

Assessing the Factors Impacting the Sustainability of the Clarenville-Bonavista Rural Secretariat Region

Prepared by: Stephen Holisko, Erika Parrill, Kyle White and Dr. Kelly Vodden



Table of Contents

Acknowledgements	3
Executive Summary.....	4
I. Introduction	6
Background	6
Purpose	7
<i>Common Framework for Action</i>	<i>7</i>
<i>Consistency of Definition and Appraisal.....</i>	<i>7</i>
<i>Opportunities, Strengths, and Concerns for the Region.....</i>	<i>7</i>
<i>Common Indicators and Measures</i>	<i>7</i>
II. Background of the Study Region	8
Geographic and Environmental.....	8
Economic	9
Cultural and Social.....	10
III. Literature Review	12
Defining Sustainability	12
Sustainability Reporting and Monitoring Initiatives in Rural Regions.....	13
Common Barriers for Sustainability	20
IV. Identification of Critical Factors, Indicators and Data Gaps.....	22
Critical Factors in the Clarendville-Bonavista Region.....	22
1) <i>Intergenerational equity</i>	<i>22</i>
2) <i>Promoting a sense of place while valuing and enhancing physical and cultural identity.....</i>	<i>23</i>
3) <i>Meeting basic needs, tackling poverty and promoting equity</i>	<i>23</i>
4) <i>Good governance and participation.....</i>	<i>23</i>
5) <i>Integration of environmental, social, and economic factors</i>	<i>23</i>
Indicators to Assess Critical Factors.....	24
Available Data and Early Gap Analysis.....	31
V. Conclusions and Next Steps	37
References	40
Appendix II – List of Resources	45
Appendix III – Examples of Indicators.....	46
Appendix IV – Fraser Basin Indicators Selection	48
Appendix V – Willapa Alliance Indicators Selection	53

Acknowledgements

We would like to take this opportunity to thank all of those who took the time to participate in this project. This project was indeed a collaborative effort across many important fronts. In particular, we would like to thank Colin Holloway with the provincial Office of Public Engagement for his crucial support. We would like to thank the members of the Regional Council of Clarenville-Bonavista for their input, collaboration, and support: Janet Fay Matthews (chair), Marilyn Coles-Hayley, Edith Samson, Barry Pearce, Violet Parsons, Darryl Johnson, and Mervin Wiseman. Finally, we would like to extend a thank you to the Environmental Policy Institute, Memorial University, Grenfell Campus, and to Susan Kennedy in particular, for her administrative support throughout this project.

Kelly Vodden, PhD
Associate Professor (Research)
Environmental Policy Institute
Grenfell Campus, Memorial
University
 Tel: (709) 639-2703
 Email: kvodden@grenfell.mun.ca

Colin Holloway
Regional Partnership Planner
Clarenville - Bonavista
 Tel: (709) 468-5428
 Fax: (709) 468-5429
 Email: colinholloway@gov.nl.ca

Executive Summary

The Clarendville-Bonavista region, much like other regions throughout the province and rest of Canada, is posed with significant challenges with respect to sustainable development and maximizing future opportunities. Environmental, economic, and social considerations coalesce in mapping these challenges, as well as defining the ways in which a truly sustainable future may play out for the region. A principled and inclusive design is necessary for any such strategy to ultimately be successful.

Regional governance bodies are crucial to the strategic implementation of sustainable development, thanks in part to their relative scale and responsibilities and their ability to engage people and collaborate in designing specific policies. It is this interconnectedness within but also throughout neighboring regions, the province, and beyond that can make a framework for a sustainable development strategy both pragmatic and transferrable.

This document, commissioned through the Clarendville-Bonavista Regional Council and Office of Public Engagement, represents the first phase in a two-phase project. The intent of this Phase One is to provide a Literature Review and jurisdictional analysis, as well a recommended methodology towards completing a gap analysis/sustainability assessment of the Clarendville-Bonavista Region, which will take place in Phase Two.

This document provides a working definition of sustainable development for the Clarendville-Bonavista region as follows:

Sustainability in Clarendville-Bonavista means an integrated response to economic, social and environmental imperatives, while emphasizing intergenerational equity with regard to resource use and future opportunities.

Using this definition, the Regional Council may move forward with sustainable development strategies in a manner that is understandable and relatable, as well as consistent with their stated priorities.

This document also identifies a list of critical factors necessary to promote the sustainability of rural regions, as well as existing barriers, with examples from other jurisdictions. Consideration of sustainability priorities as expressed by the Regional Council has also been crucial to this document's formulation. The development of an indicators approach to developing and implementing a sustainable development strategy aims to provide a measurable framework through which the goals of the strategy may be mapped and achieved. A major goal of future research will be to identify and gather data through the framework of critical factors and indicators previously outlined for the Clarendville-Bonavista region.

Phase Two will thus see a design and implementation, in consultation with the Clarendville-Bonavista Regional Council, of a public engagement as well as gap analysis/sustainability assessment. This will be carried out through an implementation of the indicators framework that has been designed, in consultation with the Regional Council, in this report.

In consideration of policy advice to the Clarendville-Bonavista Regional Council on how best to proceed with a Phase Two, the authors offer the following recommendations on how best to conduct a sustainability assessment and gap analysis:

1. Host an initial public engagement session to gain feedback on sustainability priorities as well as indicators data

Public engagement will be crucial as far as gaining support for this initiative, as well as spreading awareness that such an initiative exists. Public education and outreach will also be necessary to gain a foothold on qualitative indicators data.

2. Use the indicators framework to complete a gap analysis

The indicators framework will guide the completion of the gap analysis. This will be the critical piece for a sustainability assessment for the region.

3. Develop a strategy for aggregating existing data, both qualitative and quantitative

Much data exists pertaining to sustainability goals for the region, however it is for the most part heavily disaggregated, or dispersed. A major task of the next phase of research will be to compile that data, specific to the region, in a meaningful and relatable way.

4. Conduct qualitative research to gain insight on population practices and perspectives

While much data exists, clearly there is a need for gaining a better understanding of what sustainability means, as well as to what extent it is being achieved, according to citizens of the region. Instruments such as opinion polls and population surveys can provide such insights. This may be conducted to better understand practices and perceptions, both for businesses as well as in the household.

5. Engage community input in an ongoing basis, while continuing to look outside the region for inspiration and support

Sustainability goals must necessarily be achieved from within the region, albeit with support from the outside. Public engagement is an absolute precondition to the success of sustainability goals and initiative. In addition, keeping those involved aware of similar efforts in other regions or jurisdictions will only be beneficial.

I. Introduction

Background

Regional governance bodies are crucial to the strategic implementation of sustainable development, thanks in part to their relative scale and responsibilities.¹ Regions are able to engage people and collaborate in designing specific policies, as well as offering the potential to be strategic enough to make connections across wider areas. Interconnectedness with neighboring regions, the province, and beyond will ensure that goals and strategies are realistic, pragmatic, and collaborative. The region can be an ideal unit from which to frame a sustainable development strategy and launch point for eventually broader sustainability initiatives.²

The primary mandate of the Clarendville-Bonavista Regional Council is to provide recommendations for public policy advice on critical social, economic, cultural and environmental issues that impact the sustainability of a rural region. In 2005, the Regional Council developed a **Vision 2020** document, which illustrated a vision for the Clarendville-Bonavista Region in the year 2020 as follows:

The vision of the [Clarendville-Bonavista region] is of a sustainable region with healthy, educated, prosperous people living in safe, inclusive communities.

This document is further framed around the four pillars of regional sustainability identified by the Council: demographic changes; private sector investment; public services; and program, infrastructure, and skill development.³ From this document, the Regional Council has articulated their determination to better understand the critical elements involved for this region to grow and flourish in a sustainable manner. The Council is interested in defining the barriers to regional sustainability as well as determining whether such elements are applicable to other regions across the province. The Clarendville-Bonavista region seeks to develop a sustainable development strategy that recognizes the unique strengths, challenges, and opportunities of this region and its communities therein.

¹ Network of Regional Governments for Sustainable Development, "Indicators for Sustainable Development Goals," accessed March 1, 2014, <http://www.nrg4sd.org/news/sdsn-indicators-sustainable-development-goals>

² Ibid.

³ Vision 2020, "Clarendville-Bonavista Regional Council Vision Development," p.1.

Purpose

The following is a guiding set of principles, adapted from the Network of Regional Governments for Sustainable Development (nrg4SD) to facilitate a sustainability strategy or plan for the Clarenville- Bonavista region:⁴

Common Framework for Action

The first role of a strategy should be to construct a guiding vision for sustainable development within the region. The Clarenville-Bonavista region of Newfoundland has produced such a document, entitled *Vision 2020*, which provides a rationale for the project as well as a basis for how to proceed with sustainable development goals in the region. This document sets a precedent for developing an action framework.

Consistency of Definition and Appraisal

Sustainability and sustainable development can be bulky concepts. That is why it is important to identify and articulate common principles of sustainable development in order to underpin the necessary actions of the involved institutions.

Opportunities, Strengths, and Concerns for the Region

The third role of a strategy is to explain why action is needed and how the strategy will build on the needs of the region. What needs to be done to pursue sustainable development will differ greatly between regions depending on their location, character, and needs – that is one of the reasons why action at the regional level is so vital. Setting the vision in a clear regional context ensures that the vision is relevant, and that institutions and the public will understand how it relates to their goals, needs, and expectations.

Common Indicators and Measures

The fourth role of a strategy should involve providing a basis for measuring progress and appraising policies for their impact on sustainable development. Indicators of progress are crucial for measuring the effectiveness of relevant policies and programs.

⁴ Ibid.

II. Background of the Study Region

Geographic and Environmental

The Clarenville-Bonavista Rural Secretariat Region covers the Bonavista Peninsula, Clarenville area and the Isthmus. The region has 109 communities that range from the tip of the Bonavista Peninsula to Terra Nova, Swift Current and Long Harbour.⁵ The main service-centre and largest community in the Region is Clarenville, which has a population of approximately 6,000.⁶ The Region also hosts three other community clusters with populations over 1000 residents – Arnold’s Cove, Bonavista and Trinity Bay North. The remaining 105 towns in the Region together comprise approximately 44% of the Region’s population.⁷ Please see Appendix A for a map of the Clarenville-Bonavista Rural Secretariat Region and Table 1 for an overview of the population changes in the Region over the previous 5 years.

This Rural Secretariat Region has multiple natural and built assets. For example, the Region includes the eastern boundary of the beautiful Terra Nova National Park, and boasts a strong skiing culture. Located within the Clarenville-Bonavista Region is both a downhill ski resort and cross-country ski trails. Notably, the Region is also home to three golf courses and a large network of walking trails that strongly support an active lifestyle for the Region’s senior residents. The Region’s rugged coastline and whale watching, bird watching, and iceberg-viewing opportunities also make the area a major tourist destination. The community of Elliston is home to “one of the closest land views of Atlantic Puffins in North America,” and has approximately 1,300 nesting pairs for the viewing of avid birdwatchers.⁸

⁵ Community Accounts, “Clarenville-Bonavista Rural Secretariat Region Profile,” accessed March 15, 2014, http://nl.communityaccounts.ca/profiles.asp?_vb7En4WVgbWy0nc

⁶ Government of Newfoundland and Labrador–Rural Secretariat, “Clarenville-Bonavista Regional Overview,” accessed March 8, 2014, http://www.exec.gov.nl.ca/rural/regional_councils/clarenville_bonavista.html#ov

⁷ Ibid.

