Fraser Basin Council

INDICATORS REPORT 2011

Measuring & Reporting on Sustainability

A Report on Lessons Learned

ACKNOWLEDGEMENTS

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Lastly, we would like to thank the many indicator practitioners that we have worked with over the years in a variety of capacities. Appendix 6.5 includes a list of indicator initiatives that have engaged with Fraser Basin Council staff over the past decade. These collaborations have offered numerous opportunities to learn together and advance our shared knowledge about the art and science of developing and using indicators.

Fraser Basin Council

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Introduction

This report presents a wide range of good practices and lessons learned from the field of sustainability indicators and reporting. The report includes lessons from a decade of Fraser Basin Council knowledge and experience, including broad collaboration with other partners and indicator initiatives. The information in the report is also strengthened, diversified and deepened with the experiences and knowledge of other indicator practitioners.

The report spans several different themes and phases of work, including:

1 Getting Started - Process Planning and Design
2 Getting from Data to Knowledge
3 Presenting and Communicating Results
4 Getting from Indicators to Action

This lessons learned report is intended as a reference for diverse audiences, which are either already involved in the development and use of indicators, or are considering initiating this type of work, including all orders of government, business, researchers and non-government organizations from across BC and Canada. It is not intended as a comprehensive step-by-step manual, but rather a collation of experiences, observations, insights and lessons learned.

1.1 Introducing Sustainability & Reporting

The following are offered as some definitions and explanations about some common terminology that is used throughout this Report.

SUSTAINABILITY, WELL-BEING & QUALITY OF LIFE

There are numerous definitions of the term sustainability. The FBC vision of sustainability is "Social well being, supported by a vibrant economy and sustained by a healthy environment". The key elements of this concept include consideration of social, economic and environmental dimensions, examining the interconnections and integration among these dimensions, and a long-term perspective that does not give preferential treatment to current generations at the expense of future generations. The concept of sustainability has substantial overlap with many similar concepts including human and/or community well being, quality of life, and healthy communities. Many other indicator and reporting initiatives use these concepts as frameworks for measuring and reporting. However, for the purposes of this report, the concept and term sustainability will be used because this is the orientation of the Fraser Basin Council as the organization that has authored this report.

INDICATORS, MEASURING & REPORTING

In the year 2000, when the FBC initiated its Sustainability Indicators Program, it defined indicators as:

"statistical data that can be selected and observed to gain insight into the functioning of a complex system.

Example: Body Temperature
Body temperature is a common indicator of human health. The body temperature of a healthy human being is 37ºC. When body temperature is above or below 37ºC, the person may be sick. If the indicator suggests that the person may be ill, then we may seek additional information on the illness (i.e., in addition to a high fever, what are other symptoms?). Our knowledge of body temperature, combined with information about other symptoms, can give us insight into the specific nature of the illness and identify treatment options.

Sustainability indicators are specific pieces of statistical information that can be used to measure critical trends in progress towards sustainability.

On their own, indicators only show part of the picture, but they can prompt us to look for more information, especially if we suspect the interaction of our social, economic and environmental systems is not moving our communities in a sustainable direction. Because indicators are data, changes and trends will be interpreted in different ways by different people. Identifying and tracking changes in indicators will not, on its own, bring consensus to groups of people with different values and interests. Indicators are not decisive measurements, but are windows that "provide a glimpse of the 'big picture'" (Sustainable Seattle web site, 1999). Indicators are not solutions and may not even be helpful in identifying "treatments" or options for addressing specific concerns that have been identified." [1]

Because of the complex and over-arching scope of sustainability, typically, a set of indicators is used as a framework to measure the system. Qualitative data and information can also be part of a measurement system. Case studies, stories and other forms of narrative can also provide relevant insights about sustainability. Together, quantitative indicators, qualitative information and narrative can all be part of a system to measure and report on sustainability, well being, quality of life, etc. Throughout this report, the terms sustainability indicators, measures, and reporting are used somewhat interchangeably.

2

Getting Started Process Planning & Design

2.1 Why Measure & Report

KEY LESSON

- Define the goals and objectives of your indicators initiative, as this may influence the project planning, design and implementation.

There are a wide range of goals and objectives related to measuring and reporting on sustainability. These vary from one organization or initiative to another. However, in general most organizations develop and use indicators to educate and to inform one or more audiences.

The goals that the Fraser Basin Council has developed for its Sustainability Indicators Program include the following:

- To increase public awareness and understanding about sustainability
- To identify critical issues and responses to improve progress
- To inform decisions and influence actions
- To advance sustainability

Ultimately, the goal of this program is to advance progress towards a more sustainable Fraser Basin. Indicators and reports on sustainability aspire to achieve this by raising awareness and building understanding about the state of sustainability and trends over time to inform decisions and influence actions by a wide variety of people and organizations. We all impact a variety of sustainability issues in many different ways either positively or negatively. By informing multiple audiences about these issues as well as pressures and suggested actions, there is an opportunity to enable a shared responsibility to improve the state of sustainability. More discussion on Audiences follows in the next section of this report.

Although most goals and objectives for indicators and reporting are similar to those of the FBC, there may be more strategic or more narrowly targeted objectives associated with some initiatives. For example, some indicator reports may be tailored for specific audiences. Some initiatives may focus on particular approaches to education or influence. For example, some organizations may use this type of information for very specific lobbying purposes while others may use an indicator initiative for more general awareness-raising. There may also be more strategic applications such as developing a State of the Watershed Report to inform the development of a Watershed Management Plan.

2.2 Audiences

KEY LESSON

- Define your audience at the outset, as this will inform the scope of your report and the depth of indicator data that would be appropriate.

Different individuals and different types of audiences have a variety of learning styles, values, interests, information needs, and preferred media. Therefore it is important to consider the audiences that are most relevant for a particular indicator initiative.

The FBC has taken the approach of preparing indicator reports that are relevant to multiple audiences. As noted above, all individuals and organizations have contributions to make in advancing sustainability; therefore, multiple audiences would benefit from information about the state of sustainability. The FBC describes its audiences as:

1 Four Orders of Government (both elected officials and staff)
   a. Federal
   b. Provincial
   c. First Nations
   d. Local
2 Community and Non-Government Organizations
3 Businesses and the Private Sector
4 General Public and Civil Society
5 Media
6 Educators

Each of these audiences has its own information needs so it is a challenge to develop indicator reports that are relevant and appropriate for multiple audiences. It is important to provide sufficient detail to be relevant to specialists while not providing so much information that it may overwhelm other audiences. It is important to be technically accurate and precise without using technical jargon. It may also be important to appeal to the hearts and minds of diverse audiences that may have very different perspectives and opinions on the issues. The Council has attempted to thread this needle by seeking input and feedback from diverse perspectives in all phases of work on indicators. This is discussed further in the section on Community Engagement and Advisory Processes.

Commonly, indicator initiatives may focus on a more specific audience or subset of audiences. For example, a local government may be developing indicator data specifically for its own use to inform planning, policies, budgets and other forms of decision making. The Vital Signs initiative of the Vancouver Foundation has invested in publishing a Chinese language supplement for several of its indicator reports to provide the information to the Chinese-speaking population of the Vancouver region. Recently, the Vancouver Foundation has also utilized Facebook and Twitter to reach audiences that utilize these media rather than traditional print reports.

2.3 Project Scoping

KEY LESSON

- Define the scope of issues that you will be reporting on based on the priorities of your organization and your audiences. For example, what issues are most relevant to your audiences?

A critical and challenging step in any indicator project is in scoping the issues to be reported on and selecting the indicators that will be used to report on those issues. This is a particular challenge within the context of sustainability, when arguably, any and all issues could be considered as sustainability issues depending on how you define sustainability. Information on Indicator Selection is provided in the following section of this report. The scoping of issues can be influenced by many considerations such as the region of interest, timing, the audience(s), the interests and priorities of the lead organization, the priorities of funding contributors, and many other factors.

It has been a priority of the Council to focus on issues that are of high relevance throughout the Fraser Basin and across diverse sectors, therefore the FBC undertook community and stakeholder consultation workshops and a survey, supplemented with evaluation, feedback and refinement over time. The Council developed a Workbook as a consultative tool. The workbook described the "what, why and how" of indicators and it profiled 40 specific indicators for consideration, including a description of the indicator, its relevance to sustainability, and background on data. The workbook included a survey for respondents to rank the usefulness of the indicators and to suggest alternatives. About 400 people responded to the survey, from all regions of the Basin and from many different perspectives. The results are summarized in a Consultation Report. The Workbook and Consultation Report are downloadable at www.fraserbasin.bc.ca/publications/indicators.html. In addition to the surveys, more than 200 people attended one of eight regional workshops that were held throughout the Fraser Basin.

