern	1.5	2.2	2.4	3.1	3.4	3.5	4.0	4.7
Peace	0.8	1.0	1.5	1.9	2.1	2.3	2.7	3.1
Southern	0.9	1.0	1.4	3.0	3.5	4.1	4.6	5.0
Southern (Irrigated)	**3.3**	**5.0**	**6.7**	**9.4**	**10.3**	**10.9**	**14.9**	**18.0**
Saskatchewan								
East Central	0.5	0.7	1.2	1.3	1.5	1.7	2.2	3.2
North Eastern	0.7	1.0	1.5	1.8	1.8	2.2	3.0	4.2
North Western	0.7	1.0	1.4	1.7	2.0	2.1	2.5	3.5
South Eastern	0.7	1.1	1.5	1.6	1.7	1.9	2.5	3.2
South Western	0.4	0.6	1.1	1.6	2.0	2.0	2.2	2.6
West Central	0.6	1.1	1.5	1.6	2.0	2.3	2.8	3.5
West Central and South Western (Irrigated)	-	-	-	-	-	-	**6.3**	**8.2**
Manitoba								
Central Plains – Pembina Valley (CPPV)	1.5	2.2	3.6	4.4	5.0	4.8	5.8	6.6
Eastman	1.3	2.1	2.8	3.5	3.9	4.6	5.3	6.3
Interlake	1.0	1.3	1.6	2.5	2.6	2.9	3.5	4.5
Parkland	0.9	1.3	1.6	2.1	2.3	2.2	2.8	3.3
Westman	0.8	1.2	1.7	2.2	2.6	2.8	3.4	4.1
Westman & CPPV (Irrigated)	-	-	-	-	-	**9.5**	**10.6**	**12.9**

[51] Farm Credit Canada. Farmland Values Report (2024). Retrieved from: https://www.fcc-fac.ca/en/knowledge/economics/farmland-values-report.

5.3 Capital Gains Taxes with Irrigation

Introduction

An increase in land value can drive higher capital gains taxes for governments due to several interconnected economic principles and tax structures. Capital gains tax is imposed on the profit that individuals or entities earn from the sale of an asset when the proceeds of the sale exceeds the adjusted cost base, which is typically the original purchase price plus certain qualifying costs. In the context of land, this means that if a farmer sells a plot of land that has appreciated in value, they may be liable to pay tax on the profit earned from that sale. As land values rise, the potential profits from selling that land also increase. This higher sale price directly translates to larger capital gains. The government taxes that profit at the applicable marginal federal and provincial tax rates, which can significantly increase government revenue. The current inclusion rate is 50%, therefore 50% of the capital gain is included in income and taxed at a taxpayer's marginal tax rate. The potential circumstances for each landowner would vary. Therefore, the description below is intended for illustrative purposes only and may not reflect the nuances of individual circumstances. The taxation rules are complex and also remain subject to change and therefore reflect a point in time (May 2025).

Limitations and Considerations

While increased land value leads to higher potential taxes, the realization of these taxes typically depends on the actual sale or transfer of the land. Therefore, if landowners hold onto their properties without selling during their lifetime, the taxation of capital gains are not realized.

An additional limitation is the Lifetime Capital Gains Exemption ("**LCGE**"), which is a crucial tax provision for many farmers in Saskatchewan, allowing them to shelter a significant portion of their capital gains from taxation upon the sale of their qualified farmland. The LCGE allows individuals to exclude a certain amount of capital gains from their income when they sell qualifying properties. For 2024, the lifetime exemption amount for qualifying farmland in Canada is up to $1.25 million for individuals. This means if a farmer sells their farmland and realizes a gain of $1.25 million or less, they may not be subject to tax on that amount of the capital gain.

For farmland to qualify for the LCGE, it generally must meet specific criteria. The rules are complex, but in summary: (1) the land must be used mainly for farming purposes; (2) it must be owned by the individual for at least 24 months before sale; and (3) the farmer must be actively engaged in farming activities on that land during that period. The rules are intended to ensure that the exemption is aimed at genuine farmers and avoids speculative gains from land trading. Eligibility for the LCGE is generally tied to ownership. If only one spouse is the beneficial owner of the property, that individual is typically the one who can claim the LCGE upon the sale of that property. If both spouses are co-owners of a qualifying property, even if only one is on the title, both might be able to claim their respective exemptions, depending on the circumstances of the acquisition or transfer.

In certain situations, individuals that are subject to a reduction of tax due to the LCGE may be subject to Alternative Minimum Tax ("**AMT**"). The AMT is a parallel tax calculation designed to ensure that taxpayers who benefit from preferential tax deductions, credits, or exemptions still pay a minimum amount of tax. Although the LCGE can eliminate regular tax on a qualifying capital gain, it does not fully eliminate income for AMT purposes. This typically means that an individual with a large LCGE claim will pay some AMT in the year of sale. AMT that is paid becomes a credit that can be carried forward for up to 7 years and applied against future tax liabilities.

There are additional provisions that would mitigate the tax on a transfer of qualifying farming property to the next generation on a tax deferred basis. These rules can be utilized on a transfer of land either during an individual's lifetime or on a transfer of ownership due to the death of the owner. In certain qualifying situations, typically a transfer of land to a child or grandchild, this would allow for a transfer of qualifying farming property from one individual to another without incurring a tax on the capital gain.

Illustrative Example

The table below compares three illustrative taxation scenarios. The lower tax case assumes a smaller farm with a higher original cost basis (purchase price and on-farm equipment), and the highest possible remaining LCGE of $2.5M ($1.25M from a marital couple). The higher tax case assumes a larger farm with a lower cost basis and no remaining LCGE. In the middle of these two scenarios is the base case with what are assumed to be typical or median figures. As the impact of AMT is dependent on the individual's situation, and can be recovered over time, the impact has not been included in this analysis. This indicates that without irrigation, the capital gains taxes would be approximately $39M, whereas the taxes generated with irrigation would be $113M, representing an increase of approximately $74M in current / real dollars.[52]

Table 7: Illustrate land capital gain taxation scenarios

Scenarios:	Lower Tax Case	Base Case	Higher Tax Case
General Assumptions			
Farm size[53]	800 acres	1,800 acres	2,800 acres
Year of land purchase	2019	2009	1999
Original cost basis	$2,100 per acre[54]	$500 per acre[55]	$400 per acre[56]
Original purchase price (ac x $/ac)	$1.68M	$0.90M	$1.12M
Remaining LCGE	$2.50M	$1.25M	-
Capital Gains Taxes without Irrigation			
Current land value	$2,600 per acre[57]	$3,050 per acre[58]	$3,500 per acre[59]
Total proceeds from sale of land	$2.08M	$5.49M	$9.80M
Less: Original purchase price (cost basis)	($1.68M)	($0.90M)	($1.12M)
Capital gain from sale of land	$0.40M	$4.59M	$8.69M
Less: Applicable LCGE	($0.40M)	($1.25M)	-
Capital gains net of LCGE	-	$3.34M	$8.68M
Taxable capital gains (50% inclusion rate)	-	$1.67M	$4.34M
Marginal tax rate[60]	47.5%	47.5%	47.5%
Resulting estimated capital gains taxes	-	$0.79M	$2.06M
Extrapolated to a region of 100,000 acres	-	*$44.07M*	*$73.63M*
Average of the three scenarios		**$39.23M**	
Capital Gains Taxes with Irrigation			
Current land value[61]	$7,200 per acre	$8,200 per acre	$9,200 per acre
Total proceeds from sale of land	$5.76M	$14.76M	$25.76M
Cost basis			
Original cost basis	$1.68M	$0.90M	$1.12M
Investments in irrigation equipment ($/ac)	$3.0K	$1.5K	-
Total investments in irrigation equipment ($)	$2.40M	$2.70M	-
Adjusted cost basis[62]	$4.08M	$3.60M	$1.12M
Capital gain	$1.68M	$11.16M	$24.64M
Less: Applicable LCGE	($1.68M)	($1.25M)	-
Capital gains net of LCGE	-	$9.91M	$24.64M
Taxable capital gains (50% inclusion rate)	-	$4.96M	$12.32M
Marginal tax rate[60]	47.5%	47.5%	47.5%
Resulting estimated capital gains taxes	-	$2.35M	$5.85M
Extrapolated to a region of 100,000 acres	-	*$130.76M*	*$209.00M*
Average of the three scenarios		**$113.25M**	