⁸ Eastern Newfoundland Geotourism MapGuide, “Puffins at Elliston Point,” accessed March 19, 2014, <http://www.nlgeotourism.com/content/puffins-at-elliston-point/nfl0436D4836F84BB28A>

Economic

By and large, the Clarenville-Bonavista Region has a strong industrial base and is supported by “a diversification of economic activity.”⁹ The hub of the Region, Clarenville, has grown significantly over the previous 5 years. With many retail stores, government centres and medical clinics having set up shop in Clarenville, the community remains as the Region’s service-centre. In addition, the region hosts two community college campuses in Bonavista and Clarenville. Studies have shown that community colleges such as the College of the North Atlantic in Atlantic Canada are significant assets and act as “economic engines” throughout rural regions.¹⁰

Through the collaboration of its local communities, a further economic asset of the Region is its achievement of becoming a year-round tourist destination. This accomplishment has enabled the development of new small businesses in support of and indirectly related to the region’s tourism industry.

The Clarenville-Bonavista Region’s economy is also significantly linked to the oil and gas and mining industries. For example, the Bull Arm facility located within the Region’s Isthmus area is a major industrial site and is projected to employ approximately 3,000 personnel at its peak in 2014 pertaining to the construction of the Hebron projects gravity-based platform.¹¹ The Region has also hosted construction activities for the Hibernia, Terra Nova and White Rose projects.¹² The dry-dock facility used as a transshipment terminal for offshore oil located at Whiffen Head is a strong economic asset to the Region.¹³ While the Region is home to the province’s only oil refinery, there are some media reports that suggest the future of the refinery may be in doubt.¹⁴ Employing approximately 600 people, it is unknown how this potential loss would affect the continued sheltering of the Region from declines in sectors other than oil and gas. The reduction from 6,000 to 600-800 employees at Vale’s Long Harbour site in 2013 due

⁹ Government of Newfoundland and Labrador–Rural Secretariat, “Clarenville-Bonavista Regional Overview”

¹⁰ Atlantic Provinces Community College Consortium, “Region Seeing Positive Return on Investment in Community Colleges,” March 25, 2014, accessed March 17, 2014, http://www.apccc.ca/news/APCCCRRelease_ENGLISH_17Mar14.docx

¹¹ Michelle Porter and Kelly Vodden, “An Analysis of Municipal Readiness for Socio-Economic Development Opportunities in the Isthmus of Avalon Region,” Memorial University (March, 2012), p. 35

¹² Ibid.

¹³ Ibid.

¹⁴ “Come By Chance Refinery’s Future Remains in Doubt: Government Says Owners Considering Sale, Downsizing or Closure,” *CBC News*, November 7, 2013, accessed March 14, 2014, <http://www.cbc.ca/news/canada/newfoundland-labrador/come-by-chance-refinery-s-future-remains-in-doubt-1.2417865>

to workforce adjustments associated with the completion of project milestones has also had negative implications for the Region.¹⁵ However, it is expected that the company will recall employees skilled in pipefitting and electrical instrumentation in 2014 to prepare for the processing of nickel.

Because of the Region's coastal waterways, there exists strong historical ties to the fishing industry.¹⁶ The fishing industry still has a considerable economic impact on the Region, as a large processing plant in Arnold's Cove employs approximately 300 residents and fish plants are still in operation within Bonavista, Clarenville, Norman's Cover, Long Cove, Plate Cove, and Hickman's Harbour.¹⁷ In addition, there are smaller seasonal operations in Arnold's Cove and Fairhaven.

Although the large industrial projects in the Region have been noted as growing the residential base, the projects currently are not attracting new supplier and support industries to the extent that might be expected.¹⁸ Due to the close proximity of the Region to St. John's, studies have suggested that the firms in St. John's are already readily supplying major project needs that might otherwise have the potential to be filled by local industrial supply companies in the Clarenville-Bonavista Region.

Infrastructure is critical to both the economic development and diversification of rural regions such as the Clarenville-Bonavista Region.¹⁹ In the Clarenville-Bonavista Region, investments in infrastructure have included improving and maintaining main roadways, creating affordable public transportation, and developing broadband and wireless services.²⁰

Cultural and Social

The Clarenville-Bonavista Region has a deep history and connection with the rugged Newfoundland coastline and the province's early fishing and trade industries. The Region is considered to be of important historical and cultural significance to the province. For example, one important site of significance is the community of Bonavista; it has been proclaimed that John Cabot landed in Bonavista on his historic voyage of

¹⁵ "Long Harbour Layoffs Stun Workers: Vale Spokesman Admits Contractor Gave Little Notice," *CBC News*, November 8, 2013, accessed March 19, 2014, <http://www.cbc.ca/news/canada/newfoundland-labrador/long-harbour-layoffs-stun-workers-1.2419834>

¹⁶ Porter and Vodden, "An Analysis of Municipal Readiness for Socio-Economic Development Opportunities in the Isthmus of Avalon Region," p. 35

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid., 37.

²⁰ Clarenville-Bonavista Rural Secretariat Council, "Clarenville-Bonavista Regional Council Vision Development," (February 15, 2008), p. 2

1497.²¹ Other important sites throughout the Region include: the Ryan Premises National Historic Site; The Matthew Legacy and the Cape Bonavista Lighthouse in Bonavista; the Port Union National Historic District of Canada; the community of Trinity; the community of Elliston; and the Random Passage Film Set in Trinity Bight.²² Furthermore, the region is home to 5 of the 13 provincial historic sites and continues to draw in tourists with its “quaint English architecture, winding streets and breathtaking seascapes.”²³

²¹ Government of Newfoundland and Labrador–Rural Secretariat, “Clarenville-Bonavista Regional Overview”

²² Ibid.

²³ Newfoundland and Labrador Tourism, “Places to Go-Eastern,” accessed March 27, 2014, <http://www.newfoundlandlabrador.com/PlacesToGo/Eastern>

III. Literature Review

Defining Sustainability

The term sustainability has received much criticism over the years for its perceived ambiguity. Not only are there often conflicting and competing definitions for the term, but one may get the sense from the broad literature on the topic that meaning may get lost in the term's ubiquity and common use. Farley (2013) goes so far as to pose the question with regards to the concept, "If it's everything, is it nothing?"²⁴ This points to a need for a succinctness of definition and careful, cautious use of terms.

The literature on sustainability and sustainable development strategies is indeed robust. From the classic definition of sustainable development as articulated by the 1987 United Nations sponsored Brundtland Report, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs,"²⁵ to more recent literature emphasizing the adaptive or evolutionary nature of sustainability,²⁶ the discussion around sustainable development strategies ultimately requires precision and consistency in order for desired results to become reality.²⁷ Barraket (2005) explains that sustainable development "emphasizes an integrated response to economic, social and environmental imperatives within a given locale, and an emphasis on intergenerational equity with regard to resource use".²⁸

This integration of economic, social, and environmental spheres is perhaps more concisely described in recent literature as being a part of broader, more interdependent social-ecological systems.²⁹ Ultimately, taking into account this interconnectedness, Dale and Sparkes (2011) explain that "sustainable community development requires the creation of new visions for the future and the building of new relationships that redefine what is possible for communities."³⁰ Through this lens, and taking into account the myriad ways and means through which sustainable development goals or strategies may be achieved, we may seek to define sustainable development as "the combined capacity

²⁴ Heather M. Farley, "Sustainability: If It's Everything, Is it Nothing?" New York: Routledge, 2013. P. 7

²⁵ UNEP 1987.

²⁶ Vodden 2014.

²⁷ Steve Lonnergan, "Sustainable Regional Development." *Canadian Journal of Regional Science* XVI, no. 3 (1993): 335-339.

²⁸ Jo Barraket, "Enabling Structures for Coordinated Action: Community Organizations, Social Capital, and Rural Community Sustainability." In *Dynamic Balance: Social Capital and Sustainable Community Development*. Edited by A. Dale and J. A. Onyx. Vancouver: UBC Press, 2005. P. 77.

²⁹ Vodden 2014.

³⁰ Ann Dale and Jennie Sparkes, "The 'agency' of sustainable community development," *Community Development Journal* 46:4, p. 447.

to create and maintain adaptive capability (sustainability) and opportunities (development) over time.”³¹

As there is no “one size fits all” plan or strategy towards accomplishing such goals, assessing the factors impacting the sustainability of the Clarendville-Bonavista region needs be taken in a manner consistent with the broader literature on the topic, while applying the framework towards the unique realities, potentials, strengths and challenges of this region.

Sustainability Reporting and Monitoring Initiatives in Rural Regions

To track sustainability for community planning and management purposes, a community or region must first define sustainability, as has been previously stated. However, it must be emphasized that there is no universally acceptable definition of sustainability or sustainable community development (SCD) that can support all community projects and targets due to the unique characteristics of locales that “result in unique opportunities and constraints.”³² Thus this paper suggests the following adapted definition (from Barraket 2005), developed in consultation with the regional council, for the Clarendville-Bonavista region:

Sustainability in Clarendville-Bonavista means an integrated response to economic, social and environmental imperatives, while emphasizing intergenerational equity with regard to resource use and future opportunities.

An effective SCD practitioner has the ability to review various community characteristics that can affect and/or prevent a region or community from achieving sustainability.³³ The characteristics that communities should be concerned with can range considerably from “natural resources, to weather, to the way people build and create their environments.”³⁴ In its essence, SCD entails the building of both new visions and relationships for the future that “redefines what is possible for communities.”³⁵ Successful SCD requires the inclusion of multiple characteristics that frame a particular community or region. Please see Table 1 for a list of the range of features that academics have cited as important for successful holistic SCD.

³¹ Vodden 2014.

³² R. Warren Flint, *Practice of Sustainable Community Development: A Participatory Framework for Change*, (New York: Springer, 2013), p. 405.

³³ R. Warren Flint, *Practice of Sustainable Community Development*, p. 329.

³⁴ Ibid.

³⁵ Ann Dale and Jennie Sparkes, “The ‘Agency’ of Sustainable Community Development,” *Community Development* 46, no. 4 (2011): 477.

Table 1. Overarching Features of Successful Holistic Community and Sustainable Community Development³⁶

Characteristics
Ecological protection
Transportation-oriented density and design (TOD)
Urban infill
Mixed-used development in village centres (MUD)
Local economy
Sustainable transport
Affordable housing
Livable community
Sewage, stormwater, and low-impact development (LID)
Water supply and protection (watershed management)
Energy conservation
The three 'Rs' – Reduce, Reuse, Recycle

However, the means and characteristics by which a rural community or region develops or re-develops itself may vary considerably from an urban area. Previous studies have shown that rural communities have a number of dissimilar characteristics from urban communities.³⁷ Table 2 presents a list of characteristics that rural communities in particular should be concerned with pertaining to the maximization of the social, economic and environmental benefits.

Table 2. Characteristics of Rural Sustainable Community Development (RSCD)³⁸

Characteristics
Active, inclusive and Safe "tolerant and cohesive with a strong local culture and other shared community activities"
Well Run "with effective and inclusive participation, representation and leadership"
Well Connected "with good transport services and communication linking people to jobs, schools, health and other services"
Well Served "with public, private, community and voluntary services that are appropriate to people's needs and accessible to all"

³⁶ Flint, *Practice of Sustainable Community Development: A Participatory Framework for Change*, p. 406.