Both the survey and the workshops were useful in identifying the priority issues that were shared across multiple regions and multiple interests. The Council also refined the scope to ensure that it was balanced relative to the social, economic and environmental dimensions of sustainability, which is a priority of the Council. This formed the starting point for the Council in scoping the issues to be profiled in its first indicator report A Snapshot on Sustainability: State of the Fraser Basin Report, published in January 2003. In subsequent indicator reports the scope of issues was refined based on evaluation and feedback that was received. In some cases issues were combined or split in different ways over the years.

Generally speaking it is good practice to develop the scope of issues based on input from the intended audience(s). In cases where the audience is more narrowly defined, or the geographic area of interest is smaller, the broad-based consultative approach of the FBC may not be necessary. On the other hand, it may be even more important within a local-scale initiative to reflect the specific priorities of a community. In some cases, scoping can be undertaken based on a review of available literature. For example, in the City of Quesnel, several planning processes had previously been undertaken, many of which included extensive community consultation. So when it came time to develop an indicators report, this was scoped on the basis of community priorities, which had previously been expressed in other processes and reports.

2.4 Indicator Selection

KEY LESSONS

- Adapt and use indicator selection criteria based on your needs;
- Aim high, but be flexible – no indicator is perfect.

There are hundreds of possible indicators to choose from. None are perfect, but many can be useful. As individuals and organizations we all have different concerns and perspectives that we might want reflected by the indicators. Several selection criteria are commonly used to help organizations develop their particular suite of indicators.

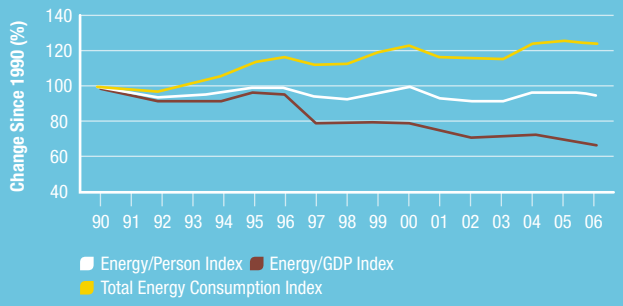
The following criteria were used by the Council to guide the selection of sustainability indicators for the Fraser Basin. Although, there are few, if any, indicators that fully achieve the following criteria, many indicators were selected on the basis that they substantially achieved as many of the criteria as possible.

- 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.
- Links to Mandate of FBC – Data/indicator relates to one or more of the goals of the Charter for Sustainability (i.e., social, economic, environmental and institutional).
- Integrative – Data demonstrates connections among key dimensions of sustainability.
- Comparable – Data can be compared across regions.

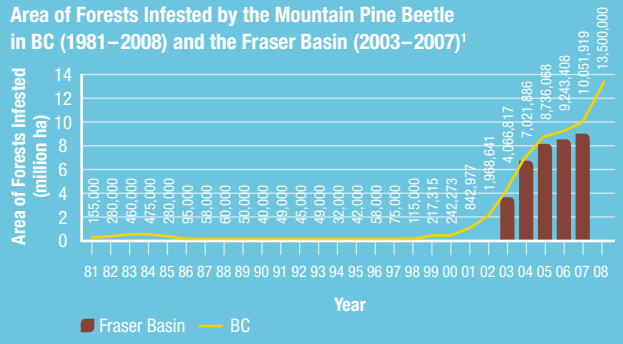
In some cases the FBC assessed the criteria by using a community and stakeholder consultation process (e.g. are the indicators understandable and relevant?). Other criteria were assessed through a technical advisory process (e.g. are the data available and credible?). Some indicators may be selected because they strengthen the overall achievement of the criteria across the suite of indicators. For example, the FBC has reported on province-wide data about greenhouse gas emissions per capita because this information was not previously available for the specific geography of the Fraser Basin. The indicator met most of the criteria, but not the criterion of comparability across Fraser Basin regions. For some indicators, their status may change over time. For example, some new indicators and available data may emerge (e.g. Community Energy and Emissions Inventory), while other data that were historically available, may no longer be updated (e.g. some long-form Population Census variables). Lastly, the issues themselves may evolve. For example, the significance of the Mountain Pine Beetle outbreak in BC was much more apparent in 2010 than it was during the FBC consultation process in 2001. Therefore this sub-issue was added to the scope of indicators on Forests & Forestry as it rose in importance and as relevant data became available.

Indicator initiatives typically use criteria similar to the list of FBC criteria above to help them select indicators, or perhaps a subset of the criteria that are listed above. However, they may apply the criteria in different ways. For example, each organization may have different geographic scales of interest for which they require indicator data and they may have different needs in terms of comparability with other areas. The national Vital Signs initiative of the Community Foundations of Canada compares data between different cities across Canada; therefore, indicators are selected where data are available to enable these comparisons. Each organization will

Energy Consumption and Intensity Trends in BC (1990–2006)[1]



Area of Forests Infested by the Mountain Pine Beetle in BC (1981–2008) and the Fraser Basin (2003–2007)[1]



typically select indicators that are related to their mandate, however, these mandates will vary significantly from one organization to another. Most initiatives are dependent on data that are readily available and accessible. However, some initiatives may have sufficient resources to develop new data through research, surveys or polling.

The development or identification of true sustainability indicators is a particular challenge because of the all-encompassing nature of sustainability and because of the interest in describing the interconnections among the social, economic and environmental dimensions of sustainability. For example, there is no single indicator that reflects the broad sustainability of the agriculture and food sector. Therefore a suite of multiple indicators can be used to touch on the multiple elements and interconnections such as retention of productive farm land, environmental management practices, and net farm income.

It is also important to recognize that different measures may tell very different stories. This reinforces the value of evaluating and reporting on a suite of multiple indicators. The following are some examples of income measures, and general trends, that were reported for the period between 1995 and 2004 in BC:

- Real average after tax income in BC has increased;
- Average income in the top 20% bracket increased (12%) while the bottom 20% bracket decreased (16%); and,
- There are slightly fewer people in BC below the Low-Income Cut Off, but compared with the rest of Canada BC has the highest proportion of people below LICO (18%).

Very different results may also emerge from simply selecting indicators that are absolute values (e.g. total energy consumption) versus ratios (e.g. per capita energy consumption). This can be an issue for indicator selection and is also explored further in the section on Analysis and Interpretation.

2.5 Community Engagement & Advisory Processes

KEY LESSONS

- Engage in many different ways at many stages for many benefits:
- To ensure scope reflects relevant, meaningful, priority issues;
- To identify best available indicators and data;
- To ensure sound analysis and audience sensitivity;
- To reflect diverse interests and perspectives;
- To disseminate findings, facilitate dialogue and explore opportunities for collaborative action;
- To solicit feedback to ensure continual improvement, refinement and evolution.

Most indicator initiatives recognize the importance of engaging communities, stakeholders and advisors at one or more stages in their process. However, there are many different approaches that can be used.

In order to ensure you will effectively reach your target audience, it is important to recognize the different priorities and needs within your audience. To get advice and feedback from your audience(s) during the development of your indicator report it is useful to:

- Offer a variety of engagement opportunities (e.g. surveys, workshops, meetings, one-one-one conversations, feedback forms)
- Engage with a diversity of interests, expertise and perspectives (e.g. elected and staff, specialists and generalists, private and public sectors, social and economic and environmental perspectives)
- Consider overlap and balance between diverse perspectives (e.g. public preferences and technical advice)
- Don't expect to satisfy everyone (scoping of issues, indicator selection, analysis of results)

As discussed earlier in this report, the FBC undertook significant community and stakeholder engagement to help with Project Scoping by identifying issues that were of high relevance throughout the Fraser Basin and across diverse sectors. The Council used a Workbook, survey and regional workshops to solicit input about priority issues and preferred indicators. These community engagement processes have been complemented with advisory processes. For the Council's first indicator report, a multi-disciplinary advisory committee was established, which included indicator practitioners, data providers, researchers and others with particular knowledge and expertise. Some advisors provided "big picture" perspectives while others provided perspectives from a particular sector, jurisdiction or discipline. The advisory committee met several times in person and by teleconference during the development of the Council's first indicator report. The advisors were extremely helpful in verifying data availability as well as the credibility and scientific rigour of different indicators. Advisors were also important in the analysis of indicator data and trends, as well as reviewing and providing feedback on draft reports.

The combined community and advisory processes provided a solid foundation for the Council's Sustainability Indicators Program overall and its first indicators report. For subsequent indicator reports, the Council took an approach of fine-tuning and updating the program. Different methods were utilized to engage advisors. Rather than holding regular meetings with a formal advisory committee, several one-on-one discussions were held with individual advisors. Rather than seeking broad input on all aspects of the indicator initiative, advisors were asked to provide feedback on strategic

issues or at particular milestones. To supplement this type of advisory process, occasional workshops were held with indicator practitioners and other interested groups to provide feedback and advice to the Council and to have dialogue on issues of broad interest. An informal network of practitioners emerged and there has been an ongoing exchange of ideas and knowledge throughout the network and between individuals.

