



CASE STUDY: TECHNOLOGY PARKS AND INCUBATION IN ECONOMIC DEVELOPMENT

FCM INTERNATIONAL

The Case of Drayton Valley, Canada



Technology parks and business incubators have become popular means of economic development by communities. **Technology parks are designated areas where research or knowledge-based companies can locate near to each other.** It is believed that technology parks will **lead to increased collaboration, sharing and innovation** among knowledge-based companies. In addition, technology parks are thought to attract talent and investment to a community.

While a technology park offers an area where similar businesses can locate near each other, **a business incubator is a different model where new businesses requiring direct support can share space and receive business support services from professional service providers.** Business incubators also provide an opportunity for new businesses to share ideas, knowledge and opportunities. **Business incubators have been proven to reduce the rate of new business failure** by providing concrete skills and competencies to business owners, as well as intangible values and confidence. Incubation has been seen to increase the viability of participant businesses.

The Town of Drayton Valley in Alberta, Canada has been selected as a case study in seeking to establish both a technology park and business incubator to spur economic development in the community. In particular, Drayton Valley is a small, rural community that has chosen to build on their historical area of strength — the forestry industry.

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1. COMMUNITY OVERVIEW

The largest community in Brazeau County, Drayton Valley is a town of approximately 7,000 people located one hour (112 km) west of the Edmonton International Airport. Settled in the early 1900's, the lumber industry was the economic mainstay of the new community. Agriculture began to take hold in 1940's and in 1953 the discovery of oil set the community on a path of rapid growth and prosperity.¹

1.1. Demographics

Drayton Valley and the surrounding Brazeau County recorded a total population of 14,250 in the 2011 National Census of Population. With a population growth of only 2.3% between 2006 and 2011, the area's growth rate is well below that of the Edmonton region (11.8%) and the province (10.8%). However, the median age at just over 36 is comparable to the regional and provincial averages and indicates the community has been able to retain youth and the working age population.

1.2. Educational Attainment

The level of education has been shown to directly contribute to economic development. Regions with high levels of skill, measured by educational attainment, are becoming more economically productive than less skilled regions.² In addition, jobs in traditional areas such as forestry and manufacturing are requiring increasingly skilled and adaptable workers.



Source: http://www.fcm.ca/Documents/presentations/2012/SCC2012/Drayton_Valley_Home_Of_The_Bio_Mile_EN.pdf

As can be seen in Figure 1, Drayton Valley and Brazeau County have significantly lower levels of education than the provincial average. Only in the area of apprenticeship and trades, does Drayton Valley outperform the province. The figure also demonstrates that urban areas, such as Edmonton (the provincial capital), tend to have higher levels of education than the general population.

1.3. Economic Snapshot

Drayton Valley's economy today is largely driven by the oil and gas sector. With 14% of all businesses (Figure 2), there are more oil and gas businesses than any other business sector in the Drayton Valley area (including Brazeau County). Other significant sectors including construction, transportation and warehousing and professional, scientific and technical services are closely linked to the oil and gas sector. With 12% of businesses, agriculture and forestry are also important sectors in the economy of the Drayton Valley area. Anchored by Weyerhaeuser (a large wood products company), forestry and logging is still an important component of the local economy employing over 250 people in logging, contract logging and sawmill operations.

2. OPPORTUNITY

In December 2007, Weyerhaeuser, a large wood products company operating in Drayton Valley, ceased operations of the oriented strand board mill in Drayton Valley. The permanent closure of this facility occurred in July, 2008

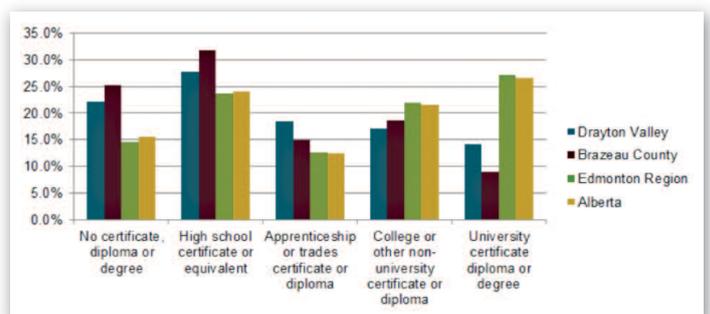


Figure 1: Educational attainment Drayton Valley, 2006.