³⁷ Gerard McElwee and Geoff Whittam, "A Sustainable Rural?" *Local Economy* 27, no. 2 (2012): 94.

³⁸ McElwee and Whittam, "A Sustainable Rural?" p. 91-92.

Characteristics
Environmentally Sensitive “providing places for people to live that are considerate of the environment”
Thriving “with a flourishing, diverse and innovative local economy”
Well Designed and Built “featuring quality built and natural environment”
Fair for Everyone “including those in other communities, now and in the future”

Once visions are defined, it is important for rural regions to select goals and targets that are achievable, and also use indicators that are traceable.³⁹ Identifying key local issues and setting achievable goals whereby a structured approach might lead to positive results helps to ensure effective sustainable community planning and management.⁴⁰ Selected indicators should therefore be well focused on the important local issues at hand and should be indicators for which data can be obtained.⁴¹

Sustainability indicator systems have been shown to be a valuable tool to many communities, both urban and rural, within multi-actor governance processes.⁴² They are great tools for “opening up dialogue, information sharing, learning and consensus-building across different policy boundaries such as between experts and non-experts, formal governments and nongovernmental actors, and higher-order governments and lower-order governments.”⁴³ Rural communities are not alone in the struggle to pick a set of indicators for a particular target (or set of targets), as there are no universally accepted set of indicators “backed by compelling theory, rigorous data collection, and analysis and influential policy.”⁴⁴ While there is a multitude of efforts to characterize and measure sustainable development,⁴⁵ it appears unlikely that the international

³⁹ Alan Terry, “Community Sustainable Development Indicators: A Useful Participatory Technique or Another Dead End?” *Development in Practice* 18, no. 2 (2009): 229.

⁴⁰ Terry, “Community Sustainable Development Indicators: A Useful Participatory Technique or Another Dead End?” p. 229.

⁴¹ Ibid.

⁴² Meg Holden, “Sustainability Indicator Systems Within Urban Governance: Usability Analysis of Sustainability Indicator Systems and Boundary Objects,” *Ecological Indicators* 32 (2013): 89.

⁴³ Holden, “Sustainability Indicator Systems Within Urban Governance: Usability Analysis of Sustainability Indicator Systems and Boundary Objects,” p. 89.

⁴⁴ Thomas Parris and Robert Kates, “Characterizing and Measuring Sustainable Development,” *Annu. Rev. Environ. Resour.* 28 (2003): 559.

⁴⁵ Examples of efforts to characterize and measure sustainable development: “United Nations Commission on Sustainable Development; Consultative Group on Sustainable Development Indicators; Wellbeing Index; Environmental Sustainability Index; Global Scenario Group; Ecological Footprint; Genuine Progress Indicator; US Interagency Working Group on Sustainable Development Indicators; Costa Rica Systems of Indicators for Sustainable Development; Boston Indicators Project; State Failure Task Force; Global Reporting Initiative.” Parris and Kates, “Characterizing and Measuring Sustainable Development,” p. 559-560.

community will soon agree upon universal SCD indicators that are akin to accepted indicators such as GDP.⁴⁶

As rural communities are often plagued by a lack of capacity and easy access to expertise, indicators may appear to be difficult to track.⁴⁷ However, it remains important for a community to make normative judgements and obtain consensus pertaining to SCD goals, targets and progress. To effectively track sustainability for community planning and management purposes, a community or region must move forward by asking, “What do we expect of ‘our’ rural area?”⁴⁸

For examples of rural and urban communities choices of indicators please see Appendix III. Examples of two regions that have undertaken sustainability indicator initiatives are provided below.

Case Study One: The Fraser Basin Council

The Fraser Basin refers to the land surrounding the Fraser River in British Columbia. It extends from Vancouver where the river meets the Pacific Ocean beyond Prince George in the northernmost parts of the province (Figure 1). It is Canada’s 5th largest watershed encompassing 240,000 km² and 25% of the province. The region is home to nearly three million people but most are concentrated in the city of Vancouver. Given this strong rural-urban divide, there is uneven regional distribution of industry, population, wealth, and inequality. In response to social and geographic differences, sub-regions (Upper Fraser, Cariboo-Chilcotin, Thompson, Fraser Valley, and the Greater Vancouver area) emerged that allow communities to collaboratively address the challenges pertaining to their particular contexts.¹

Fraser Basin Region



Figure 1.

Source: <http://knowbc.com/limited/Books/Encyclopedia-of-BC/F/Fraser-River>

⁴⁶ Ibid.

⁴⁷ Sean Markey, Sean Connelly, and Mark Roseland, “‘Back of the Envelope:’ Pragmatic Planning for Sustainable Rural Community Development,” *Planning, Practice and Research* 25, no. 1 (2010): 8.

⁴⁸ McElwee and Whittam, “A Sustainable Rural?” p. 94.

The Fraser River was the site of much development in British Columbia throughout the 20th Century. The abundance of salmon, transportation routes, and other natural resources encouraged settlement and rapid development. By the 1980s it was clear that the effects of pollution, urbanizations, and industry were being felt in the region and the river was being exploited and the environment could not maintain the same levels of development. In 1990, the Canadian government in Canada's Green Plan identified the issues experienced in the Fraser River. This document detailed the Fraser River Action Plan and led to the establishment of the Fraser Basin Management Board in 1992. This board focused on implementing collaborative solutions to issues of sustainable development.¹

The Fraser Basin Council replaced the Management Board but upheld the same principles and quest for sustainable development. The Council is composed of representatives from four levels of government (federal, provincial, municipal, and aboriginal) as well as the civil and private sectors. The Council's goal is simple, to ensure "Social well-being supported by a vibrant economy and sustained by a healthy environment."¹ To achieve this goal the Council sought to assess their sustainability performance through indicators. These indicators were captured in a series of four snapshot reports (2003, 2004, 2006, and 2010) to allow stakeholders to compare the improvement made in the region.

The Fraser Basin Council wanted to measure their sustainable development performance from social, economic, and environmental perspectives. Given natural and socioeconomic characteristics of the region, the Council devised seven themes that captured the most pressing issues for sustainable development:

- Agriculture and Food
- Consumption and Waste
- Environmental Health
- Land Use
- Population and Health
- Social and Economic Well-Being
- Transportation

Collecting data within these categories has allowed the Council to assess their sustainable performance and compare their progress with similar regions. In some areas data collection was limited due to the subjective nature of the theme. However, the council agreed upon a series of quantifiable indicators that would provide a general assessment of the region's sustainability.¹

Case Study Two: The Willapa Alliance

Pacific County (pictured below) is located along the southwestern coast of Washington State, USA. With a population of 21,000 it constitutes 0.31% of the state's population, but has experienced continued growth over the past decades. It is a resource-based economy relying on seafood, agriculture, forestry, and tourism with 2419 registered businesses in 2012. The 2011 average income per capita was \$32,648, which was lower than the state average \$42,878.⁴⁹ The county contains no major cities and is considered rural, providing residents with a unique lifestyle and scenic natural environment. Much of the county's development relies on the Willapa Bay watershed and the marine resources within.

Pacific County, Washington

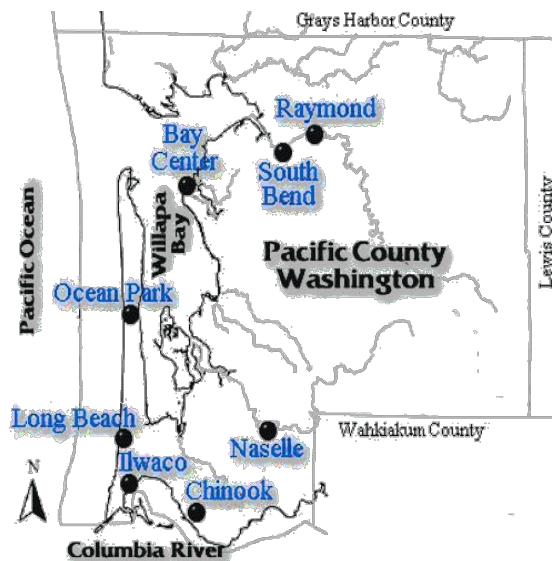


Figure 2.

Source: <http://www.co.pacific.wa.us/map%20and%20cities/mapcounty.htm>

In 1992, local residents responded to ongoing challenges by forming the Willapa Alliance, a private non-profit community organization. The organization sought to address the region's challenges from a sustainable multi-dimensional perspective including social, economic, and environmental elements. In 1995, the Alliance published a comprehensive analysis of measurements of sustainability that assessed multiple components of Pacific County. These indicators were then used to identify regional weaknesses and implement policies that would foster sustainable development:

"The mission of the Willapa Alliance is to enhance the diversity, productivity, and health of Willapa's unique environment, to promote

⁴⁹ Pacific County. "Pacific County General Statistics."

sustainable economic development, and to expand the choices available to the people who live here.”⁵⁰

In order to understand the social, economic, and environmental issues facing the region, the Willapa Alliance developed indicators that would allow stakeholders to assess local trends (see Appendix V for the list of indicators). By collaborating with researchers, government officials, and local interest groups, the Alliance assembled a comprehensive outline of indicators that contributed to the region’s sustainability. These indicators are not exclusive to the Pacific County and can be applied to other regions with similar socioeconomic and natural conditions. The indicators were categorized to ensure the three pillars underpinning sustainable development (environmental, social, economic) were equally represented.

When these indicators were applied to Willapa the results raised several concerns regarding the sustainability of the region. The Willapa Alliance lacks the resources to address all of these concerns but has implemented several policies to improve their sustainability based on these indicators. Following the publication of this report, the Alliance formed the Willapa Science Group to continue collecting information within the region and reporting to communities in an attempt to facilitate scientifically informed development. This has included working with a Portland-based GIS firm to compose a database of social information and guiding research on the natural environment. The Alliance has also made efforts to improve its ecosystem management by developing the Willapa Fisheries Recovery Team, composed of fishers, state and federal officials, researchers, and local government. The Team composed an adaptive strategy that involves habitat restoration, controlling invasive species, and salmon enhancement.

In addition to these policies, the Willapa Alliance regularly seeks to improve regional sustainability by fostering economic development and public education/involvement. This work includes administering grants/loans to local businesses that foster sustainable economic activity and provide opportunities for citizens as well as designing interactive GIS tools that educate the region’s youth. They place particular emphasis on the regions resource wealth, entrepreneurial strengths, and volunteer commitment to sustainability.

⁵⁰ Peter Schoonmaker and Bettina von Hagen, “Willapa Indicators for a Sustainable Community.”

Common Barriers for Sustainability

Rural communities across Canada are facing particular capacity barriers to achieving innovative and integrated sustainable development planning.⁵¹ However, even when planning materials hold true to the principles of sustainable development it appears that Canadian rural communities are struggling to implement sustainable alternatives.⁵² Rural Canadian communities are facing an implementation gap; rural communities are being prevented from capitalizing on “many known and proven sustainability techniques and technologies that could significantly contribute to addressing infrastructure deficits.”⁵³ Very few rural communities in Canada are currently able to translate their visions, goals and objectives into tangible sustainable development strategies, projects and outcomes.⁵⁴

Unlike Canadian urban areas, rural communities throughout Canada face additional capacity barriers (e.g. “variable access to information; limited staff resources; and fewer financial assets”).⁵⁵ While each rural area has its own unique characteristics, there remain multiple conceptual and practical barriers to conducting innovative planning processes throughout rural Canada.