There is a broad spectrum of approaches when it comes to engaging communities and advisors within different indicator projects. For example, the Regional Vancouver Urban Observatory established an Advisory Board and facilitated several large community workshops. Thematic teams or working groups were also established to assist in the identification and development indicators. The Vancouver Foundation's Vital Signs initiative utilizes both a Leadership Group and an Expert Resources Group to provide guidance on their indicator projects.

2.6 Planning For Financial & Human Resources

KEY LESSON

- Clearly defining the goals, scope and audience of the indicator project will inform the level of human and financial resources required.

An important part of any indicator project is planning regarding the required resources, both human and financial. There are many factors that will influence resource requirements such as project scope, community and advisory processes, costs for data, the capacity and cost of internal staff, reliance on consultants and volunteers, and report production costs. The number of themes and indicators within the project scope will influence the amount of labour required for research, data collection and writing. Graphic design and printing costs can be significant in the case of full-colour reports with a lot of photos, maps and other graphics. However, more modest black and white reports with limited graphic elements are also an option. Another factor is how extensive a community engagement or external advisory process would be involved. Extensive processes require significant time for planning, facilitation, note taking and follow-up. There may also be costs associated with meeting or workshop venues and catering.

LABOUR

The FBC has taken a variety of approaches in terms of human resources with the overall responsibility for the report managed by an internal staff person. Over the years, the project team has included a mix of internal staff and external consultants to undertake research, data collection, analysis and writing. On occasion, internships and volunteers have supplemented the project team. Advisors have always been engaged on a voluntary basis with no financial cost to the Council.

DATA

For the most part, the Council has relied on data that have no associated costs other than the labour required to locate and acquire the data, which can be considerable in some cases. Much data is available for free from existing print or web-based reports. The exception for the Council has been data purchased from Statistics Canada. Because the Council requires data on the basis of the Fraser River watershed and five sub-regions, semi-custom geographic tabulations of the Population Census have been acquired with considerable cost. However, the costs of census data drop substantially if standard data products are able to fulfill the needs of the indicator project. Data costs and time required would increase substantially if primary research is required to obtain data.

REPORT PRODUCTION

The Council has typically produced reports with a high visual quality and this has evolved over the series of indicator reports. The reports are full-colour and include numerous charts, photographs and other graphic elements. From the outset, the Council has received very positive feedback about the value of reports that are visually appealing. Graphic design can help bring the reports to life and full-colour charts add clarity for the reader. Web-based reporting can help reduce or avoid printing costs but there will be associated labour costs with developing a web-based report, particularly if contractors are used.

MISCELLANEOUS EXPENSES

There can be a variety of miscellaneous expenses including rooms and catering for meetings and workshops, telephone and teleconference charges, travel and accommodation, and honoraria for volunteers.

3

Getting from Data to Knowledge

Fundamental to any indicators and reporting process is the acquisition, analysis and presentation of data, information and knowledge. Once a project has been scoped and specific indicators have been selected, it is time to populate those indicators with data. There are numerous challenges associated with data collection related to the variety of data types, the diversity of data sources, and the associated characteristics of those data sources.

3.1 Types & Sources of Data

KEY LESSONS

- Finding relevant, comprehensive and up-to-date data can be both challenging and time-consuming. However, it is worth the effort as it enables the development of a report that is relevant and accurately reflects the current "state" of the topic area;
- Aim for best available information and accept compromises as necessary.

For the purposes of this report, we may consider four different types of data and related data sources:

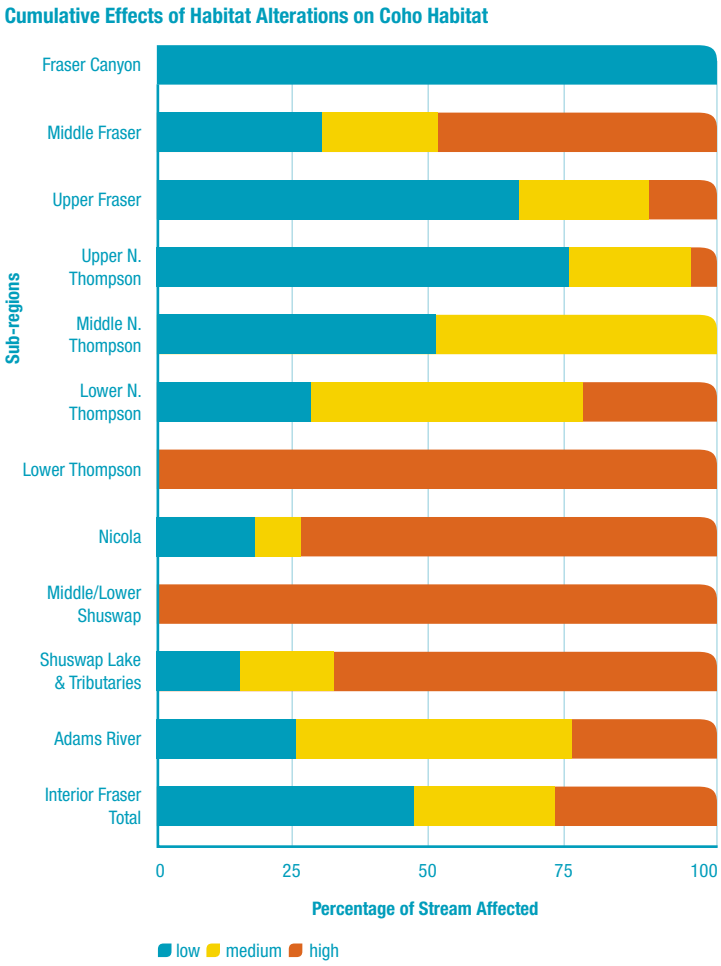
1 Large centralized databases
2 Specialized or targeted data sources
3 One-time studies
4 Local and Traditional Ecological Knowledge

1 Large centralized databases It is common for indicator projects to draw data from large, centralized databases that span large geographic areas, include multiple variables, and are updated on a regular or semi-regular basis. The largest single source of data for the FBC Snapshot reports is the Population Census that is managed by Statistics Canada. This includes numerous demographic and socio-economic data variables (e.g. population, age demographics, ethnic and language diversity, educational attainment, employment, income, housing, etc.). The census is updated every five years with data collected most recently in 2006 with the next scheduled update in the summer of 2011. This database is national in scope with the capability of extracting data with a very fine geographic resolution (e.g. census blocks and dissemination areas, which approximate the neighbourhood scale). In the 2011 census year it will no longer be mandatory to complete the long-form version of the census, therefore there is some uncertainty about the reliability of the data and if 2011 census data will be comparable with previous census years.

2 Specialized or targeted studies The second type of data can be described as specialized or targeted studies that may vary in their geographic coverage, are narrower in terms of the variables, and may vary in their frequency of updates. An example of this is the Homelessness Count in Metro Vancouver. The scope includes several variables related to homelessness within the region of Metro Vancouver and data are collected annually. In recent years, communities in the Fraser Valley have also collected homelessness data using a similar methodology.

3 One-time studies In some cases it may be appropriate for indicator projects to draw upon data from very specific one-time studies. While these sources of data may not be appropriate as the foundation for an indictor project, they can be very useful to supplement key indicators with unique information relevant to thematic interests. Government agencies, academic institutions or nongovernmental organizations may undertake such studies. These studies may also include unique, one-time analyses of data from other sources, which could be updated or replicated in the future. An example of this from the work of the FBC is a study on the economic benefits of local farmers' markets that was undertaken by researchers at the University of Northern British Columbia. This study included several farmers' markets from different regions of the Fraser River Basin and provided relevant information to supplement the key primary indicators pertaining to Agriculture and Food. In some cases, indicator projects may have sufficient resources to develop new data that are targeted to address existing gaps. Some examples include research on local air or water quality, as well as surveys on public attitudes, opinions, experiences or awareness.

4 Local and Traditional Ecological Knowledge There may also be opportunities to learn from and integrate Traditional Ecological Knowledge (TEK) or other forms of Local Knowledge. While the Fraser Basin Council has no direct experience in the use of TEK within indicator reports, other work with First Nations and Aboriginals in the Fraser Basin suggests the importance of cultural sensitivity, respect, relationship-building and trust as being fundamental for anyone considering the inclusion of TEK within an indicator project. There may be other forms of knowledge from local observations that are also appropriate to consider within indicator projects.



3.2 Data Limitations

KEY LESSONS

- Consider trade-offs when reviewing best available data (e.g. geographic precision vs. trend data vs. most current data);
- Supplement quantitative indicators and data with case studies and other narratives (e.g. tell a story about the integrated nature of sustainability);
- Explain data limitations in your indicator reports to avoid misinterpretation or misunderstanding;
- Consider highlighting gaps to profile the need for improved knowledge
- If possible, discuss data limitations with data providers.