[52] In reality, land transactions would occur over time, and inflation would impact the land values and the LCGE in the future.
[53] Average of 1,788 (+/-1,000). Retrieved from: https://pubsaskdev.blob.core.windows.net/pubsask-prod/83874/Agriculture%252BStatistics%252BPocket%252BReference.pdf
[54] Average land value in the South Western and West Central regions of Saskatchewan in 2019, rounded to nearest $100
[55] Average of the low and high original cost basis assumptions (mid-point), rounded to the nearest $100
[56] Average land value in the South Western and West Central regions of Saskatchewan in 1999, rounded to nearest $100
[57] Lower of the two areas with contemplated development (South Western and West Central) as of 2024
[58] Average of the low and high original cost basis assumptions (mid-point)
[59] Higher of the two areas with contemplated development (South Western and West Central) as of 2024
[60] The marginal tax rate is assumed to be the 2025 tax rate applicable at the highest marginal tax bracket in Saskatchewan of 47.5%. This illustration does not account for the 4% Saskatchewan Farm and Small business Capital Gains Tax credit, which may apply in certain situations to reduce the marginal tax rate to 43.5%.
[61] Irrigated land value in the South Western and West Central areas of Saskatchewan as of 2024
[62] This example does not factor in any tax implications of depreciation, recapture or terminal loss on the irrigation equipment

6 Illustrative Example

6.1 Introduction

Purpose

The purpose of this section is to apply the information gathered related to livestock, food manufacturing, and capital gains to the **Westside Irrigation Rehabilitation Project ("WIRP")** as an illustrative example of the economic value of irrigation.

Historical Context

Saskatchewan is known for its valuable agricultural land and as a key source of global food exports. In the early 1900s, the South Saskatchewan River Project was initiated with the vision of flood irrigating 500,000 acres of land and developing hydroelectricity. The Gardiner Dam was constructed from 1958 to 1967, followed by the partial construction of the west main canal and associated pumpstation. The partially constructed infrastructure (including the pump station, westside main canal, and the north dam of the Conquest reservoir) were intended to convey water for flood irrigation up to the Swanson-Ardath area, although it is not clear how this would have been envisioned to be accomplished when the pump station and canal were originally limited to 21 m^3/s in flow.

The construction of the irrigation infrastructure was then halted in 1973. Since that time, only a small portion of the partially complete canal and pumping infrastructure have been used for irrigation. Today, after 50 years with minimal maintenance and renewal, the west main canal and control structures require significant rehabilitation and supplementary construction to unlock additional irrigation potential.

While the WIRP components were largely incomplete, the Eastside Pumping Station was developed out of Lake Diefenbaker. It is now fully allocated, supporting four mines, several communities, and 13 wetland projects.

Work Completed to Date

In 2020, the GOS announced the decision to invest in supplementary planning activities for the LDIP. The 2020 announcement defined a vision to achieve 500,000 acres of additional irrigated acres in Saskatchewan through the Westside Irrigation Project ("**WIP**") and the Qu'Appelle South Water Conveyance Project ("**QSWCP**"). Since the announcement, ongoing investment into planning activities have occurred including feasibility studies and business cases for evolving project scopes related to the LDIP. Notably Western Economic Diversification Canada released a report, Prairie Prosperity: A Vision for the Management of Water Across Saskatchewan and the Prairies (September 2020) that recommended, "The Governments of Canada and Saskatchewan should advance the Upper Qu'Appelle Canal and the WIP"; thus resulting in the WIRP business case.[63] The announcement in 2020 was related to investments in preliminary planning activities to validate, refine, and supplement the key attributes of the LDIP, including scope, technical, and cost-related considerations. Since then, subsequent investments in technical, financial, and economic development work have been conducted. These were intended to further understand the LDIP, with an initial focus on the WIP, and to refine and validate studies and analyses related to the WIP that have occurred over the past 50 years.

[63] Western Economic Diversification Canada. *Prairie Prosperity: A Vision for the Management of Water Resources across Saskatchewan and the Prairies.* Retrieved from: https://www.wd-deo.gc.ca/eng/20090.asp.

Recent Information Gathered

In 2024/2025, the GoS engaged Prairie Engineering Partners ("**PEP**"), including Stantec and MPE, for further cost definition and the development of a staging / development plan. The report recommends that the GoS pursue a staging plan that maximizes the total acres available and the gravity acres available at the onset of the project. This is said to increase the potential for early uptake, minimize overall construction time, reduce cost escalation risk, and reduce risk that political or economic factors could disrupt project completion. This will include construction of the WPS, the entire WMC up to Conquest Reservoir and the construction of Conquest Reservoir.

There are approximately 168,000 acres in the total development area. Of this, there are approximately 120,000 acres of potentially irrigable cropland. PEP designed 29 pipeline layouts for a total 109,000 new acres of potentially irrigable cropland. Due to the capacity of the existing WPS and availability of storage in the proposed Conquest Reservoir, the system can service up to 100,000 total acres. It was determined that constructing the WMC from Lake Diefenbaker to Conquest Reservoir along with the WPS as part of one continuous project will increase the total acres and gravity acres available at the onset of the project. Increasing availability of water to the most acres and the most cost-effective acres will increase the potential for quicker uptake by producers.

6.2 Major Components

The WIRP prioritizes rehabilitation of legacy infrastructure. It is critical to rehabilitate existing infrastructure and systems prior to broader investments in distribution infrastructure to enable an extended project lifecycle of 50+ years. As part of the work conducted from 2021 through 2023, a supplemental review of existing infrastructure was completed. Given the age, condition, and current standards, significant rehabilitation of current infrastructure would be required to achieve the Project's objectives. Based on preliminary technical studies and currently known information, there are five major components that make up the WIRP scope of work.

Pump Station
Rehabilitation of the existing main pump station in Coteau Bay ("Westside Pump Station" or "WPS") involving refurbishment of a large concrete substructure, expansion of pumping equipment, and consideration of inflow and outflow mechanisms to enable the movement of water.

West Main Canal
Rehabilitating and lining the existing WMC from the Coteau Bay Pumping Facility to Conquest (approximately 47 kilometers). The WMC would be designed to support a range in flow capacity from ~32 cubic meters per second.

Balancing Reservoir
Constructing a balancing reservoir near Conquest. The main purpose of the reservoir is to provide off-peak storage that supports the balance of water supply and irrigation demand, reducing the required capacity of the ongoing supply.