As outlined in Markey, Connelly and Roseland’s article pertaining to planning for rural SCD, there are four major barriers to achieving sustainability in regions that share similarities with the Clarendville-Bonavista Region.

1. **Defining Rural Sustainability:** As discussed previously, there is no current internationally accepted definition of SCD. To help create sustainable community development objectives, literature shows that public participation is the best practice.⁵⁶ Through the inclusion of local people in development processes, rural communities yield various benefits such as “greater buy-in, appreciation for and integration of local knowledge, and conflict resolution prior to major investment.”⁵⁷
2. **Rural Restructuring:** There are significant challenges associated with the economic and political restructuring of communities that have been caused by the “advent of neoliberal inspired policy agendas matched with increasing

⁵¹ Markey, Connelly and Roseland, “‘Back of the Envelope:’ Pragmatic Planning for Sustainable Rural Community Development,” p. 1.

⁵² Ibid.

⁵³ Ibid., p. 2.

⁵⁴ Ibid.

⁵⁵ Ibid., p. 3.

⁵⁶ Ibid., p. 13.

⁵⁷ Ibid.

demands of flexible production systems.”⁵⁸ The shifts from restructuring have significantly impacted both the economic and demographic characteristics of Canadian rural communities over the past 30 years.⁵⁹ To help bridge this particular implementation gap, the literature shows that incorporating a common community vision is best practice.⁶⁰ It has been shown that projects that lack a coherent vision generally are not as successful in the long-term as visions that make direct links between the sustainability of a community and economic restructuring.

3. **Rural Capacity:** Rural municipalities across Canada have generally experienced internal barriers that are associated with community capital and the sheer complexities of SCD.⁶¹ During the assessment states of community planning capacity, rural communities in Canada are often faced with issues such as “access to information and the ability to mobilize a critical mass of individuals willing to engage with and sustain ongoing planning processes.”⁶² Employee or volunteer ‘burnout’ is one of many underlying reasons as to why rural communities in Canada are less likely than urban municipalities to engage SCD projects.⁶³ One way to bridge this implementation gap is to adopt ‘back of the envelope’ planning whereby approaches to SCD processes become simplified. For example, the Town of Craik, a rural community in Saskatchewan adopted an 80%-20% rule when selecting initiatives. This rule guided SCD planners to implement ‘low-hanging fruit’ projects (80%) that do not require as considerable additional resources or capacity than other projects (20%).⁶⁴ Another way for rural Canadian communities to address rural capacity issues is to leverage external capacity. By finding solutions to “‘bend’ existing programs to support prioritized local initiatives,” potential implementation barriers can be reduced.⁶⁵
4. **Planning Frameworks:** Over the years there have been an excess of SCD strategic planning frameworks. Although the frameworks attempt to simplify the process of SCD, many of the frameworks are not necessarily relevant to rural areas.⁶⁶ To avoid the usage of frameworks that may require considerations such as specialized technical and managerial capacity, rural Canadian communities can adopt project-based approaches and use simpler approaches to planning. Through action-oriented activities, rural communities can bridge implementation

⁵⁸ Ibid., p. 6.

⁵⁹ Ibid.

⁶⁰ Ibid., p. 14.

⁶¹ Ibid., p. 7.

⁶² Ibid., p. 7.

⁶³ Ibid., p. 7.

⁶⁴ Ibid., p. 17.

⁶⁵ Ibid., p. 18.

⁶⁶ Ibid., p. 8.

barriers that are often associated with cumbersome and lengthy planning processes.⁶⁷

Overall, these internal and external barriers associated with the definition of sustainability, restructuring, capacity, and planning frameworks all add to the implementation gap affecting the sustainability efforts of rural Canadian communities.⁶⁸ When strategic decisions are made to allow for pragmatic approaches that enable implementation, communities may be less able to track their specific impacts of their actions, but are able to implement ‘low-hanging fruit’ projects and the complexities of initiatives and/or projects along with the behavioural change required by residents will increase over time.

IV. Identification of Critical Factors, Indicators and Data Gaps

The Clarendville-Bonavista Region has illustrated through its Vision 2020 document a strong vision for the Region. In 2005, it was noted that the Region seeks to become “a sustainable region with healthy, educated, prosperous people living in a safe, inclusive communities.” In keeping with this vision, any goals relating to sustainable growth and development should adhere to these basic principles.

In consultation with the Regional Council and stakeholders within the region, what follows is an iteration of the critical thematic factors in order for the Clarendville-Bonavista Region to proceed with its sustainable development goals.

Critical Factors in the Clarendville-Bonavista Region

Regions need to know that they are making choices that have real impacts on the sustainability of their communities. Defining critical factors for a sustainable development strategy will allow the region and its communities to understand and agree on the basis for which a strategy may move forward. The following is a suggested list of critical factors, compiled through a scan of relevant literature as well as input, collaboration, and continual dialogue with Regional Council, that are paramount to defining a sustainable development strategy for this region.

1) Intergenerational equity

Sustainable development clearly needs to take a long-term time frame. Too often, short-term decisions of the past have sown seeds of major problems in the future. Sustainable

⁶⁷ Ibid., 19.

⁶⁸ Ibid, p. 9.

development means affording equal and ideally better opportunities for future generations. This means not only economic opportunities, but also opportunities to enjoy environmental and cultural amenities such as forestland and clean beaches that are enjoyed by our current generations.

2) Promoting a sense of place while valuing and enhancing physical and cultural identity

At the regional level, it is the sense of identity which perhaps most defines an approach towards achieving sustainable development. Sustainable development means building on distinctiveness, so that economic goals support cultural and environmental character. This will ideally serve as a strong point for Clarendville-Bonavista as a region – sense, and pride, of place must be harnessed at the regional level in order to maximize not only participation and buy-in, but the overall return on investment.

3) Meeting basic needs, tackling poverty and promoting equity

Sustainable development should meet the fundamental needs of all the population. This means providing employment opportunities, schooling, access to clean drinking water and sanitation, and healthcare. A key concern for the region, as economic development in the oil and gas industry continues on an upward trajectory, is the access to affordable housing and basic daily needs.

4) Good governance and participation

Sustainable development strategies must be prepared transparently on the basis of partnership and collaboration with the rest of the Province. Strategies should promote and strengthen civil society and people’s ability to engage meaningfully. This includes promoting awareness and education regarding sustainable development. Strategies should also reflect the need to innovate and work at different levels of governance.

5) Integration of environmental, social, and economic factors

The essence of sustainable development is finding solutions that benefit the environment, the economy, and society at the same time, be it in the immediate or the long run. This is only possible if decisions and decision-making reflect all three aspects, and that the impacts of these decisions are tracked from the local, to the regional, to the global level. Concepts such as full cost accounting, “living off the interest,” as well as a focus on quality rather than quantity of development will serve as important shifting points away from traditional economic development.⁶⁹

⁶⁹ Mark Roseland, “Towards Sustainable Communities,” p. 31-35

Indicators to Assess Critical Factors

Sustainability indicators aim to report on and alert people to approaching limits of our environmental and socio-economic life support systems. They are meant to be **measurable, reportable, and verifiable**.⁷⁰ However they are not necessarily so much scientific, as they are a collaborative process based on a variety of values and understandings from within a community or region. Ultimately, the use of indicators can hope to generate discussion amongst people from different backgrounds and viewpoints, and in the process, help create a shared vision of what the community or region should look like in terms of tracking a course towards sustainable growth and development.

The purpose of the use of indicators is twofold. First, an indicator should be a *management tool*, to help a region develop implementation and monitoring strategies for achieving the SDGs and to monitor progress. Second, an indicator acts like a *report card* of sorts, to measure progress towards achieving a target and ensure the accountability of governments to their citizens.⁷¹ Where possible, objective quantitative metrics are used, but subjective and perception-based indicators can also play an important role. Public input and collaboration should be seen as critical to this end. The following describes, from review and past research, the ways in which indicators are most effectively used in a planning process:⁷²

- Indicators do not drive policy in themselves, but rather influence it through a process of conversation and learning;
- Indicators primary impact occurs through the process of developing and discussing them;
- Their influence is felt most through a “collaborative learning process” as those who develop and use them jointly make sense of why the indicators are important, what they mean, and their implications for changes in actions and policies;
- The full range of anticipated users (i.e., those whose decisions one hopes will be influenced by the indicators) must be involved in the selection, development of and collaborative discussions regarding the meaning of the indicators.

⁷⁰ Meg Holden, “Sustainability indicator systems within urban governance: Usability analysis of sustainability indicator systems as boundary objects,” 89.

⁷¹ Sustainable Indicators Solutions Network, “Indicators for Sustainable Development Goals,” *Global Initiative for the United Nations* (2013), 5.

⁷² Innes, J. E. and Booher, D.E. “Indicators for Sustainable Communities: A Strategy Building on Complexity Theory and Distributed Intelligence,” Institute of Urban and Regional Development, University of California at Berkeley, Sept. 1999, p. 5.

Furthermore, the use of indicators should reflect a basic selection criteria that instills consistency and confidence amongst users:⁷³

- *Available* – Data are available and easily accessible.
- *Understandable* – Data are easily understood by a diverse range of non-technical audiences.
- *Credible* – Data are supported by valid, reliable information and interpreted in a scientifically defensible manner.
- *Temporal* – Data have the capacity to measure trends over time.
- *Relevant* - Data/indicator reflects community values and interests.
- *Integrative* – Data demonstrates connections among key dimensions of sustainability.
- *Comparable* – Data can be compared across regions.

As a broad starting point, the intent is to identify some overarching themes/values we feel will point us in the right direction going forward in terms of how a sustainability plan should proceed (i. our Critical factors), followed by more specific information that describes the key elements of those critical factors (ii. our Indicators), and finally to specific data on those indicators (iii. Measures) to demonstrate how the region is doing with respect to these indicators, including strengths that can be built upon and protected, and areas where the region is vulnerable and improvement is needed.

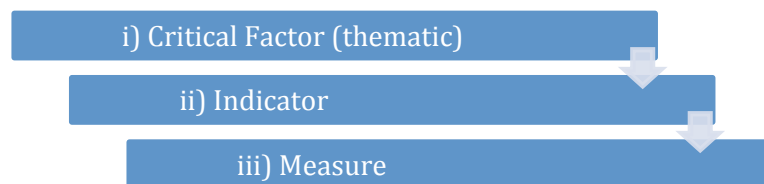


Figure 3. Indicators Flow Graph.

Thus what follows is an outline of indicators and potential measures for tracking sustainable development goals framed around the critical factors previously iterated.

⁷³ Fraser Basin Council, “Measuring and Reporting on Sustainability: A Report on Lessons Learned,” (2011) p. 7.