Source: Derived from Statistics Canada Community Profiles, 2006 by Millier Dickinson Blais

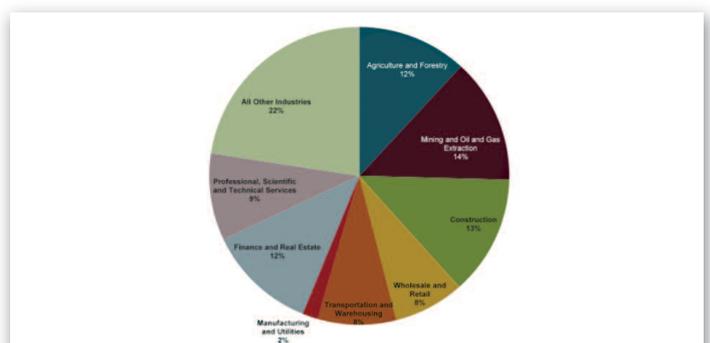


Figure 2: Business Composition Drayton Valley Area, December 2012.

Source: Derived from Statistics Canada Business Patterns, December 2012 by Millier Dickinson Blais

¹<http://www.draytonvalley.ca/history>

²Saiz, E. L. (2003). The Rise of the Skilled City. NBER Working Paper No. 10191.

directly impacting 130 workers and sending ripples through the local economy. This served as the trigger for the Town of Drayton Valley to explore opportunities in the bio-economy.

Broadly speaking, **the bio-economy includes industrial activities that use plants, animals or microorganisms to create new products.**³ Usually, the bio-economy seeks renewable resources, and uses resources in a sustainable way. The Alberta government has defined the bio-economy as the use of “renewable resources to produce economic wealth, social and community development [and] growth and development”.⁴ The bio-economy is not restricted to manufacturing and production from bio-based materials, but also the application of knowledge, research, development and commercialization involved in bringing these products and processes to market.

Access to renewable resources can form the basis of a bio-economy. Drayton Valley is surrounded by forested areas and has easy access to abundant renewable forest resources. Forested areas in Alberta are divided into Forest Management Areas (FMA) governed by the Ministry of Environment and Sustainable Resource Development. The Drayton Valley FMA (Figure 3) covers 520,000 Ha and has over 300,000 Ha of harvestable, productive forest.⁵ The total annual allowable cut (AAC) for both coniferous and deciduous trees is 775,000 m³

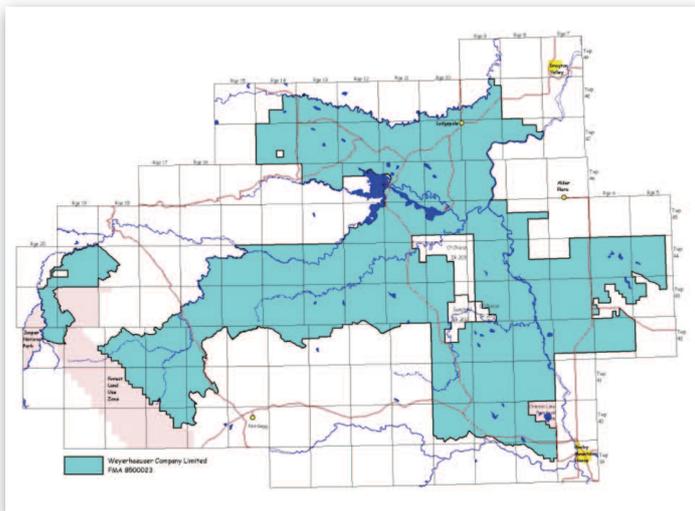


Figure 3: Drayton Valley Forest Management Area.

Source: http://www.weyerhaeuser.com/pdfs/businesses/sustainableforestry/DraytonValley_SFMP_2008.pdf

³BioEconomy Council, Germany.

<<http://www.biooekonomierat.de/bio-economy.html>>

⁴Alberta Research Council & FPInnovations Forintek. 2007. “Getting Value from Every Fibre: Making the Most of Alberta’s Lignocellulose Resource”.

⁵SYU R12 Detailed Forest Management Plan 2000-2015 Volume I prepared by Weyerhaeuser Company

⁶ibid

providing the prospective bio-economy in Drayton Valley with access to woody bio-mass for activities such as power generation, ethanol production or the production of bio-composite materials. Weyerhaeuser manages the Drayton Valley FMA. Their detailed forest management plan shows that Weyerhaeuser controls approximately 93.5%⁶ of the AAC for the operation of its sawmill. However, there are small community timber programs in the community allowing for local harvesting. Other local sawmills have access to approximately 5% of the AAC.

3. THE CONCEPTS — THE BIO-MILE AND BIO-ARCC

The approach taken by the Town has 2 components:

- Integrated bio-industry park (Bio-Mile)
- Bio-economy Incubator Office for Applied Research and Commercialization Centre (BIO-ARCC)

3.1. Integrated Bio-industry Park (Bio-Mile)

The concept of an integrated bio-industry park is based on the principles of common services and product integration. Common services refers to collective handling of waste water management, cooling water, instrument air, industrial gasses emergency response and power provision. **Common services provision has the potential to lower capital cost for new entrants and lower operating costs for all resident businesses improving the investment climate.** In such a system new investors would build their facilities to plug into the common services rather than constructing their own service operations.