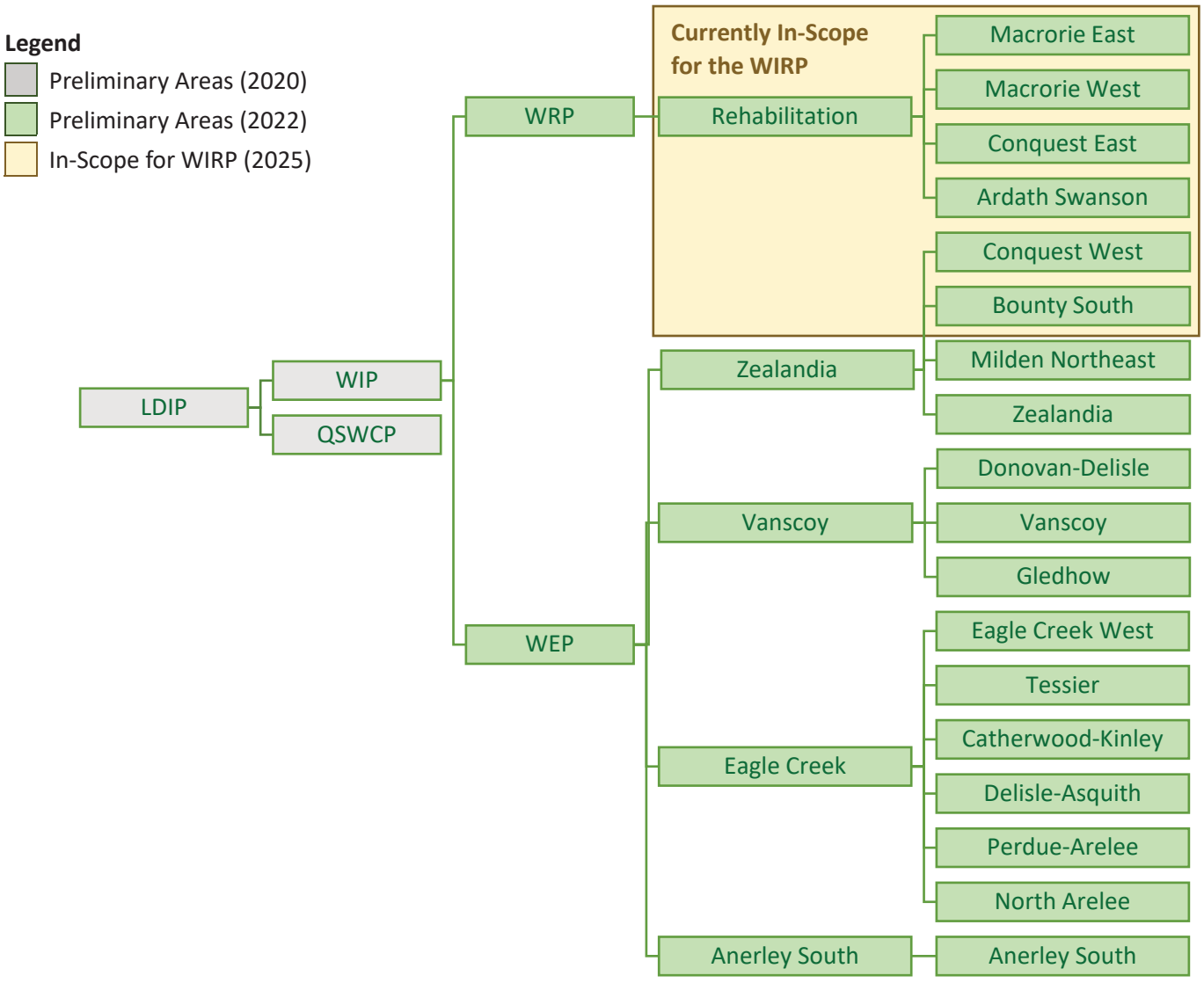
Distribution System
Distribution infrastructure includes a combination of both pumped and gravity systems. The project would involve further analysis to determine the number of pumped and gravity systems required for the scope area. Activities for the distribution work would include the installation of pressurized, buried pipelines, which will provide distribution to approximately 100,000 acres.

Instrumentation, Controls, Communications, and Reporting (ICCR)
The Instrumentation, Controls, Communications, and Reporting (ICCR) would include a range of infrastructure to connect, operate, and control the other major components of the project.

6.3 Project Definition

The LDIP has an objective of achieving 500,000 acres of additional irrigated acres. The preliminary areas within the full LDIP include both the original WIP and Qu'Appelle South Water Conveyance Project ("**QSWCP**"). The WIP was preliminarily divided into two areas: The WRP and the WEP. The defined scope for the WIRP includes the full Rehabilitation area from the WRP, along with part of the Zealandia area from the WEP. The graphic illustrates the areas and interdependencies within the LDIP, indicating which components are currently considered in-scope.

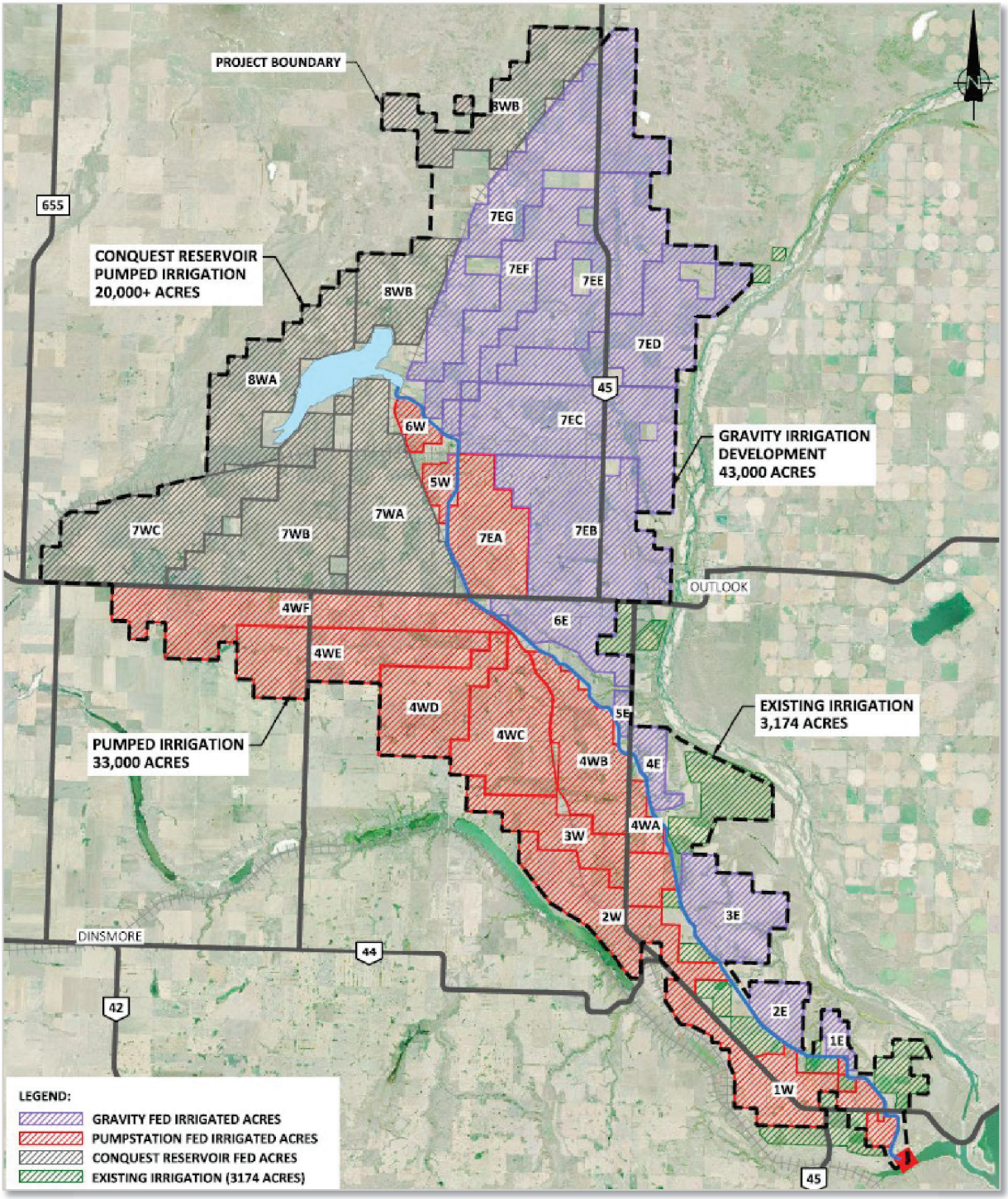
Figure 19: In-scope areas of the project



6.4 Geographic Area

The WIRP scope spans across 29 'Potential Development Areas' ("**PDAs**"). A visual summary of the WIRP scope is shown in the image below.[64]

Figure 20: Map of the WIRP regions



[64] Stantec / PEP. *Technical Memorandum (May 2025).*

6.5 Qualitative Benefits

The development of Irrigation projects presents a generational opportunity for Saskatchewan. The following benefits have been identified and defined that could be achieved or enabled through the project.