DATA GAPS RELATED TO AVAILABILITY, ACCESSIBILITY AND AFFORDABILITY

Indicators projects are largely dependent on and limited by best available, accessible, affordable data. Perhaps the most significant type of data limitation is data gaps. Gaps may exist where there simply is no available data related to the selected indicator. Data gaps may also result from issues related to accessibility or affordability. For example, if the data in question are primarily intended for internal use, it may be difficult to secure authorization and/or staff resources that may be necessary to extract the data for use by external organizations. In other cases, there may be staff resources available to facilitate access on a cost-recovery basis or with other fees associated. This may be cost prohibitive for some indicator projects or there may simply be no financial resources available to pay for data. In some cases, data availability and/or accessibility may vary over time, as data sources are not always updated regularly or consistently.

The following are two examples of indicators that were profiled in earlier indicator reports from the Fraser Basin Council:

- Economic Diversity Index / Forest Vulnerability Index – These indices were developed by BC Statistics for select communities in BC using 2001 data;

- Core Housing Need – Statistics Canada and Canada Mortgage and Housing Corporation developed this variable for regions across Canada using 2001 census data.

Each of these indices was selected by FBC because of their relevance, particularly how they integrated several indicator variables within simple index values. However, neither of these indices have been updated with more current data.

From the experience of the FBC, the following are examples of indicator themes of particular interest that come with challenges related to significant information gaps:

- Aboriginal and non-Aboriginal Relations
- Community Engagement
- Business and Sustainability

In addition, data availability and accessibility can also be influenced by geography, timeline and methodologies. These aspects are discussed next.

DATA LIMITATIONS RELATED TO GEOGRAPHY

Many data limitations may be related to specific geographies of interest. For example, some indicator data may exist at a national or provincial scale, but are not available at regional or community scales. In some cases data are available in some regions/communities but not other regions/communities. For example, regions that are identified as Census Metropolitan Areas (CMAs) may have additional Census data or analyses available than for those regions that are not designated as CMAs. Some regions or communities may have the capacity to develop unique data related to issues that are identified as priorities, particularly where they have additional financial or human resources necessary to develop that data.

In cases where data are available at finer geographic resolutions, the administrative boundaries for data collection vary significantly across different data sources. The geographic precision of data may influence the representativeness of the data for a given indicator project. For example, in the case of air and water quality, data are typically collected at specific monitoring locations. These may or may not be representative of a particular community, region, stream, lake, watershed or airshed. It is up to the organization leading the indicator project to make some judgment calls on what data are appropriate and representative of the geography of interest and how best to align the boundaries associated with the data and the appropriate boundary for the indicator project. In some cases, the data provider may be able to provide technical advice to assist in this process. In the case of the Fraser Basin Council, the range of necessary data-related geographies have included the following:

- Precise boundary of the Fraser River Basin;

- Composites that approximate the Fraser Basin (including School Districts, Local Health Areas, Forest Districts, and Regional Districts);

- Selected monitoring sites throughout the Fraser Basin;

- Province-wide data (where basin-specific data were unavailable and where province-wide data were considered relevant and somewhat representative of the Fraser Basin); and,

- In some cases data comparisons have been made with BC, other provinces, the Canadian average and other nations.

DATA LIMITATIONS RELATED TO TIMELINE

Many data limitations may be related to specific timelines of interest. Data may be available for a particular point in time, but may be unavailable to characterize a trend over a longer period of time. In cases where time series data are available, there may be limitations resulting from the frequency of updates and/or lag times between acquiring raw data and making published data available for public use. The volume of data that require processing and the quality assurance procedures typically influences lag times. In some cases there may be delays associated with analysis of data, publication of reports and the associated vetting and approval procedures. The most extreme example in the work of the FBC was the use of Census data in its first Sustainability Snapshot, which was published in January of 2003. Because the 2001 Census was not yet available, the most current data for several indicators was the 1996 Census, which was almost seven years out of date at the time of publication. If the FBC had chosen to defer

publication of its indicators report by another year or two, more current census data would have been available. Instead, we released Snapshot 2 in 2004 and used the 2001 Census data to update the indicators from the previous snapshot.

DATA LIMITATIONS RELATED TO CHANGING METHODOLOGIES

In some cases there may be data limitations derived from particular methodologies or changes in methodology over time or geography. The scope of indicators in the Fraser Basin Council indicator reports include data that are derived from a wide range of methodologies including surveys and questionnaires (e.g. Census data), monitoring instruments (air and water quality data), field observations (e.g. homelessness and salmon escapement data), digital mapping (e.g. land use and land cover data) and a variety of other methods. Each of these methods comes with its own ranges of accuracy, precision and error. In some cases, single sources of data may include multiple methodologies. For example, the salmon escapement database profiles a significant time series and geographic area. However, different methods have been used over the years or across different geographies depending on available technologies and human and financial resources. In other cases there may be data gaps resulting from changes in methodologies. For example, census variables may be added or dropped between census years.

KNOWLEDGE GAPS

Beyond the data gaps and limitations related to specific indicator themes, indicator measures, geographic scales, temporal scales and methodologies, there are also knowledge gaps and limitations that could be characterized as being of a strategic nature. Some examples include:

- Knowledge on cause and effect relationships and/or pressure/state/response relationships
- Knowledge on linkages among social, economic, environmental and institutional dimensions of sustainability
- Knowledge on linkages among different geographic scales (e.g. local, regional, provincial, national and global scales)
- Knowledge about how to describe indicator trends and conditions in relation to sustainability definitions and targets

3.3 Data Acquisition & Management

KEY LESSONS

- A standard data request form may be helpful to ensure common and consistent data specifications as well as clear communication with data providers;
- It is important to archive data files in a way that is easily accessible by others.

DATA REQUESTS AND ACQUISITION

Once you have selected the final suite of indicators and identified the corresponding data sources, it is time to contact the data providers and acquire the indicator data. It may be appropriate to develop a standard data request form to ensure common data specifications (e.g. geographic and temporal scales), clear communication with data providers as well as consistency among multiple researchers that may be involved in the indicator project. This is particularly important under the following circumstances:

- A broad scope of indicator data is required;
- Data are being solicited from many diverse data providers;
- Unique geographic or temporal parameters are involved, and/or,
- Many researchers are involved in the data acquisition process.

In some cases it may be necessary to refine your data request based on new information from the data provider. This may be appropriate for any number of reasons such as:

- Resolving geographic or temporal data needs versus actual data availability;
- Changes in the availability of data (newer or better indicator measures that may have become available or data for measures that are no longer available); and,
- Changes in methodology that may influence data analysis and/or results.

A formal, written data request may be very helpful in clarifying data expectations versus actual data availability. This can provide an early trigger regarding the need to refine a particular data request, which may be overlooked in the case of a verbal or less formal data request.

DATA MANAGEMENT

The Council utilizes databases and spreadsheets to manage and analyze data for each indicator theme. Data comes from a variety of sources including Statistics Canada, various other federal and provincial government departments, academic institutions and non-profit organizations. Data are generally sorted into suitable geographies, such as the Fraser River Basin overall, the five Fraser Basin regions, or key communities to represent the five regions. In some instances, indicator data are only available at the province-wide scale and cannot be separated into sub-regional data. In addition to sorting into similar geographies, it may or may not be appropriate to sort data into similar time periods. As a “rule of thumb”, FBC aims for a ten-year time period to analyze indicator trends. There may be exceptions depending on the nature of the issue and/or the availability of

data. For example, monitoring changes in climate or salmon stocks may warrant a longer time horizon for trend analysis.

Due to the scope of indicator themes and measures, as well as the number of different data sources, it is challenging for the FBC to maintain up-to-date data between indicator reporting periods. This often requires researchers to take the time to review or make contact with each data source when in the process of developing a new indicator report. New or updated data occasionally become available during the course of the indicator reporting process, which may require a re-analysis of specific indicators to ensure the most current data and trends are reported. For example, data may be updated after it has already been acquired for analysis and reporting. In other cases, data are updated shortly before or immediately after publication whereby updating the data, analysis and writing is not feasible. This is an inherent challenge when diverse data sources are utilized. It is simply not possible to schedule publication in a timeline that accommodates all possible updates by all data providers.

The FBC has taken an approach of refining the scope of indicators and updating the indicator data prior to the preparation of each new indicators report. An alternative approach would be to update indicators and data when possible and/or as appropriate. This would come with the benefit of distributing the effort over an extended time horizon, potentially resulting in a less intensive “crunch time” associated with updating and analyzing all indicators simultaneously. This approach might also enable a smaller project team.