1) Intergenerational equity

Indicators

- **Public debt**
Public Debt, mentioned in early consultation with Regional Council members, and reinforced by the precarious financial situations of many struggling municipalities, is a significant concern amongst municipalities and a possible hindrance to future SDGs.
 - Potential Measures: Debt to operating budget ratios, debt servicing grants and subsidies.
- **Youth unemployment**
Youth unemployment and under-employment is a significant concern not only throughout Newfoundland, but the rest of Canada and much of the developed world.⁷⁴ A discouraged youth workforce will inevitably lead to a level of out-migration.
 - Potential Measures: Youth unemployment and under-employment rates, employment programs specifically targeting youth, youth out-migration, discouraged youth workforce statistics.
- **Investment in post-secondary education and training**
As our youth are the inheritors of tomorrow, it is crucial to equip them education, skills, training and opportunities that afford a new generation every opportunity to succeed.
 - Potential Measures: Post-secondary investment, skills and training/retraining programs, access to low-interest student loans, incentives to upgrade skills and education.

⁷⁴ Mohamed Omar, "Unemployment plagues young people around the world," Huffington Post (accessed 14 April 2014) http://www.huffingtonpost.ca/2013/10/07/youth-unemployment_n_4059291.html

2) Promoting a sense of place while valuing and enhancing physical and cultural identity

Indicators

- **Stabilizing populations**

A viable and sustainable demographic structure is an important and desirable component for any region to have in order to facilitate economic growth. This is especially true in Newfoundland and Labrador, where outmigration and falling birth rates across much of the province have created not ideal conditions for sustaining any amount of economic activity. Declining populations, aging populations, and out-migrations pose significant challenges to sustainable development goals.

- Potential Measures: Out-migration statistics, birth rate statistics, population trends, average age, projections on future population levels.

- **Community connectedness**

Community cohesion on a social level is crucial to its overall wellbeing and longevity. Well-connected citizens with a deep sense of place are more invested and attached to that place.

- Potential Measures: Cultural events and celebrations, abundance and rate of volunteerism, community media such as newspaper, newsletters, television, use of social media.

- **Preservation of cultural heritage and local history**

The Clarenville – Bonavista Regional Council believes the protection of culture, identity and place is crucial to long-term sustainability. Rural communities are changing due to the impacts of population shifts. Programs, services and policies are necessary to protect the unique culture, identity and place.

- Potential Measures: Culture and heritage funding, number and activity of societies and associations, tourism statistics.

- **Social inclusion and diversity**

Communities that are welcoming to diversity and newcomers will be crucial for regional sustainability in the future. Communities must find ways to reach out to groups beyond traditional lines, adapt to changing cultures, and embrace diversity.

- Potential Measures: Foreign workers programs, immigration statistics, abundance and success of immigration policies and programs
- **Active and healthy lifestyles**
Physically active populations with plenty of recreation opportunities tend to be healthier and more engaged with their community.⁷⁵ This is in addition to the associated physical health benefits.
 - Potential Measures: Spending on recreation activities, physical health outcomes, rates of chronic disease.

3) Meeting basic needs, tackling poverty, and promoting equity

Indicators

- **Affordable housing**
With a rapidly expanding oil and gas sector, the Clarenville-Bonavista Region is expected to see a continued trend in rising housing prices. However this effect will be felt unevenly throughout, with the primary growth centre of Clarenville expected to experience the strongest growth.
 - Potential Measures: House pricing data, housing price projections, homelessness rates, expenditures on social housing/assistance, etc.
- **Access to transportation**
Mobility is an essential part of people's livelihoods in terms of accessing daily basic needs, getting to and from work, as well as general well-being, peace of mind, independence and leisure.
 - Potential Measures: Car ownership/access to car sharing, amount and availability of public transportation.
- **Access to primary healthcare**
Primary healthcare is consistently ranked as amongst the most significant concerns when it comes to sustainability and well-being of a community or region.⁷⁶ While it is not an unreasonable expectation in outport communities to have to drive to major service centres for specialized care, such as the hospital centre in Clarenville, nearby primary healthcare is crucial to a community's social fabric.

⁷⁵ Mark Roseland, "Towards Sustainable Communities," p. 17.

⁷⁶ McElwee and Whittam, "A Sustainable Rural?" p. 93.

- Potential Measures: Drive times required to obtain primary medical attention, availability and service level of ambulances and first response, ratio of physicians to citizens (particular focus on outside of service centres).
- **Employment opportunities**
Economic development and employment opportunities are at the heart of sustainable communities. Well-paying jobs that are close to home will mean more time spent at home and more social, cultural, and economic investment in those communities.⁷⁷
 - Potential Measures: Employment rates, skills and training opportunities, private investment statistics, "green" jobs investment.
- **Access to good food, clean water, and nutrition**
Good nutrition is essential for a healthy, vibrant population. Good, fresh, affordable foods that are minimally processed will result in a healthier, happier, more sustainable community.⁷⁸
 - Potential Measures: Food price indices, obesity rates, water infrastructure statistics, amount/frequency of boil water advisories, etc.

4) Good governance and participation

Indicators

- **Commitment to governance and local autonomy**
As has been stressed throughout this document, citizen engagement is a crucial part of the process of establishing sustainable community development goals. Communities should seek to develop incentive programs to enhance regional collaborative efforts that are considered realistic and sustainable.
 - Potential Measures: Public meeting turnout, ability to fill vacant seats of office, evidence of policy support for community-based research
- **Citizen engagement, community well-being, vibrancy of unpaid and 'non-recorded' activities**
Small communities face significant challenges when it comes to issues of capacity. Often times, there are champions or key stakeholders who assume

⁷⁷ Mark Roseland, "Towards Sustainable Communities," p.22.

⁷⁸ Ibid.

many roles within their community's socio-political structure. This is crucial as well as potentially problematic, given the likelihood of 'burn-out' or fatigue to take place amongst those stretched too thin.

- Potential Measures: Volunteer programs and participation, Survey stakeholders and community champions/activists to gauge level of commitment, stress, concerns, constraints, etc.

5) Integration of environmental, social, and economic factors

Indicators

- **Viability of the agricultural sector**
The agriculture industry provides great benefit to many in the Clarendville Region. Understanding its success and shortcomings will allow decision makers to identify areas for improvement. A sustainable agricultural industry is one with agricultural land and people to operate farms.
 - Potential Measures: Number of individuals employed by the agriculture sector, land dedicated to farmland, total agricultural production, average benefits of the industry (wages, profits, etc.).
- **Waste reduction strategies**
Everyone needs to do their part in reducing the amount of household and commercial waste that we produce. While waste reduction is an important part of municipal directives, such as recycling programs and restrictions on waste collection, ultimately in rural regions waste reduction starts within the household.
 - Potential Measures: Municipal waste collection data, inventory of recycling programs
- **Air quality and health**
 - Potential Measures: Environment Canada air quality index
- **Water quality and treatment**
 - Potential Measures: Percentage of wastewater flows treated to provincial/federal standards, water quality index, presence of long term boil water advisories

- **Energy and GHG emission reduction measures**
 - Potential Measures: CO2 Intensity of the power sector, CO2 Intensity of the transport/industrial sector, fuel consumption, electrical use
- **Protection of forest lands**
 - Potential Measures: Area of forest under sustainable forest management as a percentage of forest area
- **Sustainable fisheries management**
 - Potential Measures: Proportion of fish stocks within safe biological limits, Ocean Health Index

This is the flow of information we seek to gather through an indicators report. Ultimately, there will be overlap and some reiteration between the factors, but that is to be expected when seeking to describe complex social, environmental, and economic systems.

Available Data and Early Gap Analysis

Indicators data specific to the Clarendville region is in some cases available and robust, while in others, not easily forthcoming. An early gap analysis and preliminary scan shows that much data does not currently exist, or that existing data is scattered and disaggregated. Table 3 illustrates an early gap analysis of available data for the region in each of the five identified critical sustainability factors.

Table 3.

	Measure	Source
Intergenerational Equity		
Public Debt	Number of municipalities with a debt-service ratio + %20 (2014): 5	Municipalities NL
	Number of municipalities with a debt-service ratio + %30 (2014): 2	Municipalities NL
	(Provincial average of debt-service ratio amongst municipalities: %17.7)	Municipalities NL

Youth Unemployment	Youth unemployment rate as of April 2014: 19.0%	Stats NL
	Youth Employment rate as of April 2014: 41.8%	Stats NL
Investment in Post-secondary education/training	Elimination of Provincial Student Loans	NL 2014 Budget ⁷⁹
	Lowest average tuition fees in the country	Advanced Education and Skills ⁸⁰
	Citizens aged 18-64 holding High School diploma or higher (2011): 66.5% (5 th of 9)	Community Accounts ⁸¹
Sense of Place/Physical Cultural Identity		
Stabilizing Populations	Residual net migration, 2006-2010: +0.21% (60 people)	Community Accounts
	2011 population 27,850, representing a decline since 2006 of 2.8%. ⁸² During the same period the community of Clarenville experienced an increase of 14.4%. ⁸³	Community Accounts
	Median Age in Region	Community Accounts

⁷⁹ Canadian Federation of Students, "NL Government to Reduce Student Debt Burden by Replacing all Student Loans with Grants," accessed March 15, 2014, <http://cfs-fcee.ca/nl-government-to-reduce-student-debt-burden-by-replacing-all-student-loans-with-grants/>

⁸⁰ Newfoundland and Labrador, "A Strengthened Workforce and Renewed Vision for Communities," accessed March 15, 2014, <http://www.releases.gov.nl.ca/releases/2014/aes/0103n02.htm>

⁸¹ Community Accounts, "Community Accounts indicators of well-being," accessed March 15, 2014, http://nl.communityaccounts.ca/indicators.asp?_vb7En4WVgbWy0nc_

⁸² Clarenville-Bonavista Regional Council of the Rural Secretariat-Executive Council, "Annual Activity Report 2011-12," accessed March 15, 2014, <http://www.exec.gov.nl.ca/rural/publications/pdf/Clarenville-Bonavista2011-12.pdf>

⁸³ Ibid; Community Accounts, "Clarenville-Bonavista Rural Secretariat Region Profile," Community Accounts, "Clarenville-Bonavista Rural Secretariat Region Well-Being and Indicators," accessed March 15, 2014, http://nl.communityaccounts.ca/indicators.asp?_vb7En4WVgbWy0nc_

	(2011): 44 years of age (compared to 42 years of age in Province)	
	Percentage of population 65+ (2006): %17.1 (1 st of 9 Rural Secretariat ranking)	Community Accounts
	Median age of death (2011): 79 (2 nd of 9 Rural Secretariat ranking)	Community Accounts
Community Connectedness	Regional Newspaper: The Packet	http://www.thepacket.ca/
	89.4% of Pop. with a Very Strong or Somewhat Strong Sense of Belonging to a Community (2 nd of 9 Rural Secretariat ranking) (2010)	Community Accounts
	87.9% of Pop. that are Very Satisfied or Satisfied with Life in General (5 th of 9 Rural Secretariat ranking) (2010)	Community Accounts
	10.2% of Pop. with Life Stress as Extremely or Quite a Bit (1 st of 8 Rural Secretariat ranking) (2010)	Community Accounts
	Self-assessed community safety (2002): %100	Community Accounts
Preservation of cultural heritage and local history	Approximately 69,709 visitors to the region between May-Oct, 2011	Dept. TCR Eastern region
	Home to 5 of the 13 provincial historic sites	