- **Irrigation investment helps sustain Saskatchewan's reputation as a globally trusted source of food and ingredients, in addition to other commodities**
    - Potentially increasing revenue and yields at least 50%, dependent on crop, when the land has been irrigated relative to dryland.
    - Opportunity for expanding production of high-value crops that require irrigation, such as vegetable crops, as well as forages that can support increased livestock production.
    - Enhancing and maintaining consistency in production, potentially saving significant costs from production losses during drought conditions, which are expected to occur more frequently in the future.[65]
    - Potentially increasing in Saskatchewan's reputation for providing a consistent quality of crops and positions the province as a reliable/dependable supplier.
    - Potentially reducing crop insurance risk due to increased stability. For example, a 2001-2002 drought caused an estimated $5.8 billion decrease in Canada's GDP, with the most significant impacts being to the Prairie provinces ($1.6 billion specifically in Saskatchewan).
- **Increased local jobs, investment, participation of Indigenous businesses, value of exports, and prairie resilience:** As described later in this document, the WIRP project is estimated to increase (incremental) GDP by $12.9 billion (real) over 50 years and provide incremental employment of 80K+ in total person years of employment (or over 1,650 jobs annualized).
- **Expanded awareness of opportunities for agri-food processing in Saskatchewan and increased investment:** Similar jurisdictions have experienced significant increases in investment in value-added activities following irrigation expansion. Based on the quantitative analysis, it is estimated that the WIRP alone will increase food processing in Saskatchewan by approximately 4% (+6 food processors). This means more jobs and investment in Saskatchewan.
- **Engagement and participation of Indigenous businesses:** This project presents Indigenous communities with economic development opportunities. These include participation in planning, design, construction, and maintenance. Additionally, it could involve agricultural production, enhanced value through processing, and support of the industry ecosystem through business services and utilities.
- **Municipalities investing in community infrastructure (e.g., transportation and wastewater systems) to further enable economic growth (e.g., food processing):** It is anticipated that industry and community development would support expanded community infrastructure, such as water and waste wastewater systems.
- **Participation and growth of Saskatchewan's agri-tech sector to enable sustainability and innovation:** Future project design and engineering activities may consider opportunities to integrate technology into the construction and operations of the irrigation infrastructure enhancing the safety, sustainability and efficiency of the irrigation systems for producers, communities and operators.

[65] Saskatchewan Research Council. Natural Hazards: What about the Future? Saskatchewan Flood and Natural Hazard Risk Assessment, in collaboration with R. Halliday & Associates, Wheaton Consulting, Walker Projects, and the University of Saskatchewan. Retrieved from: https://www.src.sk.ca/sites/default/files/files/resource/e%20Future%20Climate%20Scenario%20Wittrock%20et%20al%20Final.pdf.

6.6 Quantitative Benefits

Work to date has assessed the influence of increased crop production expenditures on GDP, employment, and taxes, using the 100,000-acre irrigation project as a case study. These multipliers represent GDP impact and employment generated across the industry due to enhanced crop production in Saskatchewan. They are based on the potential processing mix in Saskatchewan and the contributions made to the provincial and broader Canadian economies. In addition to the changes in crop expenditure, the analysis also considers the economic impact of value-added investments due to irrigation.

These multipliers, while subject to change across production years, serve as a benchmark for similar production years and as an indicator of the irrigation project's impact on the local economy. Both Saskatchewan and Canadian multipliers are provided, with the latter covering a broader geographic area. These multipliers interpret how a dollar of new spending in one industry affects output, GDP, employment, taxes, and other economic metrics. They estimate the total effects a change in activity may have on the economy, which could be triggered by new construction projects, public spending, policy adjustments, or other factors. Please refer to 'Quantitative Analysis Assumptions' in the Appendix for detailed assumptions and definition of terms.

Analysis Approach

To calculate the economic impact, two scenarios were modelled. The first is a 'Current State' scenario whereby the existing dryland activities are assumed to continue to occur in the WIRP region. This is used as the base case, against which a hypothetical WIRP can be compared. This scenario includes the expenditures associated with growing dryland agriculture in the existing region (e.g., seeds, fertilizer, labour, etc.). The second scenario is a 'Future State' scenario that considers the estimated expenditures for the project. This includes the initial capital costs (e.g., engineering and construction of the canals, pumping stations, earthworks, other professional services, etc.), the operating costs (energy and non-energy), on-farm equipment necessary to irrigate fields, operating costs for the farms (e.g., seeds, fertilizer, labour, etc.), and estimated increases in food manufacturing (e.g., processing) that are assumed to be directly resulting from the project.

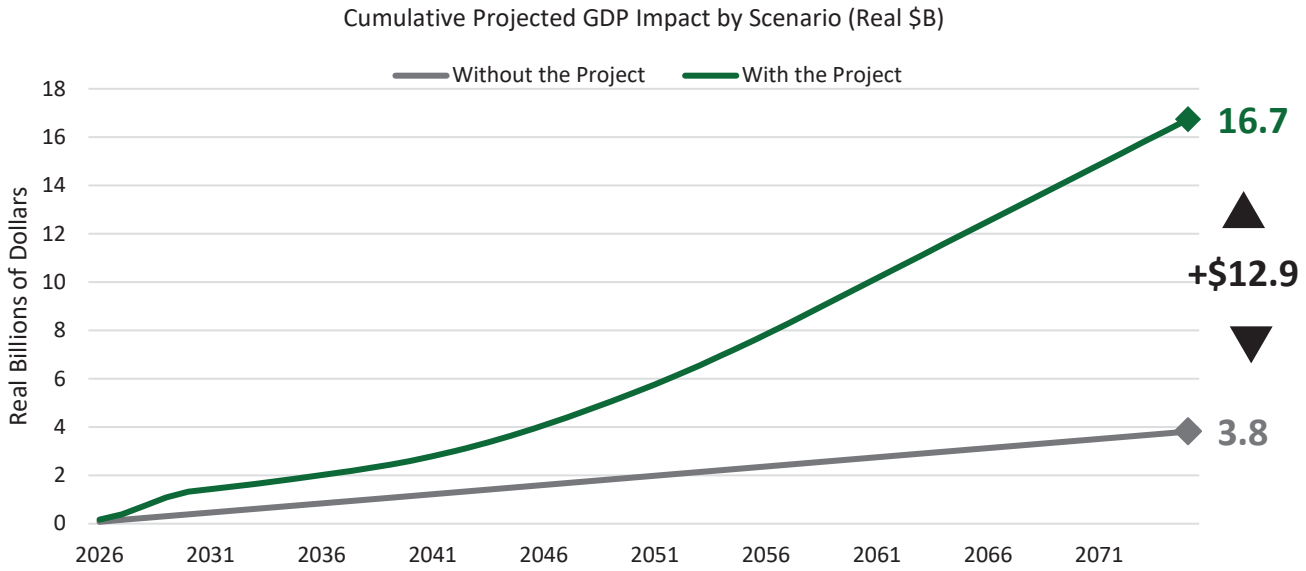
Summary Outputs

The table and chart below illustrate the estimated economic impact associated with the current and future state scenarios over the 50-year analysis period, indicating that the WIRP is estimated to drive almost $13B in incremental GDP impact. This is the difference between the total GDP if the WIRP were to never occur (approximately $4B) and the estimated GDP assuming the WIRP does occur (approximately $17B). In addition, the WIRP is estimated to generate an incremental increase of $1.3B in taxes and an annualized increase of over 1,650 jobs or 80K+ in total person years of employment over the 50-year analysis period. While the total output (the overall value of goods and services, including both final and intermediate goods) is important to consider, GDP is more critical from a perspective of economic impact, as GDP specifically measures the value of final goods and services sold to end users, avoiding the double counting of intermediate goods and services.