It is important to archive updated and/or final data files in a way that is accessible by others. This becomes increasingly important when multiple researchers / writers are working on a specific topic as it helps avoid duplication of effort and reduce analytical errors. Archiving is also extremely important in scenarios where there may be multiple versions of working files due to updates, multiple analysts, corrections related to data errors and/or alternative analyses. For example, analysts may generate a variety of graphs (line, bar, pie charts) to support the analysis of data and the presentation of results. It is important to clearly record and archive the final data tables and graphical representations that were used within the final indicators report to ensure that this information can be easily recovered and shared with end-users upon request. Archiving final data files in an easily accessible manner also enables researchers working on future indicator reports to access the raw data, which can then be updated with new or subsequent data as appropriate.

3.4 Analysis & Interpretation

KEY LESSONS

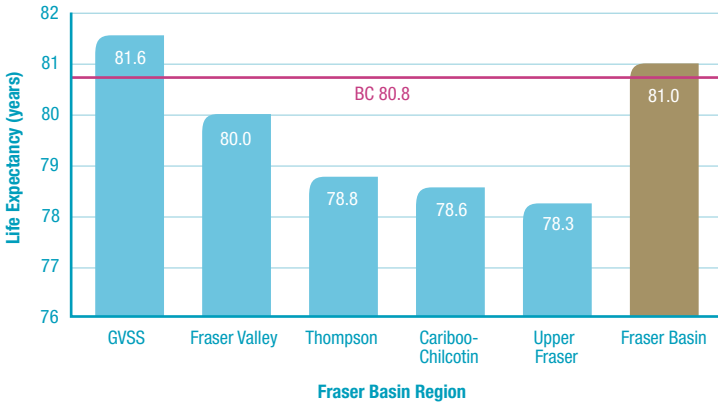
- Data analysis needs to consider different scales (temporal and spatial) as well as different metrics (e.g. average per capita, total, proportion, mean, maximum, minimum);
- Different graphical illustrations can help to identify different elements of trends and current conditions;
- Interpretation of trends needs to be done with caution, especially when it comes to cause-effect relationships. Correlation is not the same as causation;
- Drawing conclusions can be difficult as many sources of data and indicators inform an overall picture for a particular theme or topic. This can often lead to "mixed results".

Once data has been acquired it can be analyzed at different temporal and spatial scales to identify the most relevant and/or appropriate way to represent the information and illustrate the trends or current conditions. It may be appropriate to analyze different metrics to illustrate different elements of a particular theme or indicator. For example, different results may be associated with total versus per capita rates or with average values versus the extremes. From the experience of the FBC, there were important distinctions between total and per capita rates when examining solid waste disposal, energy consumption and greenhouse gas emissions where there were improvements on a per capita basis but increases (or deterioration) when analyzing total rates, likely due to overall growth in population and/or economic activity. There were also significant distinctions when it came to income-related indicators. The following are examples of some of the variations that were observed among indicator results:

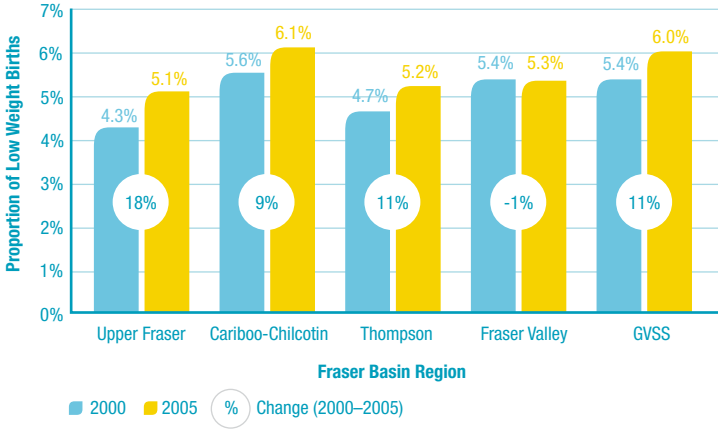
- Residents in the Fraser Basin are using less energy per capita but total energy use and total greenhouse gas emissions are on the rise;
- Residents in the Fraser Basin are using less water per capita but total water consumption is increasing;
- Real average after tax income in BC has increased while average income in the top 20% bracket increased (12%) and the bottom 20% bracket decreased (16%); and,
- There are slightly fewer people in BC below the Low-Income Cut Off, but compared with the rest of Canada BC continues to have the highest proportion of people below LICO (18%).

Different results may also emerge from analyzing data at different temporal or geographic scales. For example, if we only look at average values for British Columbia or the Fraser Basin, we might overlook important differences within sub-regions (e.g. interior regions versus the Lower Mainland) or within sub-populations (e.g. Aboriginal versus non-Aboriginal populations). Similarly, it is important to look at trends over short, medium and longer time horizons to understand a more complete picture of what

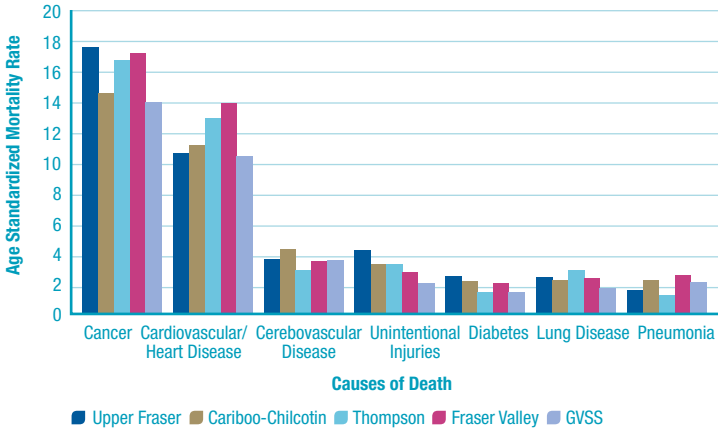
Life Expectancy by Region (2001-2005)



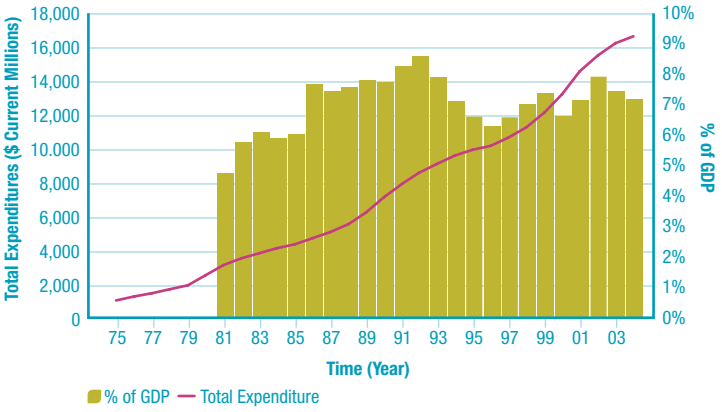
Change in the Proportion of Low Weight Births by Region (2000-2005)



Leading Causes of Death by Region (2005)



Health Care System Expenditures in BC-Total and as a % of GDP (1975-2004)

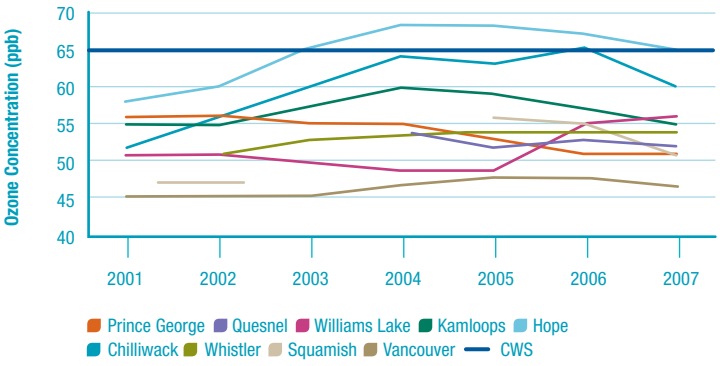


is going on. There may be a general upward or downward trend over the longer term, which might mask a trend reversal within a shorter time horizon. These sorts of dynamics can sometimes become more apparent through the development of different analyses and graphical illustrations. For example, line graphs can help to highlight multiple trends over short, medium and long time horizons. Bar graphs can help to illustrate differences between different geographies or different sub-populations.

In some cases, uncertainty and/or potential errors may be identified during the process of analysis. It may be necessary to follow-up with data providers to verify the accuracy of data, identify potential errors and/or clarify an explanation of any anomalies. There may be unique, specific circumstances that the data provider or other advisors are aware of related to the quality and/or accuracy of the data. Some of these may warrant an explanatory note within the indicator report to ensure that the data are understood and are not misinterpreted.