Social Inclusion and Diversity	Total immigrant population (2011): 190	Community Accounts
		Welcoming Communities Initiative (WCI)
		Community Retention Toolkit
Active and Healthy Lifestyles	17.4% with perceived excellent health (1 st of 9 Rural Secretariat ranking)(2010)	Community Accounts
	45.1% with perceived good health (1 st of 9 Rural Secretariat ranking)(2010)	Community Accounts
	9.6% Prevalence of diabetes (4 th of 9 Rural Secretariat ranking)(2010)	Community Accounts
Meeting basic needs, tackling poverty, and promoting equity		
Affordable Housing	Average monthly payment (2006): \$480/Rent: \$500	Community Accounts
	Homes owned vs. rented (2006): 86.5% (Provincial average is 78.7%)	Community Accounts
	110 subsidized housing units in the region (2010)	Hollett & Sons Report ⁸⁴
	Average assessed residential value for Clarendville (2010): \$102,800 (14 th ranked	Community Accounts

⁸⁴ Hollett & Sons, "Homelessness Study," May 2009, P. 7.

	amongst municipalities in Province)	
Access to Transportation	Senior-focused transportation service in the Clarenville area	Random Age Friendly
Access to Primary Healthcare	Lower number of average days per year in hospital than provincially – 8.7 days vs. 10.3 days Hospitals in Clarenville and Bonavista	Industrial Benefits document ⁸⁵
Employment Opportunities	Employment rate: 74.8%	Community Accounts
	Self-reliance ratio: 72% (80.1% Provincial rate)	Community Accounts
Access to good food and nutrition	Percentage of overweight or obese 18 years and older in Clarenville-Bonavista in 2009-2010 was 69.4%. The provincial rate was 64.7%.	Community Accounts
Good Governance and Participation		
Commitment to governance and local autonomy	13 policy advice documents and 4 policy advice consultations submitted by the Regional Council, 2005-14 Number of Local Service Districts (LSDs) in the region: 27 Number of municipalities in the region: 20	Rural Secretariat Service NL
Citizen engagement, community well-being, vibrancy of non-recorded activities	10.2% (+/- 4.5%) citizens reported their community under extreme stress	Community Accounts

⁸⁵ Vodden, Kelly and Michelle Porter, "An Analysis of Municipal Readiness for Socio-Economic Development Opportunities in the Isthmus of Avalon Region," March 2012, p. 56.

	4 major communities (Clarenville, Sunnyside, Southern Harbour, Come by Chance, Arnold's Cove) score positively on Regional Economic Capacity Index (RECI) governance indicators	Industrial Benefits document ⁸⁶
Integration of environmental, social, and economic factors		
Viability of the agriculture sector	Five-year Agriculture and Agri-Foods Action Plan, "Our Farms, Our Food, Our Future," (Provincial Plan)(2011)	Newfoundland and Labrador Federation of Agriculture ⁸⁷
Waste Reduction Strategies	60 communities implementing a common waste management approach for the Bonavista Peninsula	Regional Council policy paper ⁸⁸
	Solid Waste Management Strategy to reduce landfill waste by 50% by 2020	Eastern Waste Management ⁸⁹
Air quality and health	Air Quality: 2-3 (Low Risk)	Environment Canada
Water Quality and treatment	Towns currently under Boil Water Advisory in the region: 18	NL Water Resources Portal
	MNL Water Survey	
Energy and GHG emission		

⁸⁶ Ibid.

⁸⁷ Newfoundland and Labrador Federation of Agriculture, "Federation of Agriculture Applauds Provincial Budget," accessed March 15, 2014, http://media.wix.com/ugd/2f2209_ecebd8af2fc7b4e9364000604830b66e.pdf

⁸⁸ Clarenville- Bonavista Rural Secretariat Region, "Policy Advice on Community-Based Leadership and Collaborative Practices in Rural Newfoundland and Labrador," submitted November 2010.

⁸⁹ Eastern Waste Management, "Provincial Solid Waste Management Strategy," accessed March 15, 2014, <http://easternwaste.ca/node/5>

reduction measures	
Protection of forest lands	
Sustainable fisheries management	

The task of future research will be to suss out and aggregate the absent data as represented through the above framework. Because of the highly disaggregated nature of existing data (data may exist, though must be compiled so as to make a representation for the relevant scope), this will be a major undertaking for Phase II of the regional sustainability strategy design and implementation.

V. Conclusions and Next Steps

The Clarenville-Bonavista region, much like other communities and regions throughout the province and rest of Canada, is posed with significant challenges with respect to sustainable development and maximizing future opportunities. Environmental, economic, and social considerations coalesce in mapping present and future challenges, as well as defining the ways in which a truly sustainable future may prevail for the region. A principled and inclusive design is necessary for any such strategy to ultimately be successful.

Regional governance bodies are crucial to the strategic implementation of sustainable development, thanks in part to their relative scale and responsibilities and their ability to engage people and collaborate in designing specific policies. In addition, the region is potentially strategic enough to make connections across wider areas. It is this interconnectedness throughout neighboring regions, the province, and beyond that makes a framework for a sustainable development strategy ideally both pragmatic and transferrable. The ideal is to frame a sustainable development strategy that may serve as a launch point for eventually broader sustainability initiatives, both within as well as outside of the region.

Next Steps

This document, commissioned through the Clarenville-Bonavista Regional Council and Office of Public Engagement, represents the first phase in a two-phase project. The intent of this Phase One is to provide a Literature Review and jurisdictional analysis, as well a recommended methodology towards completing a gap analysis/sustainability assessment of the Clarenville-Bonavista Region which will take place in Phase Two.

This paper has provided a working definition of sustainable development for the Clarenville-Bonavista region as follows:

Sustainability in Clarendville-Bonavista means an integrated response to economic, social and environmental imperatives, while emphasizing intergenerational equity with regard to resource use and future opportunities.

Using this definition, the Regional Council may move forward with sustainable development strategies in a manner that understandable and relatable, as well as consistent with the region's priorities.

This paper has also documented a list of key factors necessary to promote the sustainability of rural regions, as well as the existing barriers, with examples from other jurisdictions. Consideration of sustainability priorities as expressed by the Regional Council has also been crucial to this document's formation. The development of an indicators approach to a sustainable development strategy aims to provide a measurable framework through which the goals of the strategy may be achieved. A major goal of future research will be to identify and gather data through the framework of critical factors and indicators previously outlined for the Clarendville-Bonavista region.

Phase Two will thus see a design and implementation, in consultation with the Clarendville-Bonavista Regional Council of the Rural Secretariat and the Organizational Sponsor's staff, of a public engagement as well as gap analysis/sustainability assessment. This will be carried out through an implementation of the indicators framework that has been designed, in consultation with the Regional Council, in this report.

In consideration of policy advice to the Clarendville-Bonavista Regional Council on how best to proceed with a Phase Two, the research entity offers the following recommendations on how best to conduct a sustainability assessment and gap analysis:

1. Host an initial public engagement session to gain feedback on sustainability priorities as well as indicators data

Public engagement will be crucial as far as gaining support for this initiative, as well as spreading awareness that such an initiative exists. Public education and outreach will also be necessary to gain a foothold on qualitative indicators data.

2. Use the indicators framework to complete a gap analysis

The indicators framework will guide the completion of the gap analysis. This will be the critical piece for a sustainability assessment for the region.

3. Develop a strategy for aggregating existing data, both qualitative and quantitative

Much data exists pertaining to sustainability goals for the region, however it is for the most part heavily disaggregated, or dispersed. A major task of the

next phase of research will be to compile that data, specific to the region, in a meaningful and relatable way.

4. Conduct qualitative research to gain insight on population practices and perspectives

While much data exists, clearly there is a need for gaining a better understanding of what sustainability means, as well as to what extent it is being achieved, according to citizens of the region. Instruments such as opinion polls and population surveys can provide such insights. This may be conducted to better understand practices and perceptions, both for businesses as well as in the household.

5. Engage community input on an ongoing basis, while continuing to look outside the region for inspiration and support

Sustainability goals must necessarily be achieved from within the region, albeit with support from the outside. Public engagement is an absolute precondition to the success of sustainability goals and initiative. In addition, keeping those involved aware of similar efforts in other regions or jurisdictions will only be beneficial.

References

- Atlantic Provinces Community College Consortium. "Region Seeing Positive Return on Investment in Community Colleges." March 25, 2014. Accessed March 17, 2014, http://www.apccc.ca/news/APCCCRRelease_ENGLISH_17Mar14.docx
- Barraket, Jo. "Enabling Structures for Coordinated Action: Community Organizations, Social Capital, and Rural Community Sustainability." In *Dynamic Balance: Social Capital and Sustainable Community Development*. Edited by A. Dale and J. A. Onyx. Vancouver: UBC Press, 2005.
- Canadian Federation of Students. "NL Government to Reduce Student Debt Burden by Replacing all Student Loans with Grants." Accessed March 15, 2014, <http://cfs-fcee.ca/nl-government-to-reduce-student-debt-burden-by-replacing-all-student-loans-with-grants/>
- Clarenville-Bonavista Regional Council of the Rural Secretariat–Executive Council. "Annual Activity Report 2011-12." Accessed March 15, 2014, <http://www.exec.gov.nl.ca/rural/publications/pdf/Clarenville-Bonavista2011-12.pdf>
- Clarenville-Bonavista Rural Secretariat Council. "Clarenville-Bonavista Regional Council Vision Development." February 15, 2008.
- Clarenville- Bonavista Rural Secretariat Region. "Policy Advice on Community-Based Leadership and Collaborative Practices in Rural Newfoundland and Labrador." Submitted November, 2010.
- "Come By Chance Refinery's Future Remains in Doubt: Government Says Owners Considering Sale, Downsizing or Closure." *CBC News*. November 7, 2013. Accessed March 14, 2014, <http://www.cbc.ca/news/canada/newfoundland-labrador/come-by-chance-refinery-s-future-remains-in-doubt-1.2417865>
- Community Accounts. "Clarenville-Bonavista Rural Secretariat Region Profile." Accessed March 15, 2014, http://nl.communityaccounts.ca/profiles.asp?_vb7En4WVgbWy0nc_
- Community Accounts. "Clarenville-Bonavista Rural Secretariat Region Well-Being and Indicators." Accessed March 15, 2014, http://nl.communityaccounts.ca/indicators.asp?_vb7En4WVgbWy0nc_

Dale, Ann and Jennie Sparkes. "The 'Agency' of Sustainable Community Development." *Community Development* 46, no. 4 (2011): 476-492.

Eastern Newfoundland Geotourism MapGuide. "Puffins at Elliston Point." Accessed March 19, 2014, <http://www.nlgeotourism.com/content/puffins-at-elliston-point/nfl0436D4836F84BB28A>

Eastern Waste Management. "Provincial Solid Waster Management Strategy." Accessed March 15, 2014, <http://easternwaste.ca/node/5>

Farley, Heather M. *Sustainability: If It's Everything, Is it Nothing?* New York: Routledge, 2013.

Flint, R. Warren. *Practice of Sustainable Community Development: A Participatory Framework for Change*. New York: Springer, 2013.

Fraser Basin Council. "Sustainability Snapshot 2010: Working Together in the Lower Mainland." A report of the Fraser Basin Council, 2010.

Government of Newfoundland and Labrador–Rural Secretariat. "Clarenville- Bonavista Regional Overview." Accessed March 8, 2014, http://www.exec.gov.nl.ca/rural/regional_councils/clarenville_bonavista.html#ovbt-1.2417865

Holden, Meg. "Sustainability Indicator Systems Within Urban Governance: Usability Analysis of Sustainability Indicator Systems and Boundary Objects." *Ecological Indicators* 32 (2013): 89-96.