Table 8: Current and future state projections

All of Canada	**Current State** (Without the Project)	**Future State** (With the Project)	**Difference** (Incremental Impact)
Economic Activity			
Total Output ($B)	9.91	42.38	**32.47**
GDP Impact ($B)	**3.82**	**16.74**	**12.92**
Taxes			
Taxes on Products	0.16	0.71	**0.55**
Taxes on Production	0.31	1.00	**0.69**
Capital Gains on Land Value[66]	0.04	0.11	**0.07**
Total	**0.51**	**1.82**	**1.31**
Employment			
Person Years of Employment (K)	24.1	107.0	**82.9**
Average Annual Jobs (#)	482	2,140	**1,658**

Figure 21: Cumulative projected GDP over time by scenario ($B)

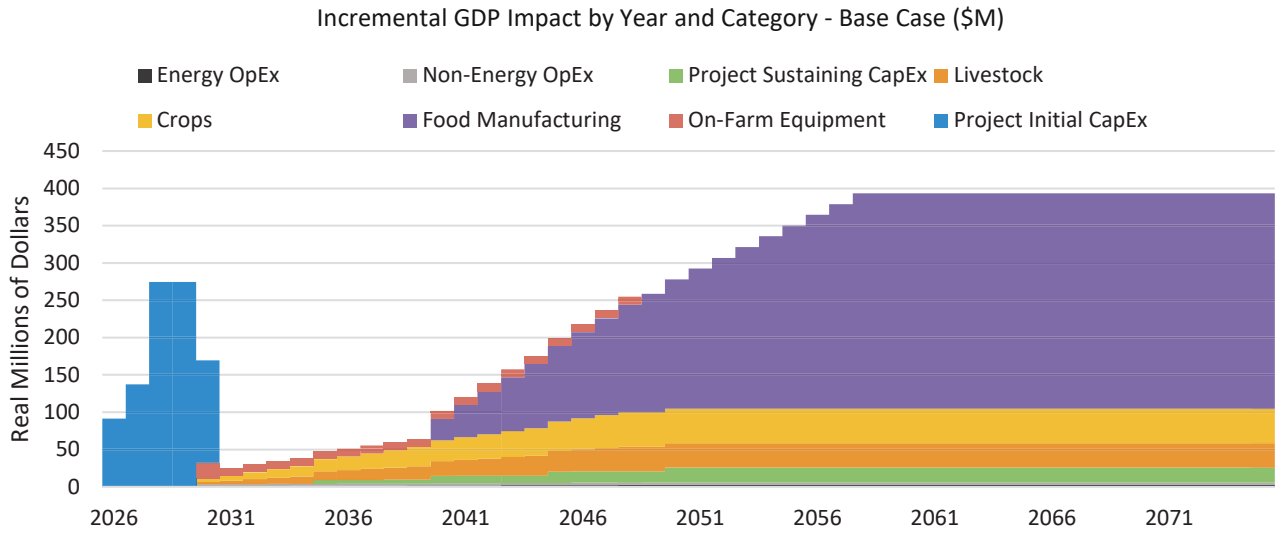


[66] Conservatively assumes the land in the region is sold / transferred one time over the 50-year analysis period. Calculated as the difference between the estimated capital gains taxes that would be generated **with the project** over the next 50 years ($113 million), minus the estimated capital gains taxes that would be generated **without the project** ($39 million) in that same timeframe, resulting in a net increase of $74 million ($113 million - $39 million), shown as a rounded figure of $0.07 billion in the table. See the Capital Gains section for more information.

Key Drivers

The chart below shows the key drivers of the incremental GDP impact by year and category (base case).

Figure 22: Incremental GDP impact by year and category ($M)



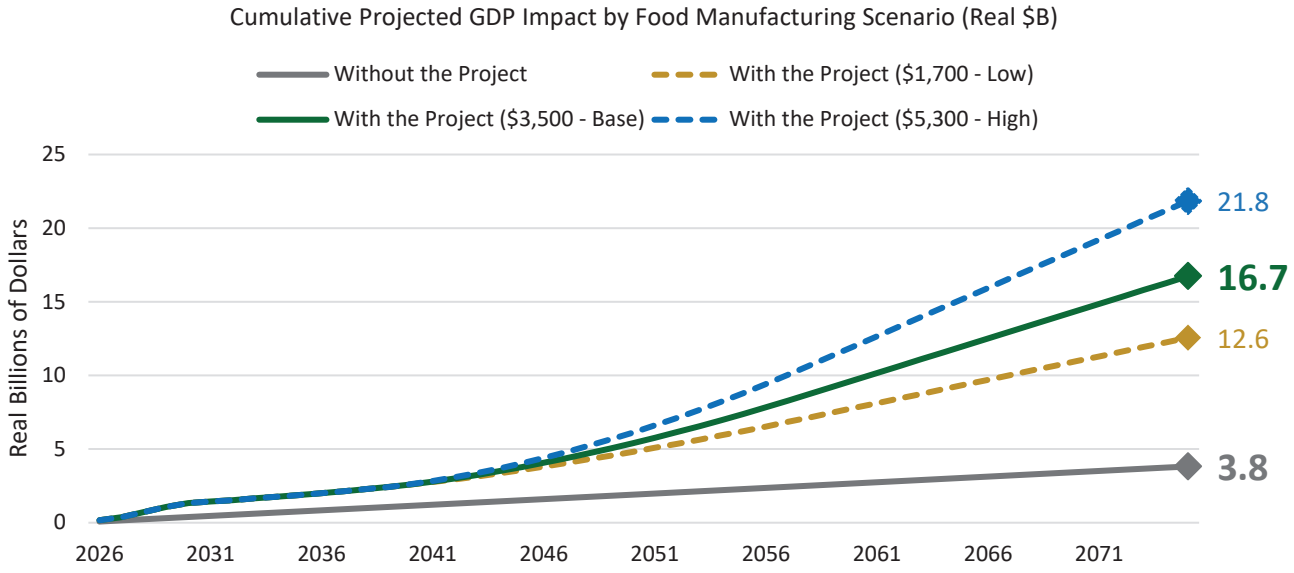
The key inputs and considerations are described below.

- **Project Initial CapEx:** Based on a Class 3 Estimate from PEP as of May 2025 ($950M).[67]
- **On-Farm Equipment:** Assumes $2,500 per acre based on input from the Ministry of Agriculture. This excludes any additional on-farm power investments that may be required to support pumping.
- **Project Sustaining CapEx:** Assumes allowances as a percentage of the initial CapEx equal to 0.5% for the first 5 years, 1.0% for years 6-10, 1.5% for years 11-15, and 2.0% for years 20+.
- **Livestock:** 1.1% of total cattle and pigs are located in the RMs that would be impacted by the project, so it is assumed that 1.1% of the total provincial livestock and livestock product receipts is attributable to this region ($37M).[68] An analysis of cattle and pigs across the province indicates that irrigated RMs have approximately 2.1x the livestock of dryland RMs. Therefore, it is assumed that the current $37M could increase to $77M (2.1x) per year at full absorption (scaled with absorption over time) with the introduction of irrigation in the region. This assumes the incremental expansions scenario described in the livestock section of the document; the feedlot scenario would be higher.
- **Crops:** Based on the current mix of crops found in dryland versus irrigation regions.
- **Food Manufacturing:** Assumes an increase of $3,500 per irrigated acre (based on the linear regression model), scaled with irrigation absorption but with a ten-year delay reflecting the need for private sector planning and construction. Based on the observed relationship across 50 U.S. states and six Canadian provinces, an additional 100,000 acres correlates with a $350M increase in food manufacturing output at full absorption, which would increase Saskatchewan's output in this sector from $6.3B to $6.6B.
- **Energy OpEx:** The operating costs estimated for pumping water in the irrigation scheme, assumed to be covered by producers' annual fees.
- **Non-Energy OpEx:** The operating costs estimated for administrating the irrigation scheme, assumed to be covered by producers' annual fees.