It is important to proceed with caution when it comes to interpretation about the causes of different trends, conditions and indicator results. In most cases there is no single cause of a problem such as poor air quality. There can be many different influencing factors that vary in importance across different regions. For example transportation, agriculture, industry, forest fires, road dust, weather conditions and many other factors can impact air quality. Further, the relative significance of these causes will vary in different communities and regions. For these reasons, the FBC has taken an approach of drawing attention to a range of probable sources, but not ascribing specific results or trends to specific causes. Similarly, the FBC has suggested simple actions or steps that can be taken to address the trends in a positive way. Hard and fast prescriptions are not presented, but rather a suite of actions is presented that are likely to make a positive difference in many cases.

Ground Level Ozone Concentrations Based on CWS Metric for Fraser Basin Communities (2001–2007)



3.5 Benchmarks, Standards & Targets

Benchmarks, standards and targets are useful tools to help track progress towards a certain goal or desired state. They are useful for putting indicator trends and current conditions into context, making them more meaningful and relevant to a variety of audiences. There can be different approaches used to develop standards and targets. In particular, targets define a desired state or outcome with respect to specific measures. Targets help provide context and meaning to quantitative indicator data and can be developed in different ways to address different needs, including:

- Scientific / technical basis
- Policy basis
- Comparative basis
- Consultative basis

SCIENTIFIC, TECHNICAL, AND REGULATORY STANDARDS

Standards and targets can be useful to help the reader better understand the significance of the data. For example, the reader might not understand the technical results of a water quality test (e.g., parts per million), but they will better understand the test results if they are related to achieving the national standard for water quality. The scientific method to setting standards is often used to identify levels of pollutants where there is a known health risk. For discussion purposes consider the national standard for a particular pollutant in drinking water to be 5%. This standard provides a reference point, which helps the reader understand that a 2% result is better than the national standard while 7% is worse. Similarly, air quality data for Ground Level Ozone may be reported in concentration in parts per billion. Most readers will not understand the significance of those levels, but presenting the results along with the Canada Wide Standard of 65 parts per billion can help the reader to understand the results.

Scientific standards can also be developed to define limits to the use of physical resources. For example water demand cannot exceed water supply. Therefore, to set appropriate targets for water management, scientific information is required about available water supply on both an annual and seasonal basis as well as water demand for both human consumptive uses and instream flows for fish and aquatic ecosystems.

POLICY GOALS, OBJECTIVES AND TARGETS

In some cases, scientific, technical or regulatory standards may not be available or appropriate. However, targets can be developed by an organization or agency in relation to their policy goals or objectives. One example of this is the previous provincial policy target to divert 50% of solid

waste from landfills through recycling, composting and other forms of waste management. Another example of a policy target is the City of Vancouver's target to end homelessness by 2015. Standards and targets can be particularly useful in linking indicator data and trends with specific policies and decisions, thus making them more relevant to the organizations and agencies responsible for these policies and decisions. For example, by illustrating a trend that is moving away from an existing standard or target, it may be easier to get the attention of those responsible for achieving the target, than it would be if there was no policy target.

COMPARATIVE BENCHMARKS AND RELATIVE TARGETS

Another approach is to use comparisons over time and between different areas or jurisdictions. This can be helpful if there is little technical basis or existing policy to define actual standards or targets. By comparing trends and current conditions in one area with another similar area, some context is provided to help the reader interpret how things are doing in their area.

Standards and targets can be used to compare data and trends over time within a single jurisdiction. The Fraser Basin Council Sustainability Snapshot reports use these simple comparisons over time to show how trends are changing (i.e. getting better, stable or getting worse). The implicit target is for all indicator trends to get better over time.

Sometimes the simplest comparisons are made either within a region, or between a region and national scale data. This is another way of providing a reference point for the reader to interpret the state of their region. For example, in Sustainability Snapshot 3, it was reported that if BC were a country it would have:

- The 2nd highest life expectancy in the world; and,
- The 4th highest GHG emissions in the world.

This simplistic approach may be the most accessible for non-technical audiences such as the public. In the FBC experience, the media has also been observed to gravitate towards simple comparative benchmarks.

There are a couple of important cautions related to the use of comparisons as a basis to analyze indicator results. There may be fundamental differences between jurisdictions, which may render the comparisons inappropriate. For example, residential energy consumption can be expected to be higher in cold climates with increased needs for household heating. Even in circumstances where geographic or jurisdictional comparisons are applicable, there may still be sensitivities related to describing one community or region as doing better than another. Everyone likes to be "the best", but no one likes to be "the worst". Comparisons can sometimes lead to winners and losers.

With respect to comparisons over time, a trend may be getting better, but the current conditions may actually be worse than the relevant standard or target. For example, there may be gradual improvements in air quality, but the majority of data are worse than the Canada-Wide Standard. Alternatively, the trend may be getting worse, but the current conditions may still be better than the standard or target.

CONSULTATIVE AND CONSENSUS-BASED TARGETS

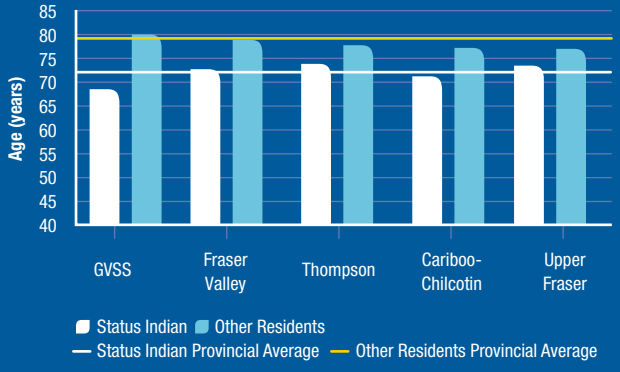
Another approach to setting targets is through consultation. Although this approach is uncommon, it is conceivable that broad-based consultation with multiple agencies, stakeholders, sectors, disciplines and the public could result in some agreed upon goals, objectives and targets for particular public policy issues. The challenge of course is related to the diversity of interests and priorities throughout a community or region. It would be no simple task to establish consensus about targets related to difficult issues such as greenhouse gas emissions or childhood poverty. There may be consensus at a high level that something needs to be done; however, it can be much more difficult to agree on specific numeric targets that must be achieved.

ABSOLUTE VERSUS INTERIM TARGETS

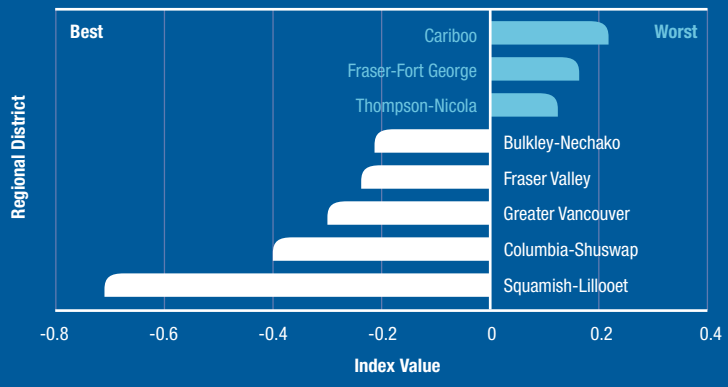
Part of the debate about targets is related to the need for absolute targets versus interim or incremental targets. When it comes to sustainability, it may be particularly important to define a target based on when a state of sustainability would be achieved. However, our knowledge about sustainability is very limited, perhaps with the exception of managing renewable resources within sustainable levels (e.g. water demand cannot exceed supply). What level of biodiversity could be considered sustainable? This type of question is even more confounding when it comes to socio-economic indicators. What level of homelessness is acceptable? What level of population is sustainable?

In many cases, it may be useful to think in terms of interim or incremental targets that describe and encourage action in the right direction for progress or improvement. For example, regarding solid waste management, the long-term target of "zero waste" may be unrealistic in the short-term. Therefore it may be appropriate to supplement an absolute target of zero waste along with interim targets that are more realistically achieved in shorter time periods (e.g. 25% reduction in solid waste within 3 years). This approach can help to encourage and achieve progress and celebrate success while keeping the longer-term target in sight. Another advantage of interim targets is that this approach allows an opportunity to refine targets over time as we continue to learn about sustainability and the challenges and opportunities that come with it.

Life Expectancy for Status Indians and Other Residents in the Fraser Basin (2001)[2]



Index of Economic Hardship for Regional Districts in the Fraser Basin (2005)



4

Presenting & Communicating Results

Following the analysis of indicator data and trends, the next step – perhaps the most important step – is in presenting and communicating the results to your audiences. This involves telling the story through a variety of means including:

- Writing and editing the narrative;
- Developing graphs, charts and other visual representations;
- Summarizing the results;
- Exploring reporting formats and producing reports;
- Communicating with the media; and,
- Disseminating results with audiences.

KEY LESSONS

- Always keep your audience and the "end-use" of the report in mind when writing and presenting results;
- Review and edit your indicator report using many different lenses including technical considerations, priorities, communications, balance, audience sensitivity and proofreading;
- Different visual representations of results such as graphs, maps, photographs, illustrations, help to tell the story and keep the audience engaged;
- Multiple reporting and outreach formats help to reach diverse audiences:
  - Print Reports
  - Launch Events (e.g. Conferences, Media Events)
  - Presentations
  - Media Coverage
  - Online Versions.