Innes, J. E. and Booher, D.E. "Indicators for Sustainable Communities: A Strategy Building on Complexity Theory and Distributed Intelligence," Institute of Urban and Regional Development, University of California at Berkeley, Sept. 1999

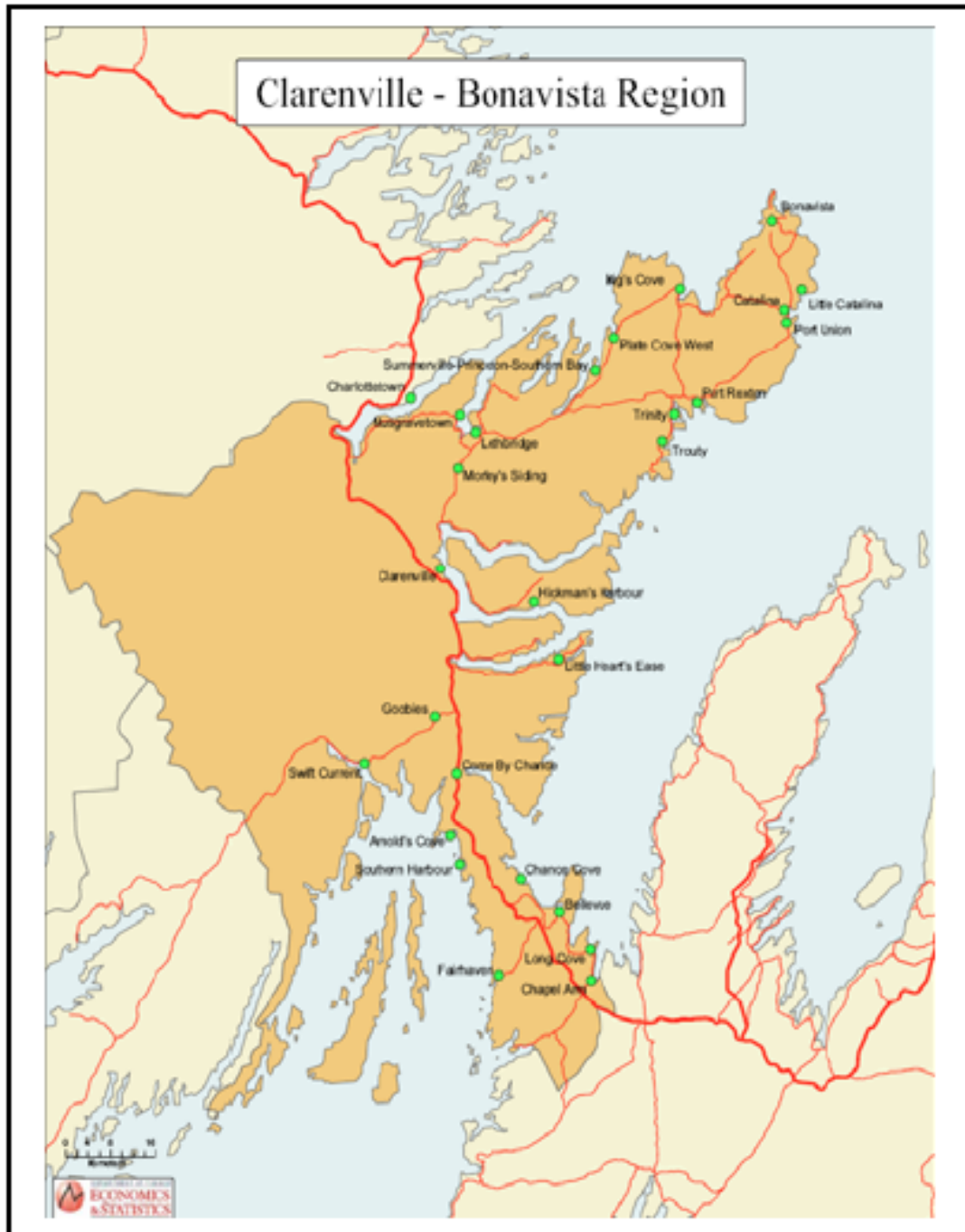
"Long Harbour Layoffs Stun Workers: Vale Spokesman Admits Contractor Gave Little Notice." *CBC News*. November 8, 2013. Accessed March 19, 2014, <http://www.cbc.ca/news/canada/newfoundland-labrador/long-harbour-layoffs-stun-workers-1.2419834>

Lonnergan, Steve. "Sustainable Regional Development." *Canadian Journal of Regional Science* XVI, no. 3 (1993): 335-339.

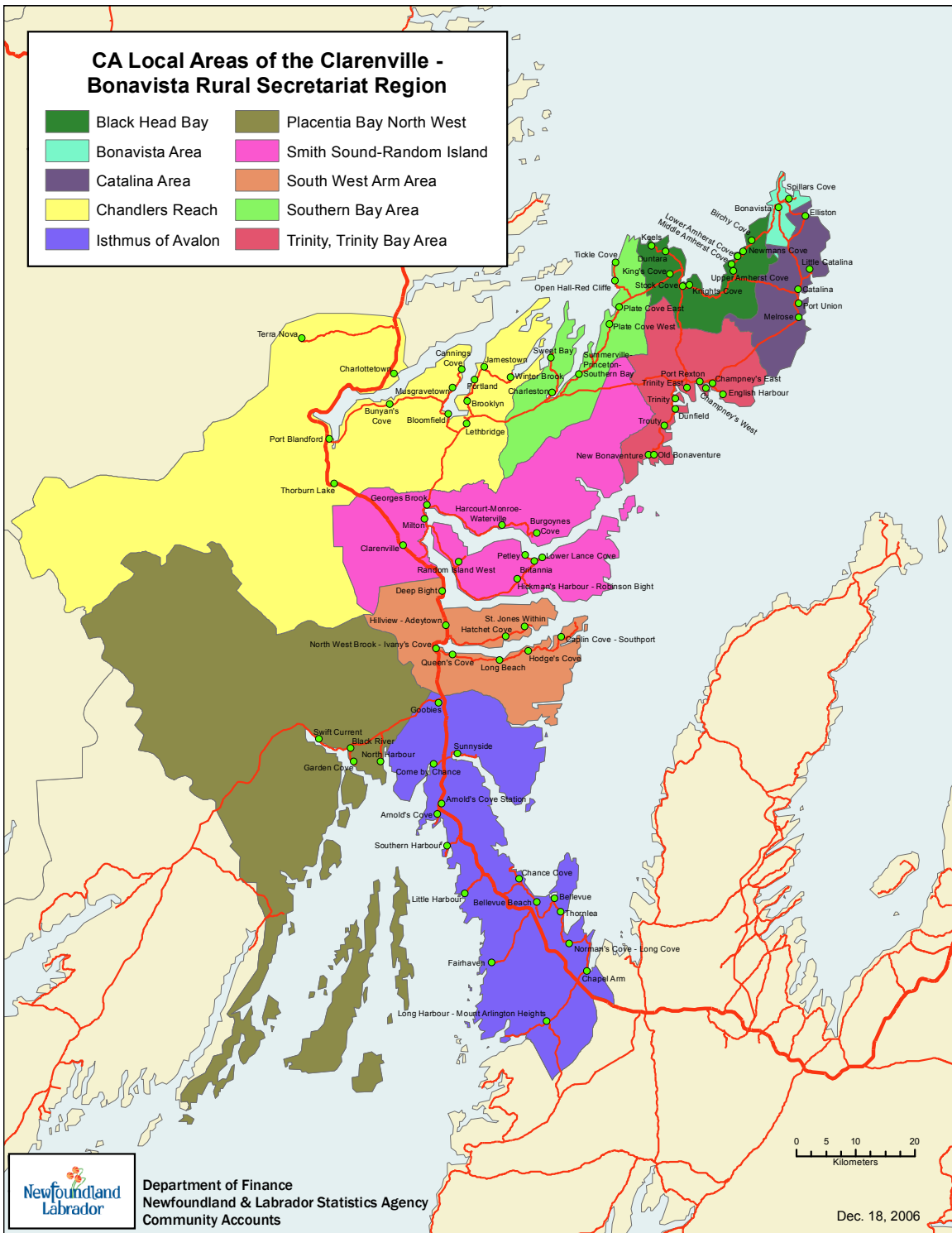
McElwee, Gerard and Geoff Whittam. "A Sustainable Rural?" *Local Economy* 27, no. 2 (2012): 91-94.

- Network of Regional Governments for Sustainable Development. "Indicators for Sustainable Development Goals." Accessed March 1, 2014, <http://www.nrg4sd.org/news/sdsn-indicators-sustainable-development-goals>
- Newfoundland and Labrador Tourism. "Places to Go-Eastern." Accessed March 27, 2014, <http://www.newfoundlandlabrador.com/PlacesToGo/Eastern>
- Newfoundland and Labrador Federation of Agriculture. "Federation of Agriculture Applauds Provincial Budget." Accessed March 15, 2014, http://media.wix.com/ugd/2f2209_ecebd8af2fc7b4e9364000604830b66e.pdf
- Markey, Sean, Sean Connelly and Mark Roseland. "'Back of the Envelope:' Pragmatic Planning for Sustainable Rural Community Development." *Planning, Practice and Research* 25, no. 1 (2010): 1-23.
- Pacific County. "Pacific County General Statistics." Accessed 19 April 2014, <http://www.co.pacific.wa.us/general-info-stats.html>
- Parris, Thomas and Robert Kates. "Characterizing and Measuring Sustainable Development." *Annu. Rev. Environ. Resourc.* 28 (2003): 559-586.
- Porter, Michelle and Dr. Kelly Vodden. "An Analysis of Municipal Readiness for Socio-Economic Development Opportunities in the Isthmus of Avalon Region." Memorial University, March, 2012.
- Roseland, Mark. "Towards Sustainable Communities: Resources for Citizens and their Governments." New Society Publishers, 2005.
- Schoonmaker, Peter and Bettina von Hagen. "Willapa Indicators for a Sustainable Community." The Willapa Alliance, August 1995.
- Sustainable Indicators Solutions Network. "Indicators for Sustainable Development Goals." *Global Initiative for the United Nations* (2013).
- Terry, Alan. "Community Sustainable Development Indicators: A Useful Participatory Technique or Another Dead End?" *Development in Practice* 18, no. 2 (2009): 223-234.

Appendix I - Maps of the Clarendville-Bonavista Rural Secretariat Region⁹⁰



⁹⁰ Clarendville-Bonavista Rural Secretariat Council. Vision Document. Feb 15, 2008.



Appendix II – List of Resources

The following is a list of resources in order to provide an indication of significant developments elsewhere throughout the country and rest of the world as far as sustainable development strategies.