[67] In alignment with the Class 3 Estimate from 2025, this excludes legal costs, right of way and land acquisition, easements, owner contingency and management costs, Macrorie Irrigation District shutdown, financing, and escalation.
[68] Statistics Canada. *Farm cash receipts, annual.* Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210004501. Includes livestock and livestock product receipts only from 2020 to 2024, adjusted for inflation using the Consumer Price Index (CPI) during that period. This results in an annual inflation-adjusted average of $3.3 billion, and 1.1% of the total is equal to approximately $37 million per year in total output.

Food Manufacturing Scenarios and Sensitivity

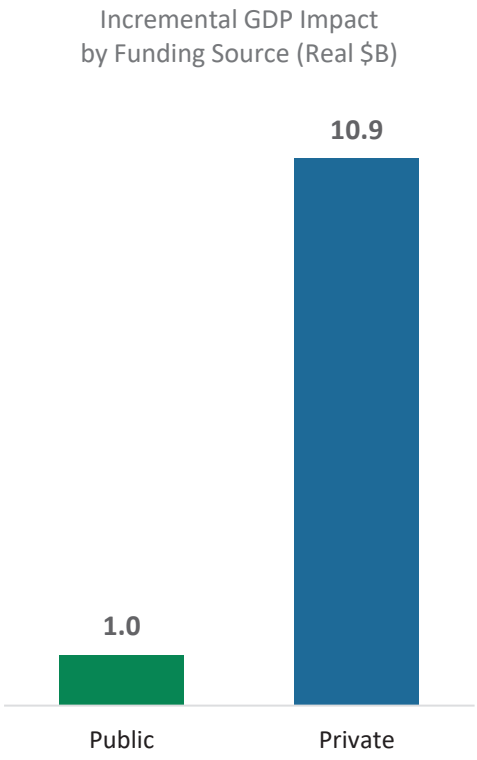
The food manufacturing section explains that for each additional irrigated acre, food manufacturing sales are expected to increase by approximately $3,500, on average, but ranging from $1,700 to $5,300 given the standard error of approximately plus or minus $1,800 per acre. Therefore, the chart below illustrates the long-term impacts associated with these lower or higher ranges to demonstrate the sensitivity of this assumption. This indicates the incremental GDP over time could be between $13B to $22B (an increase of $9B to $18B, rounded).



Catalyzing Private Investment

The irrigation infrastructure project exemplifies the kind of nation-building investment the federal government has committed to under its strategy to catalyze private investment and grow a high-value, resilient Canadian economy. Funding proportions have not yet been determined. However, for illustrative purposes, if it is assumed that governments will cover a portion of the initial capital costs and sustaining capital costs (100% of conveyance and 30% of distribution for illustrative purposes), then the remaining GDP contributors would be covered by private investment – including livestock and crop farmers and food manufacturers. This includes irrigation equipment purchased by new irrigators, on-farm crop and livestock activity, food manufacturing construction and operations, irrigation operating costs, and a portion of the initial capital and lifecycle costs. In real dollars, this is equivalent to **$1.0 billion in government costs** over the analysis period and **$10.9 billion in private investment**. In other words, catalyzing $11 of private investment for every $1 of public investment.[69]

Figure 23: Incremental GDP impact by funding source ($B)



[69] Conveyance costs include the Westside Pump Station (WPS), Westside Main Canal (WMC), and Conquest Reservoir; distribution costs include pipeline and distribution pump stations.

Cost-Benefit Ratio

The cost-benefit profile of the irrigation investment can be examined through several lenses.

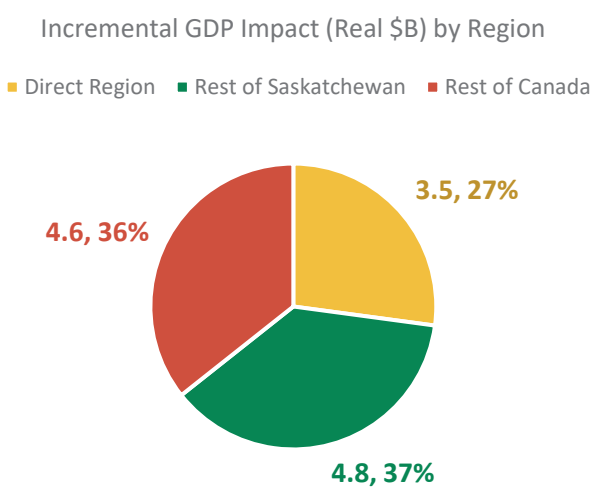
1. **Fiscal Perspective (Government Tax Revenues vs. Expenditures):** From a fiscal standpoint, government expenditures include the initial capital investment and a share of sustaining capital over the analysis period. On the revenue side, incremental tax contributions are projected to rise from approximately $0.51 billion without the project to $1.82 billion with the project—an estimated increase of $1.3 billion. While this exceeds the projected public contribution of approximately $1 billion over the analysis period, assuming the same cost-share described in the prior section, the fiscal benefits accrue gradually, whereas most expenditures occur upfront. Accordingly, the fiscal return profile is extended, with realized benefits depending on long-term production levels, land value changes, and taxation.
2. **Time Horizon:** The choice of analytical horizon has a significant effect on outcomes. Over a 30-year period, the investment cost remains fixed, but there is less time for benefits to accumulate. Over a 50-year horizon, which forms the basis of this assessment, the relationship between costs and benefits is more favourable. Beyond 50 years, forecasts become increasingly uncertain due to macroeconomic, environmental, and technological factors. Nevertheless, international experience suggests that irrigation systems typically operate well beyond this period, with some original designs (expanded upon over time) still in use after more than a century. This indicates the potential for benefits to persist beyond the formal study horizon, even if they are difficult to quantify with confidence.
3. **Broader Economic Impacts:** Looking beyond fiscal returns, the project is projected to have a notable effect on economic activity. Total output over the 50-year period is estimated to rise from $9.9 billion without the project to $42.4 billion with it. However, total output can involve double counting, so GDP is a more conservative and widely accepted measure. Under this measure, GDP is projected to increase from $3.8 billion to $16.7 billion, an incremental gain of approximately $12.9 billion. These impacts are expected to be primarily within Saskatchewan but extend into the wider Canadian economy through supply chain and consumption effects.
4. **Enabling Infrastructure and Non-Fiscal Returns:** Irrigation infrastructure can also be considered in the context of enabling infrastructure, similar to transportation networks or energy systems. In such cases, the rationale for public investment extends beyond direct fiscal return to include productivity improvements, enhanced land use, and food security. These factors, while more difficult to quantify in monetary terms, are central to the rationale for many forms of infrastructure investment.
5. **Innovation and Spillovers:** Finally, the potential for longer-term innovation and spillover effects is relevant. Concentrated investment in irrigation may support the development of new farming and manufacturing technologies, data-driven management and optimization tools, and ancillary industries. These outcomes are inherently uncertain and have not been quantified in this analysis, but they represent a category of benefit that may accrue over time.