Product integration is when the by-product of one company becomes the input for another company. As an example, a saw mill’s waste wood becomes the input for power generation while the excess heat created from power generation could be used to heat warehouses. **Product integration creates market potential as former by-products become revenue generating sellable products for neighbouring industry.** While creating market opportunities for the producer of the feedstock, through lower feedstock prices and shipping costs, it drastically reduces input costs for the producer of the derivative product. Product integration also serves to reduce overall greenhouse gas emissions.

In 2008, Drayton Valley established the Bio-Mile (Figure 4), a designated area of approximately one square mile centred on the Weyerhaeuser sawmill and Valley Power — two core companies that are already an example of product integration. Drayton Valley Power Ltd., is a power generation station utilizing wood waste from Weyerhaeuser. The goal is to have other bio-based companies locate in proximity to Weyerhaeuser and Drayton Valley Power and build on the existing product integration taking place.



Figure 4: Location of the Bio-Mile.

Source: Drayton Valley presentation to the Sustainable Communities Conference, 2012

3.2. Bio-economy Incubator Office for Applied Research and Commercialization Centre (BIO-ARCC)

In 2010, Drayton Valley secured a grant from Alberta's Rural Alberta Development Fund (RADF) to establish the Bio-economy Incubator Office for Applied Research and Commercialization Centre (BIO-ARCC).⁷ The main objectives of the BIO-ARCC are to encourage and support:

- Applied research projects specifically related to biomass commercialization and new product development;
- Provision of specialty training and support to develop labour skills required for the future bio-economy;
- Creation of a bio-based centre of knowledge and innovation "Centre of Excellence" for business, academia and government; and
- Incubation and commercialization of new bio-based businesses.

⁷<http://www.draytonvalley.ca/bio-mile>

⁸FCM Sustainable Communities Award retrieved from http://www.fcm.ca/Documents/case-studies/GMF/2012/SCAwards_2012_PLANNING_Drayton%20Valley_EN.pdf

The feasibility study conducted by Drayton Valley suggested the services provided by the BIO-ARCC could include:

- Office support
- Business seminars in areas such as financial management, marketing, human resources, customer service, connecting to the broader bio-economy and accessing government grants
- Professional services such as business coaching, access to accounting and legal services and access to a venture capital network
- Specific services to bio-industry companies such as a web-based tool to network with researchers in the bio-economy.

4. APPROACH

The idea of pursuing opportunities in the bio-economy originated with Mayor and Council after the closure of Weyerhaeuser's oriented strand board mill in December, 2007. Since that time, the Town has completed IV stages in establishing a bio-technology park and bio-business incubator to drive local economic development.

4.1. Phase I: Initial Research

Drayton Valley's Mayor and Council realized that, while they felt they had a good idea, they didn't have the knowledge and information to act on the idea. The Town contracted the services of a leading consultant on the bio-economy in Alberta to conduct a bio-mass and commercialization study. The purpose of the study was to further understand Drayton Valley's competitive strengths and opportunities in the bio-economy. The study included the availability of bio-mass in the area including the AAC in the Drayton Valley FMA and an estimation of the available waste wood from fallen trees, broken branches and Weyerhaeuser's waste wood from sawmill operations.

4.2. Phase II: Laying the Foundation

Businesses engaged in the bio-economy are communities that show they are interested in sustainability. In 2009 the Town completed a Community Sustainability Plan (CSP) including plans to reduce greenhouse gas emissions, improve energy efficiency and reduce water use in the town. **This document was a public document showing the Town's commitment to sustainability.** In the same year, the town recruited a sustainability co-ordinator to track progress implementing the CSP.⁸

Also in 2009, the Town initiated discussions with Weyerhaeuser and Drayton Valley Power to establish the Bio-Mile (while the Town declared the Bio-Mile in 2009, the planning document legally establishing the Bio-Mile was not completed until 2013). Mayor and Council are ultimately responsible for the Bio-Mile,

with direction provided by a council committee as well as a citizens' engagement committee.⁹ The Town also recruited a Bio-Mile co-ordinator to conduct research, build networks and engage in marketing activities on behalf of the town.

Another important piece of foundational work by the Town was to negotiate with Weyerhaeuser and the Ministry of Environment and Sustainable Resource Development to allocate 200,000 tonnes of AAC from Weyerhaeuser's forest management plan to the Town of Drayton Valley for their exclusive use. This allowed the Town to guarantee investors' access to woody bio-mass for their operations.