Community Indicators Consortium

<http://www.communityindicators.net/projects>

ICLEI – Local Governments for Sustainability

<http://www.iclei.org/>

International Institute for Sustainable Development

http://www.iisd.org/measure/gov/sd_strategies/national.asp

Network of Regional Governments for Sustainable Development

www.nrg4sd.org

Sustainable Measures

<http://www.sustainablemeasures.com/>

United Nations Sustainable Development Knowledge Platform

<http://sustainabledevelopment.un.org/index.html>

Vital Signs Canada

<http://www.vitalsignscanada.ca/en/home>

Appendix III – Examples of Indicators

Community Sustainable Development Indicators for a Rural Community in South Africa⁹¹

Issue	Indicator
Unemployment	# of people employed
	# of households sustained by pensions
	# of local contractors given preferences
Environment	% of households recycling waste
	# of people participating in clean-up campaigns and competitions
	Quantity of litter dropped on streets compared with quantity of litter in bins
	# of complaints of sewage smells to the Department of Health
Health	# of days per week doctors present at the clinic
	Times the clinic is accessible
	# of house visits to bed-ridden patients

⁹¹ 2775190, Development in Practice, p. 229

Community Sustainable Development Indicators for an Urban Community in the United States⁹²

Policy area	Resource conservation		
Goals	<ul style="list-style-type: none">• Promote the use of conservation technologies and practices and reduce the use of non-renewable resources• Develop local, non-polluting, renewable energy, water and material resources, and expand recycling technology in these areas		
Targets	<ul style="list-style-type: none">• Reduce energy usage by 16%• Reduce potable water usage by 20%• Reduce solid waste volumes by at least 50%• Achieve a 50% average post-consumer recycled and/or tree-free content in all city paper purchases• Convert 75% of the city vehicle fleet to reduced-emission fuels• Reduce wastewater flows by 15%• Increase total number of trees on public-property by 350		
Indicators	1990 (Actual)	1993 (Actual)	2000 (Target)
Energy Usage (non-mobile sources)	4.0 million Btu/year	4.0 million Btu/year	3.36 million Btu/year
Water Usage	14.3 million gallons/year	12.0 million gallons/year	11.4 million gallons/year
Post Consumer Recycled Tree-Free Paper Purchases	Unknown	Unknown	50%
Wastewater Flows	10.4 million gallons/day	8.5 million gallons/day	8.8 million gallons/day
City Fleet Vehicles Using Reduced-Emission Fuels	Unknown	10%	75%
Trees in Public Spaces	28 000 trees	28 000 trees	28 350 trees
Policy area	Community and economic development		
Goals	<ul style="list-style-type: none">• Encourage the development of compact, mixed-use, pedestrian-oriented projects• Promote the growth of local businesses that provide employment opportunities to Santa Monica residents• Facilitate education programmes that enrich the lives of all members of the community		
Targets	<ul style="list-style-type: none">• Provide 750 additional affordable housing units• Create 3 new community gardens• Establish partnership with local schools to create and compliment a Sustainable Schools Programme• Increase total public open space area by 15 acres		

⁹² Brugmann, "Is There a Method in our Measurement? The Use of Indicators in Local Sustainable Development Planning," p. 69-70

Appendix IV – Fraser Basin Indicators Selection

Indicator	Description	Data Sources
Viability of the Agricultural Sector	The agriculture industry provides great benefit to many in the Fraser Basin. Understanding its success and shortcomings will allow decision makers to identify areas for improvement. A sustainable agricultural industry is one with agricultural land and people to operate firms.	Number of individuals employed by the agriculture industry. Land dedicated to farmland. Total agricultural production. Average benefits of the industry (wages, profits, etc.).
Food Security and self sufficiency	With the rising cost and environmental impacts of global transportation there is increasing importance to produce food internally. This contributes to a healthy society but also minimizes the environmental impact and cost of agricultural production.	Agricultural land reserve. Conflict with regional growth (converting agricultural land). Growing food interest (e.g. farmers markets, organic groups, etc.). Public value of farmland.
Agriculture and the environment	Agricultural production relies on the maintenance of clean water, soil, and air. Ensuring these needs are met have direct consequences for human activity that mitigates impacts.	Presence of environmental farm plans. Nutrient management.
Water consumption and waste	Water is an essential asset that underpins a functioning society and commercial activity. To ensure the sustainability of this resource we must understand the pressures this resource encounters as well as the opportunities for improvement.	Residential/commercial water use. Available water resources. Wastewater treatment.
Energy and greenhouse gas emissions	Locating renewable energy sources is essential to the functioning of any society and underpins any economic activity. Locating clean energy sources and reducing the negative impacts of energy consumption is a key element of sustainable	Fuel consumption. Electrical use. Greenhouse gas emissions. Total energy use.

	development.	
Solid waste	The production of excessive waste is in indication of economic/social inefficiencies. Furthermore, the manner in which waste is disposed or managed can have serious consequences for the environment. Using one's waste for further social or economic benefits is a key concept of sustainable development. These benefits are also passed along to environmental factors by reducing negative human impacts.	Total amount of solid waste disposal (garbage collection). Amount of recycled waste.
Air quality and health	Maintenance of superior air quality is vital to environmental sustainability and human health. Excessive air pollution results from inadequate prevention measures as it typically has little bearing on socioeconomic development.	Particulate matter. Ground level ozone. Air quality health index.
Biodiversity and habitat	A key element of environmental sustainability is the preservation of species and their habitat. Economic activity often infringes upon natural habitats exploiting flora and fauna. Finding a sustainable balance between utility and preservation will ensure the wellbeing of the regional environment.	Habitat loss. Endangered species. Population of dominant species.
Water Quality	Upholding superior water quality is essential for a sustainable society as it ensures the survival of marine species and intrinsic value of the environment. This will, in turn, contribute to the sustainability of marine reliant industries.	Water quality index.
Land use	How land is used contributes to the social, economic, and environmental benefits that can	Topographic database. Protected areas. Crown land inventory.

	be derived from the area. Understanding how a region's land is used will identify areas where environmental degradation is occurring, if environmental preservation is necessary, and possibilities for new development.	
Population Density	As populations grow, decision makers must provide necessary services such as education, healthcare, and housing. Economic sustainability is typically associated with increasing density but may have negative impacts on the environment (developing land) and social (crime rates) factors.	Population density (census). Expected population growth. Housing available.
Development in the lower Fraser floodplain	Given the frequency with which parts of the Fraser Basin experience natural hazards, sustainable development must be considerate of the risks and prepare for any economic or social hardships that may occur.	Population growth in the floodplain.
Coordination with First Nations planning	British Columbia's rich cultural history includes many first nation's groups. New developments must be considerate of their historic attachment to the land by respecting their traditional land and resource reliance.	Inventory of First Nation's Land. Status for treaty negotiations.
Population demographics	Analyzing a region's demographic trends will provide an understanding of its social and economic sustainability. Aging populations translate into a decreasing labour force and greater demands for healthcare. Planning and providing services that effectively mitigate these impacts will ensure regional sustainability.	Census data.

Diversity	Attraction and settlement of immigrants is often essential to the social and economic sustainability of a region's population and labour force. Cultural diversity is also a valuable element of a healthy society.	Non-English speaking individuals. Migration rates.
Life Expectancy	Understanding a region's social dynamics is critical to planning for its social and economic sustainability. A region's life expectancy will influence health services, the labour force, and housing concerns.	Census data.
Mortality rates for leading causes of death	Ensuring the sustainability of a region's population requires planning for dominant health concerns.	Health data.
Low weight birth and toxins	Early childhood disorders, and their consequences later in life are important considerations that can affect sustainable development. Implementing measures that counter these trends are essential for social health.	Health data on birth records.
Employment and unemployment	The labour force is an integral part of a society's functionality. Maintaining adequate levels of employment is key to ensuring socioeconomic sustainability.	Census data.
Income	Financial stability is required for citizens to function in society. Ensuring people can meet their basic needs and that income is distributed adequately will produce more sustainable social dynamics as the economy matures.	Census data.
Housing	Housing is one of the basic requirements for people to live. Ensuring citizens, from multiple backgrounds and situations, will have access to affordable housing	Census data. Local government records.

	is a key feature of a sustainable society. However, housing development can have negative environmental consequences as the natural landscape is transformed to residential areas.	
Public transit	The availability of public transit ensures people with lower income can access the same opportunities as individuals with vehicles. It also minimizes air pollution by reducing the number of people using single person vehicles.	Local government information.
Commuting distances and travel patterns	The average worker's commute is indicative of a community's land use patterns, its sprawl, and the potential air pollution that results from daily commutes. Sustainable communities have a mix of land uses that allow individuals to access their desired location with ease.	Census data.
Mode share	Sharing vehicle occupancy is a contributing factor to a sustainable society by reducing emissions, travel costs, and traffic congestion.	Local information. Census data.

Appendix V – Willapa Alliance Indicators Selection

Indicator	Regional Context	Measurement tool(s)
Water Resource Quality	Many coastal communities rely heavily on marine resources and must therefore ensure the quality of that environment is maintained. This involves mitigating impacts such as waste disposal and habitat change. Furthermore, human activities can impact drinking water sites which are fundamental to the sustainability of any region.	Presence of water toxins, condition of marine species, and quality of drinking water.
Land-use Patterns	Change in land use patterns indicate human impacts on the environment as well as possibilities for and limitations of future sustainable development. In Willapa 80% of the land coverage is forest while only 4% is residential/commercial indicating new development potentials.	GIS data on land use.
Species Viability	Analyzing the environmental tolerance, abundance, and sensitivity of local species is often critical to understanding human impacts on the environment. Monitoring population changes of historically dominant species is especially valuable to identifying environmental change.	Species inventory, harvests of dominant commercial species, and dominant species populations.
Economic Productivity	In natural resource based economies the productivity of the environment is essential to socioeconomic sustainability. Furthermore, a higher value will decrease the pressure on extracting more resources for the same economic returns.	Value of key natural resources and natural resource production.
Economic	Economic opportunities are a	Unemployment rates and

Opportunities	critical factor in the settlement of a region. The availability of resources and jobs underpin the local economy and any social dynamics.	human migration.
Economic Diversity	A sustainable region is one that does not depend on single resources or industries (e.g. fishery-based economy) rather has a mix of opportunities. This ensures sustainability as it does not rely on the exploitation of a resource or risk extreme job loss in the event of an economic bust. Furthermore, diversity in the workforce is essential to minimize the impact of retirement.	Employment by sector and age structure of the labour force.
Economic Equity	A sustainable community is one that provides economic opportunities for its citizens to meet their basic needs. Measuring this commitment to citizens is typically based on provisions for those who cannot meet their own needs and the distribution of wealth.	Availability of affordable housing, number of individuals below the poverty line, and comparative income per capita (distribution)
Life Long Learning	The outward shift of low-skilled manufacturing positions has placed greater emphasis on advanced skills and higher education. The ability to access education is a critical factor in determining the social and economic sustainability of a region.	High school and post-secondary education rates.
Community Health	An important social consideration is the health and wellbeing of a regions residents. Access to health services is vital to the maintenance of a population. In rural regions such as Pacific County, accessing healthcare services is a challenge	Baby birth weights, average life expectancy, infant mortality rates, and number of healthcare centers.

	that impacts community sustainability	
Citizenship	Citizen engagement with local issues and activities is a critical indicator for the continuity of peripheral communities. Pacific County has over 250 organizations that encompass environmental, economic, and social groups providing an inclusive residence for citizens.	Voter participation and volunteer turn-out rates
Stewardship	Citizens that are aware of their impacts on the natural environment often make efforts to minimize their negative effects. This typically occurs when citizens reduce their waste output and consume resources at a rate that allows renewability.	Electricity/Energy consumption and Recycling efforts.