The analysis suggests that while direct fiscal returns are modest and long-term in nature, the broader economic effects are substantial. Given projected GDP gains of nearly $13 billion, evidence of long-lived infrastructure performance internationally, and potential but unquantified spillover effects, the project's cost-benefit profile extends beyond tax revenues alone. The extent of these benefits depends on assumptions regarding time horizon, climate, and macroeconomic conditions, all of which warrant thoughtful consideration.

Impact by Region

The chart to the right shows the estimated incremental GDP with the project by region. It is expected that slightly over one-third of the GDP impact will be realized outside of Saskatchewan (36%). The remainder would be within Saskatchewan (64%) – with 27% of that total from within the direct region with irrigation and 37% throughout the rest of Saskatchewan. This is based on assumptions related to from where the materials would be sourced and where the work would be performed.[70]

Figure 24: Incremental GDP impact ($B) by region



Irrigation as Enabling Infrastructure

One of the benefits of irrigation infrastructure is in the economic activity it unlocks beyond only the direct return in tax revenues. By providing reliable water access, irrigation supports agricultural diversification, stabilizes yields, and enables higher-value production. This, in turn, can catalyze private investment across the agri-food value chain, from primary production to processing and export. It can be similar to transportation networks in the way that irrigation infrastructure is an enabler, laying the foundation with the right conditions for long-term economic growth.

Evolution of the Estimates

Previous analyses have been conducted to quantify the impacts of the WIRP. The key differences in this study are attributable to the inclusion of livestock (given more information and research), refinements to the project scope (lower capital costs and higher number of irrigated acres), and supplementary analysis regarding the impact of irrigation on food manufacturing. For food manufacturing in particular, a conservative approach was applied in past analyses to assume that an increase in irrigation would be attributed to a 20% increase in food manufacturing count, along with assumed operating costs and capital costs for those food manufacturers. Scenarios showing as little as 0% and as high as 40% were also used to show the sensitivity of the outputs to this conservative assumption. The subsequent analysis of U.S. states and Canadian provinces has identified that there is a stronger relationship between these two variables than what was conservatively assumed for the purpose of modelling scenarios in the past, even after controlling for population and total farmland across the 56 regions. These refinements reflect the normal progression of major capital projects, where analysis and considerations are refined as scope, data, and stakeholder input advance.

[70] Assumes the following order-of-magnitude attributions to the direct region by cost category: 2/3 Project Initial CapEx (primarily performed on-site with materials and services from elsewhere), 3/4 Project Sustaining CapEx (primarily performed on-site), 1/3 Energy OpEx (with most of the energy sourced from outside of the region), 1/2 Non-Energy OpEx (with half of the work performed in the region), 1/5 Irrigation Equipment (with equipment being manufactured outside of the direct region), 4/5 Crops and Livestock (with most of the work performed in the region), and 1/5 food manufacturing (with most of the food manufacturing activity assumed to be happening closer to or within the larger city centres of Regina and Saskatoon).

Appendices

A. Key Inputs and Assumptions
B. Analysis Limitations
C. Potential Questions and Answers

Appendix A | Key Inputs and Assumptions

The following tables describe the key inputs and assumptions used to illustrate estimate the quantitative benefits.

General Assumptions

Input	Value	Note / Rationale
TIMING		
Analysis duration (years)	50	Analysis assumption
Analysis start year	2026	Analysis assumption
SCOPE		
Area (acres)	100,000	As described in a study delivered to WSA from Prairie Engineering Partners ("**PEP**"), comprised of Stantec and MPE.
Uptake rates (%)	Year 1: 10% Years 2-19: 5%	Begins when the construction reaches substantial completion and ends when 100,000 total acres are irrigated

Project Assumptions

Input	Value	Note / Rationale
ONE-TIME DEVELOPMENT COSTS		
Total one-time CapEx ($B)	0.95	As described in a study delivered to WSA from Prairie Engineering Partners ("**PEP**"), comprised of Stantec and MPE.
Hard (%)	*1.00*	In alignment with the proportions estimated for the full WIP
Soft (%)	*0.15*	In alignment with the proportions estimated for the full WIP
Cost allocation by year	2026: 10% 2027: 15% 2028: 30% 2029: 30% 2030: 15%	Analysis assumption
SUSTAINING CAPEX / LIFECYCLE COSTS		
Annual allowance by asset age (% of hard costs)	Years 0-4: 0.0% Years 5-9: 0.5% Years 10-14: 1.0% Years 15-20: 1.5% Years 20+: 2.0%	Based on preliminary analysis in 2022 by Clifton showing a total annualized cost that is equivalent to approximately 1.5% of the direct costs over the life of the asset; assumed to increase gradually over time as the assets age
OPERATING EXPENSES		
Energy OpEx ($/acre)	23	Estimated by the Ministry of Agriculture based on an analysis of other irrigation districts in Saskatchewan
Fixed (%)	*25*	Analysis assumption
Variable (%)	75	Analysis assumption
Driver	Uptake	Analysis assumption
Non-Energy OpEx ($/acre)	$30	Estimated by the Ministry of Agriculture based on an analysis of other irrigation districts in Saskatchewan

Input	Value	Note / Rationale
Fixed (%)	75	Analysis assumption
Variable (%)	*25*	Analysis assumption
Key driver	Uptake	Analysis assumption

On-Farm Assumptions

Input	Value	Note / Rationale
ON-FARM EQUIPMENT		
On-farm equipment one-time cost per acre ($K)	2.5	As provided by the Ministry of Agriculture
Time of purchase	Uptake	Assumes producers would acquire irrigation equipment during the year in which irrigation becomes available
DRYLAND CROPS		
Revenue per acre ($)	562	Based on crop reports from the Ministry of Agriculture and the following weighting defined by the Ministry of Agriculture: wheat (35%), canola (33%), red lentil (16%), and peas (7%)
OpEx per acre ($)	472	
IRRIGATED CROPS		
Revenue per acre ($)	1,446	Based on crop reports from ICDC and the following weighting defined by the Ministry of Agriculture: wheat (30%), canola (24%), alfalfa (14%), black bean (13%), potato (10%), peas (6%), flax (2%)
OpEx per acre ($)	1,039	

Food Manufacturing Assumptions

Input	Value	Note / Rationale
Total industry output ($B)	6.26	Reported figures from Statistics Canada for Saskatchewan for the Food Manufacturing industry.[71]
Increase in industry output per acre of irrigation ($)	3,500	Based on the regression model findings described in section 3.3 of the report.
Total annual impact of the project at full uptake ($B)	0.35	Calculated by multiplying the total irrigable area (100,000 acres) by the irrigation impact per acre ($3,500).
Key driver	Irrigation uptake	Analysis assumption
Delay from uptake (years)	10	A ten-year lag between irrigation uptake and food manufacturing impact is assumed, reflecting the time needed for producers to shift to higher-value crops and/or realize the benefits of irrigation in their operations, and for food manufacturers to secure supply, plan, build, and begin operations. This conservative assumption recognizes that impacts are not expected to occur immediately.

[71] Statistics Canada. *Manufacturing sales by industry and province.* Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1610004801&pickMembers%5B0%5D=4.3&cubeTimeFrame.startMonth=01&cubeTimeFrame.startYear=2024&cubeTimeFrame.endMonth=12&cubeTimeFrame.endYear=2024&referencePeriods=20240101%2C20241201.