Finally, the Town reached out to bio-economy networks to learn from others that were conducting bio-economy research. This led to Drayton Valley becoming a member of CLIB2021. Based in Germany, CLIB2021 is a global network of agencies, companies, government offices and academic institutions to promote research and commercialization of bio-industrial applications. Drayton Valley serves as the Canadian presence for CLIB2021. Membership in this network connects Drayton Valley to global thought leaders, research, investors and venture capitalists in building the bio-economy in Drayton Valley. A key partnership formed through CLIB2021 is with Nova-institut GmbH, a German based company providing project management services in the bio-economy¹⁰.

4.3. Phase III: Building Momentum

In 2009 and 2010, three bio-economy companies announced plans to establish operations in Drayton Valley providing considerable support to the Town's initiatives. Tekle Technical Services (TTS), a fibre mat producer announced they would establish a wood fibre mat processing facility in Drayton Valley's Bio-Mile.¹¹ TTS would make use of wood waste from the Weyerhaeuser sawmill. Otoka Energy announced they would construct a co-generation facility making use of the area's woody bio-mass to generate power and heat. Mascoma Corporation announced they would investigate the viability of a commercial cellulosic ethanol facility in Drayton Valley.¹² The announcements of these three companies strengthened the Town's marketing efforts and provided the Town with evidence the Bio-Mile could be a success.

⁹<http://www.draytonvalley.ca/bio-mile>

¹⁰<http://www.nova-institut.de/news-images/20100203-02/bio-mile-presentation.pdf>

¹¹Bio-Mile gets underway (August 30, 2009) retrieved from <http://www.draytonvalleywesternreview.com/2009/08/31/bio-mile-gets-under-way>

¹²http://www.mascoma.com/pages/sub_business06.php

4.4. Phase IV: Business Incubation

The most recent phase of work completed by the Town was the completion of the Business Incubator and Commercialization Centre Feasibility Study. The study suggested a business incubator could provide benefits to business development across industries while providing specific resources support to bio-industry start-ups. Of particular importance to these start-ups would be access to research, global networks and venture capital funding. The study suggested three alternatives for the establishment of the incubator from a small resource centre with no start-up business tenants to a large facility with shared office and laboratory/research space and facilities.

5. OUTCOMES

Short-term job creation, to date, has been minimal. However, a number of other outcomes have been significant for the community and the Bio-Mile and BIO-ARCC initiatives:

- From Otoka Energy to TTS and Mascoma, large investors have and are considering investments in the town
- TTS has now installed the necessary equipment to begin initial production and recruiting will begin soon
- The Town of Drayton Valley is gaining the attention of provincial and federal levels of government and international research and bio-industry commercialization groups

Over the longer term, bio-industry technology parks in other places have shown that with a few key initial investors, related businesses will be drawn to an area generating further opportunities up and down the supply chain from transportation and warehousing to bio-chemical manufacturing.

6. LESSONS LEARNED

There are a few key lessons learned from Drayton Valley that may be useful for other municipalities that wish to try to replicate this approach or model:

- **The Town made key contacts with the expertise required to conduct research and gather the information needed to build their marketing and networking efforts** including quantifying the amount of woody bio-mass available and conducting feasibility studies to be provided to funders in grant applications — the Town has done their homework

- **The Town took the necessary steps to secure the woody bio-mass necessary for potential funders by negotiating with the province and Weyerhaeuser** to have a portion of the AAC allocated to the town providing potential investors with a guaranteed source of bio-mass material.
- **The Mayor and CAO have invested considerable time attending workshops and conferences to spread the word of Drayton Valley and Bio-Mile** and this marketing and networking are paying off as the town has become recognized as a community of best practice largely through these efforts.
- **The Town has invested the time to maintain relationships with initial investors despite the fact that the actual investment is taking time to happen** — the investors themselves have become advocates of the town speaking on their behalf to other investors.
- **The Town became a member and the Canadian representative for CLIB2021 providing the Town with marketing reach** they could have never have achieved on their own as they are now a member of an exclusive club and promoted globally.
- **Several individuals played key roles as advocates for the community**, gaining access to research funding, government grants and connecting investors with various provincial and federal incentive programs that raise ability for investors to consider Drayton Valley as a place of investment.
- Weyerhaeuser shifted their business model from being a forest and product manufacturer to a supplier of raw material for new industries — an important move in attracting other businesses needing access to woody bio-mass for their business.

7. RESOURCE LINKS

<http://www.draytonvalley.ca/bio-mile>

8. GUIDING QUESTION FOR FACILITATED SESSIONS

- What is your competitive advantage? (for Drayton Valley it was access to woody bio-mass)