4.1 Writing, Editing & Feedback

A team of researchers and writers including Council staff, external contractors, interns and volunteers have been involved with analyzing data and writing text for the various FBC indicator reports. Each writer is generally responsible for background research, data acquisition and

analysis, and writing the narrative for one or more indicator topics (e.g. Biodiversity, Housing, Consumption & Waste, etc.). Typically a standard writing template is developed to provide guidance in terms of the scope and flow of content, standard headings, and word counts (see sample in Appendix 6.2). This helps to ensure some degree of consistency among the different writers. Each theme goes through a number of draft iterations with review and feedback from external advisors, Board members and FBC staff. The Program Manager is responsible for ensuring that overall the report is written with the "voice" of the organization. For the more recent indicator reports, a professional editor was contracted to review the final draft report for grammatical accuracy and consistency of style. Additional components of the report, such as regional highlights, case studies and sustainability highlights, are drafted once the indicator themes are close to completion as the data and trends are often required to draw conclusions and help to illustrate the bigger picture.

PERSPECTIVES FOR REVIEW AND EDITING

The review and editing process should incorporate input from advisors from different fields of practice. In particular, it is important to review indicator reports using a variety of "lenses", including:

Technical lens:

- To ensure the accuracy, credibility and reliability of data
- To ensure that the analysis of results is correct, including precision regarding the relevant geographic scale and timeline
- To consider if explanatory notes are necessary to speak to definitions, data limitations, or qualifications
- To confirm appropriate referencing so interested readers can follow up on data sources for more information

Priority lens:

- To ensure the most important themes and stories are being told relevant to the priorities of the authoring organization and the interests of the audiences
- To ask "so what?" about the results including text, graphs, maps, highlights, etc.

Communication lens:

- To clearly articulate key messages for the intended audience
- To ensure that the indicators, data and graphs are easily understood by the audience
- To ensure that the language is reader-friendly and free of technical jargon
- To ensure that the graphic design and layout is visually appealing to the reader, including a good mix of text, graphs, photographs, other graphics and white space
- To consider if the scope and language of the report will captivate the interest of the media

Sensitivity lens:

- Anticipate sensitive issues and edit from the perspective of the audience, including interested and/or implicated parties. For example:
  - What would a farmer say about the analysis of agriculture? What would a government agency say about the analysis of issues where they have jurisdiction? Is the analysis sensitive to, and inclusive of, stakeholder interests and perspectives, or is it geared towards one point of view?
  - Where are there apparent conflicts between environmental, social or economic interests? Can the report present the issue in a way that helps build understanding and thus provide a bridge between these interests?

Proof reading / editing lens:

- To ensure consistent use of:
  - Writing style and grammar
  - Formatting, structure and headings, as well as graphs, maps, colour schemes and fonts
  - Footnotes, endnotes and references
- To ensure that the information contained within the narrative text is consistent with the corresponding data and graphs as well as other sections of the report such as summaries, regional highlights, etc.
- If possible, contract a professional editor to review the final draft. If this is not possible, at the very least, have someone who has not participated in writing the report to review the final draft because by the time the report is near completion, it may be difficult for the author(s) to see minor proof reading issues, particularly after they have reviewed it many times

Balance lens:

- To ensure balance within the report with respect to several different considerations. For example, it is important to:
  - Be comprehensive in covering the subject, but be focused and concise to ensure that the report is interesting and readable
  - Be technically accurate, but be understandable to the audience
  - Be balanced in the analysis and interpretation of data and trends (different perspectives may interpret the same data in different ways)
  - Be balanced in terms of presenting good news and bad news. Do not paint a rosy picture if there is evidence of a problem. Do not paint a bleak picture if there is evidence of progress
  - Be balanced in terms of the sustainability vision, including social, environmental and economic dimensions of the issue
  - Be especially balanced in terms of presenting recommended actions and responsibility for these actions (do not assign singular blame or point fingers where more action is needed). Present recommendations as a shared responsibility to work together towards a common goal or objective of sustainability

4.2 Telling the Story

KEY LESSON

- Indicators are used to tell a story about complex systems. In identifying and communicating the story, consider what are the links between the indicators and what is the story that weaves the indicators together?

There are many different ways to tell the stories within indicator reports. A combination of text narrative, graphs, photos will help tell the story in a manner that is interesting and draws the reader from one page to the next. Specific quantitative data may be particularly compelling; however, it is important to balance the quantitative statistics with narrative that is more qualitative. The FBC has profiled case studies that are related to the various indicator themes to help put a real face on some of the issues and also to illustrate several good news stories about the kinds of initiatives that are being undertaken to address some of the challenging issues that are presented within the indicator report. Case studies can help balance the negative trends with good news stories that offer inspiration.

Narrative can also be helpful to provide some context for the data. Because the FBC is particularly interested in raising awareness about sustainability, it has been important to describe the ways in which the various indicator topics (e.g. Health, Agriculture & Food, Fish & Fisheries, Climate Change, etc.) are important sustainability issues. The narrative can also help to illustrate the linkages between social, environmental and economic dimensions of sustainability in ways that are not possible with quantitative indicators alone.

TELLING THE STORY VISUALLY

The common adage that "a picture is worth a thousand words" is very much applicable to the presentation of indicator data and related stories. If designed appropriately, a single graph can clearly reflect a multitude of data points across many years, regions, and populations in a way that clearly highlights trends as well as average, maximum and minimum values. Many examples from FBC indicator reports are profiled throughout this report.

As noted in the section on Analysis and Interpretation, different stories may emerge from different types of analyses and different types of graphs or charts. Therefore, it is useful to explore different options regarding the presentation of data on graphs (e.g., bar graphs, line graphs, pie charts) to see the best way to visually represent the data.

The following points have been excerpted from a Statistics Canada workshop manual on developing surveys.[2] The manual highlighted some of the key values and benefits of using graphs to present results, including:

- Quick and direct communication
- Revealing
- Convincing
- Improve recall
- Create interest

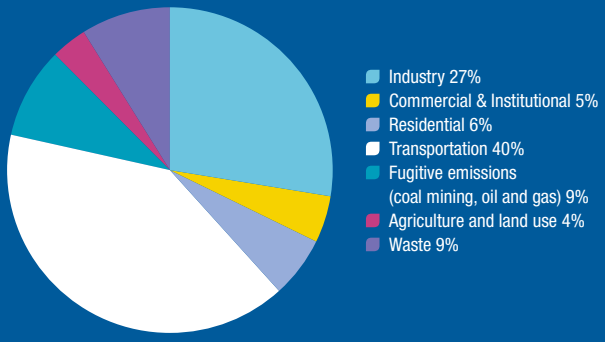
The same manual offered the following ten tips for graphical excellence:

- Serve a clear purpose
- Use an iterative, experimental process
- Use tables or text when more appropriate
- Reveal the data; use simple design for complex data
- Make visual decoding easy and accurate
- Avoid distortion and ambiguity
- Induce the reader to think about the substance (rather than method, design, production)
- Make large data sets coherent
- Be careful - proof read
- Integrate the tabular and textual material

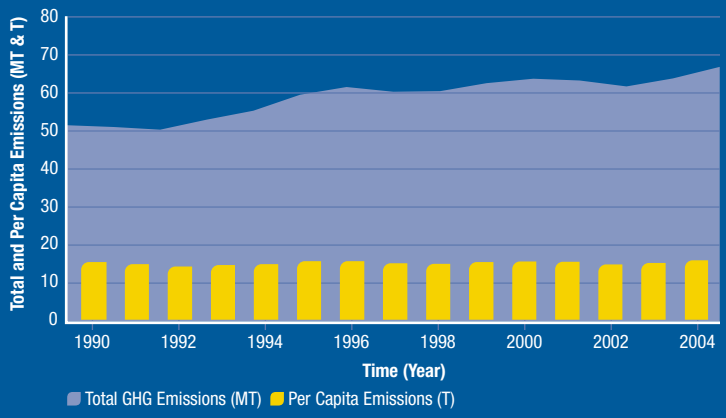
The Lower Mainland

Cartographer: Kim MacLean
Created December 10, 2009

Sources of Greenhouse Gas Emissions in BC (2004)



Greenhouse Gas Emissions in BC (1990-2004)



Lumby Rancher Lee Hesketh discusses a new biodiversity assessment tool during a field tour at his Silver Hills Ranch in April 2008. As Program Manger for the Farmland Riparian Interface Stewardship Program (FRISP) of the BC Cattlemen's Association, Hesketh helps ranchers develop land management and stewardship plans for their land.