Livestock Assumptions

Input	Value	Note / Rationale
Tota livestock product receipts ($B)	3.30	Reported figures from Statistics Canada for the period 2020-2024, adjusted for inflation.[72]
Estimated receipts in applicable region without irrigation ($M)	37	Estimated based on the fact that 1.12% of the intensive livestock operation (ILO) animal units are in the affected rural municipalities (RMs) at present, and 1.12% of $3.30 billion in provincial receipts is equal to approximately $37 million.
Estimated receipts in applicable region with the project, at full uptake ($M)	77	An analysis of the ILO animal units across the province indicates that there are approximately 23.6K animal units in RMs *with* irrigation and 11.3K in RMs without, representing a multiple of 2.08. Applying the multiple of 2.08x to $37 million in estimated receipts, at present, results in approximately $77 million in the future state, assuming similar proportions of animal units observed in the existing RMs of the province with irrigation.
Key driver	Irrigation uptake	The full increase to $77 million occurs over time, driven by uptake. Further, the existing $37 million decreases over time (as the dryland is replaced by irrigated land). Therefore, it represents a net increase of approximately $40 million per year.

Economic Impact Assumptions

Input	Value	Note / Rationale
APPLICABLE MULTIPLIER CODES[73]		
On-farm dryland OpEx	BS11A	Classified as *crop and animal production*
On-farm irrigated OpEx	BS11A	Classified as *crop and animal production*
Project initial CapEx	BS23B	Classified as *non-residential building construction*
Project sustaining CapEx	BS23D	Classified as *repair construction*
Project energy OpEx	BS220	Classified as *utilities*
Project non-energy OpEx	BS115	Classified as *support activities for agriculture and forestry*
On-farm equipment	BS115	Classified as *support activities for agriculture and forestry*
Value-add one-time CapEx	BS23B	Classified as *non-residential building construction*
Value-add ongoing OpEx	BS3A0	Classified as *manufacturing*
Livestock	BS11A	Classified as *crop and animal production*

[72] Statistics Canada. Farm cash receipts by industry and geography. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210004501.
[73] Statistics Canada. *Input-output multipliers, provincial and territorial, summary level*. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3610011301.

Appendix B | Analysis Limitations

Below are limitations related to the analysis and findings. While the analysis provides valuable insights into the economic value of irrigation, numerous caveats must be considered.

1. **Correlation does not equal causation**: It is important to clarify that while a statistical relationship may exist between irrigation and agricultural productivity, this does not imply that irrigation is the sole cause of increased yield or economic output. External factors, such as market conditions, government policies, or technological advancements, can also play significant roles in influencing agricultural success.

2. **Historical performance is not always indicative of future results**: The analysis presents past performance data regarding crops, irrigation, and economic impact; however, past trends do not guarantee future results. Economic conditions, climate variability, and agricultural practices may change in ways that could affect the predicted outcomes.

3. **Unforeseen circumstances**: Unforeseen circumstances can drastically alter the landscape for agricultural productivity and irrigation effectiveness. Factors such as natural disasters (e.g. floods, droughts), sudden market changes, or shifts in regulatory frameworks could significantly impact the output of irrigated farming operations. Thus, the analysis does not account for these unpredictable factors and their potential impacts.

4. **Data limitations**: The analysis relies on data provided by Water Security Agency, the Saskatchewan Ministry of Agriculture, their contracted third parties, and secondary research. Limitations in the availability, quality, or timeliness of data could lead to inaccurate conclusions being drawn.

5. **Modeling limitations**: The methodologies used for projecting economic impacts are based on specific assumptions that may not hold true in all scenarios. For example, figures predicting GDP growth due to increased irrigation are based on models that assume stable market conditions and consistent demand for agricultural products. The underlying assumptions of the model could result in significant variances in projected outcomes if strategic or economic conditions evolve differently.

6. **Market dynamics**: The agricultural market is influenced by trends and preferences that can shift rapidly. The demand for certain crops can rise or fall due to changing consumer preferences (e.g., laboratory meat) or competitor activities, which can have substantial implications for future returns on irrigation investments.

7. **Investment risk**: Implementing large-scale irrigation projects involves considerable capital investment, and there is an inherent risk that returns may not meet expectations. Factors like competition, changes in technology, or unexpected operational challenges can impact profitability or return on investment.

8. **Environmental impacts**: While the analysis emphasizes the economic and agricultural benefits of irrigation, it does not extensively explore the potential negative and positive environmental impacts. Over-irrigation can lead to soil salinization, depletion of local water sources, and other detrimental environmental changes which may offset the initial economic gains. In contrast, water stored in the canals and the reservoir can enhance the ecological features in the region.

9. **Dependency on external factors**: The success of irrigation projects often relies on external factors beyond farmer and government control, including climate patterns, water rights, and geopolitical issues leading to water scarcity. The analysis implies a certain degree of reliability on these factors, which can be unpredictable.

Appendix C | Potential Questions & Answers

Below is a list of potential questions regarding the report, project, and analysis, along with associated answers.

1. **What is the impact of the irrigation project?** The analysis indicates that a 100,000-acre irrigation project in the contemplated region could drive over $13 billion in incremental GDP impact over a 50-year analysis period. This is the difference between the total GDP if the project were to not occur and the estimated GDP assuming the project does take place, indicating economic opportunity for Saskatchewan and the rest of Canada.
2. **How did you quantify the impact of the irrigation project?** The quantification of economic impact was achieved through a comprehensive modelling approach using Statistics Canada's input / output multipliers. It evaluates the direct, indirect, and induced effects on total output, GDP, employment, and taxes generated from assumed increases in agricultural output and food processing activities.
3. **What is the Statistics Canada Input/Output Model?** Statistics Canada's input / output multipliers provide a framework used to analyze the relationships between different sectors of the economy. It provides a way to assess the flow of goods and services between industries and the resulting economic activity including direct, indirect, and induced impacts.
4. **What key assumptions are being made in this analysis?** Key assumptions include the presence of stable water supply enabling increased crop yields, enhanced agricultural output leading to greater food manufacturing capacity (in alignment with existing relationship found between these two measures across all 50 U.S. states and six Canadian provinces), and sustained / increasing demand for the outputs of crop and animal production.
5. **Can you describe the WIRP project in more detail?** The project aims to rehabilitate and expand existing irrigation infrastructure in south-central Saskatchewan, including critical components such as pumping stations, canals, distribution systems, and reservoirs. It is designed to enhance agricultural production, stabilize economic activity in the region, and ultimately increase food security. It has an estimated capital cost of $950M.
6. **What are some limitations of the analysis?** Limitations include the reliance on projected economic multipliers, which may not capture unforeseen economic shifts. The analysis is also based on historical data and may not fully account for future changes in market dynamics or policy impacts.
7. **Who would benefit from this irrigation project?** The benefits of the irrigation project extend to a wide array of stakeholders, including local farmers, agricultural producers, the food manufacturing sector, the provincial economy, and consumers through improved food supply stability. Additionally, it supports job creation and economic diversification in Saskatchewan. It is estimated that over one-third of the impact will be elsewhere in Canada, and two-thirds will be in Saskatchewan. However, two-thirds of the portion for Saskatchewan is estimated to be realized outside of the direct WIRP region.
8. **How will this project impact employment in Saskatchewan?** The irrigation project is projected to result in the creation of over 1,650 annualized jobs, amounting to over 80,000 in total person years of employment during the 50-year analysis period. This job creation spans direct agricultural roles, food manufacturing jobs, and positions related to the infrastructure development of the irrigation system.
9. **Why have the economic impact estimates increased?** The estimates have evolved as the scope of the analysis expanded and more information about the project became available. The original analysis focused primarily on crop production and related on-farm impacts, with a conservative assumption related to food manufacturing; while the updated analysis now also quantifies livestock and studied the food manufacturing effects in more detail, which were previously out of scope. In addition, the project footprint increased from 90,000 to 100,000 acres, directly influencing the other drivers. These refinements reflect the normal progression of major capital projects, where analysis and considerations are refined as scope, data, and stakeholder input advance.