4.3 Summary of Results "At-a-Glance"

Summaries "At-a-Glance"

Indicator reports often profile a wide diversity of themes, indicators and analyses. It can be helpful for the audience to simplify this complexity by developing some type of summary "at-a-glance". These summaries may address the current status of an indicator (good versus bad) or they may reflect a trend over time (improving versus deteriorating). The following are some examples of how different indicator initiatives may attempt to provide such summaries.

Type	Symbols
Report Card Grades	A+ for excellent and F for fail
Faces	Happy face for good and sad face for bad
Traffic Lights	Green light for good, orange light, red light for bad
Arrows	Up arrow for improving trends, flat arrow for no change, down arrow for deteriorating trends
Gauges (like a gas gauge)	Needle to the left or middle or right depending on the results
Text Description	Getting better, stable, getting worse, uncertain

While many audiences prefer the use of these types of summaries, there are a number of cautions to consider. One caution in the use of simple at-a-glance symbols is to be careful in assigning the values. Readers, particularly technical audiences and decision-makers may question or criticize why a B- was assigned or why a sad face was assigned. What scale, criteria or methodology was used? Some subjectivity and judgment is involved and you should be prepared to explain your methodology, analysis and results. It may also be appropriate to assign "mixed" ratings if there is a mix of results across different geographies (e.g. different regions of the Fraser River Basin) or different timelines (e.g. a mix of positive and negative trends over a twenty-year period). The FBC addresses this issue with the use of one or more "mixed results" ratings (see next page).

Climate Change

MIXED RESULTS / POOR	**Greenhouse Gas Emissions in BC** In 2004, both total (65,600 kilotonnes) and per capita (15.6 tonnes) GHG emissions in BC were at their highest levels reported since 1990; however, total emissions decreased by 5% between 2004 and 2006.
POOR / GETTING WORSE	**Climate Change Impacts in the Fraser Basin** Average freshwater and air temperatures have warmed over the past 50–100 years, and Fraser River flows are occurring earlier than in the past 85 years.
GETTING BETTER	**Climate Change Mitigation and Adaptation in the Fraser Basin** Communities and organizations are identifying and pursuing many opportunities for reducing their greenhouse gas emissions, and are planning to adapt to climate-related vulnerabilities, such as flooding, drought and interface fires.

Wastes & Toxins

FAIR / MIXED RESULTS	**Solid Waste Disposal** Total solid waste disposal is improving for the Fraser Basin. Per capita generation is improving in some regions and getting worse in other regions.
MIXED RESULTS / POOR	**Greenhouse Gas Emissions** GHG emissions per $ of GDP are improving, but total and per capita emissions are getting worse.
POOR / GETTING WORSE	**Toxic Substances** Releases and transfers of toxic chemicals increased by 49% in Canada (1995 – 2002). Dozens of known carcinogens and other toxins were found in a majority of volunteers tested in 2004 and 2006.

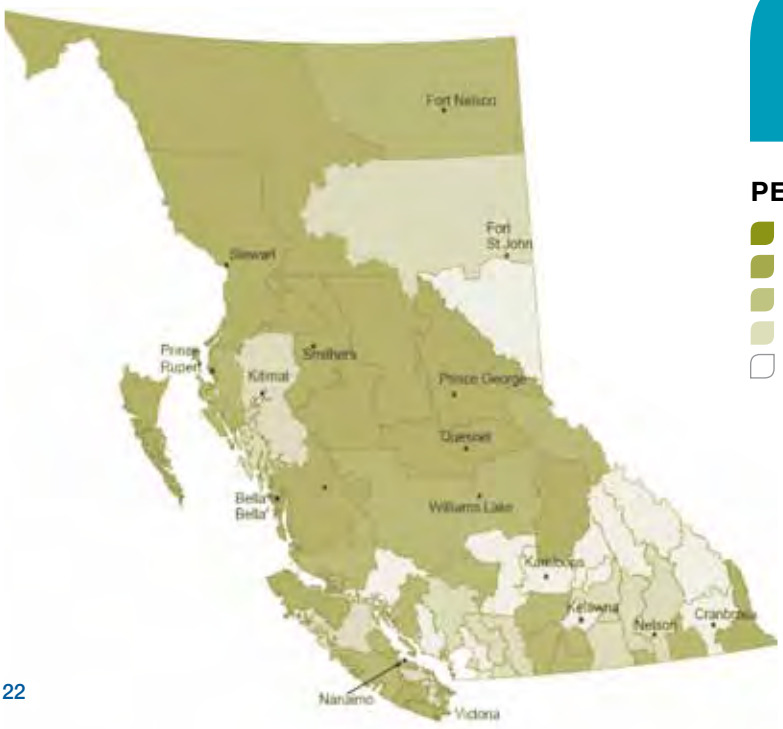
It is important to be clear about which specific indicator is illustrated by the at-a-glance symbol. Sometimes you may find that there are positive and negative trends within the same theme or topic area depending on which indicator data you are looking at (e.g., water quality). In the work of the FBC, we have typically reported on about five indicators per theme; however, we may only create summaries at-a-glance for the top three indicators. This needs to be clearly presented to avoid misunderstanding.

There may also be some confusion about whether the author is summarizing the current state or a trend over time. This may vary for different indicators depending on the available data and the most relevant story. For example, in FBC Snapshots 3 and 4, the authors used a mix of the following designations:

Good / Getting Better;
Fair / Mixed Results;
Mixed Results / Poor; and,
Poor / Getting Worse.

The basis for these ratings was described generally in the Snapshot introduction and a further explanation was also provided for each specific indicator that was assigned a rating.

Economic Diversity in BC



PERCENTAGE

- Least Diversified
- Most Diversified
- Not Reported

4.4 Report Production – Graphic Design & Printing

The graphic design process is an important piece of the indicator reporting puzzle as it helps to clearly communicate data, trends and concepts by making the report more reader-friendly and visually appealing.

The Council has developed both print and on-line indicator reports with assistance from an internal communications manager and contracted graphic designers. The FBC Communications Manager has commonly played a vital role in writing and editing as well as liaising with design and printing companies, particularly in relation to design and printing terminology, software compatibility, and knowledge about paper stock and printing and binding options.

The FBC has taken the approach of initiating a general design concept as the team is in the middle of the writing and editing process. At this stage of the report development process we have a fairly clear idea of the page count, word count, number and types of graphs, as well as other visual considerations such as photos and case study text-boxes. This information is used to assist the graphic designer to develop one or more design options, which are "mocked up" for consideration by the project team. After one or more iterations, a near-final design layout is selected and piloted with actual content. This may involve further iterations and review before a decision can be made on the final graphic design and layout of the report.

At this stage, the remaining content can be integrated into the design version of the report. This involves copying and/or converting text from Word documents and graphs from Excel files into the design software file. The majority of the text is integrated after the professional editor has reviewed the final draft and any required changes have been incorporated. However, prior to final approval to go to print, there is often a need for additional editing after the text and graphical content has been incorporated into a designed version of the report. Typos or other errors are sometimes more readily identified at this stage.

Costs can vary significantly when it comes to graphic design and printing. It takes a judgment call to assess the relative value of different levels of design and decide which is the most appropriate option based on audience, intended end-use of the report and the available financial and human resources. With respect to printing costs, the variables include the total page count, type of paper stock, type of binding, single versus full-colour, and the number of copies. In general, audiences are becoming increasingly comfortable with accessing electronic versions of reports such as PDF and/or web-based reports. This can help to reduce printing costs substantially.

4.5 Reporting Deliverables

It has been the approach of the Fraser Basin Council to present the results of the indicators project through a variety of reporting formats and mechanisms. These include:

- Print (hard copy) reports;
- Official launch events;
- Presentations; and,
- Web-based report formats.

Print reports have been the primary reporting format for the FBC to date. These have included a variety of shapes and sizes and different approaches in terms of graphic design. These can range from in-depth reports to summaries in brochure or poster format.

Web-based report formats are an important way of reaching a large audience, particularly those who are skilled at and accustomed to searching the Internet. However, the FBC has relatively little experience when it comes to web-based reporting. PDF versions of all FBC indicator reports are available for download through the FBC website (www.fraserbasin.bc.ca/publications/indicators.html). On a pilot basis, an HTML version of Snapshot 3 was prepared. This enabled easier navigation through the report with numerous links between different sections of the report. The FBC has also experimented with an online database to facilitate public viewing and access to data for select indicators. Several different online database software options are available for consideration. This is an area that holds tremendous potential for report dissemination and making indicator reports and data more accessible to a broad audience.

Some examples of well-developed online reporting systems include the following:

Environment Canada – Pacific Region
www.ecoinfo.ec.gc.ca/index_e.cfm

BC Ministry of Environment – State of Environment Reporting Office
www.env.gov.bc.ca/soe/

BC Ministry of Forests, Lands and Natural Resource Operations – State of BC's Forests
www.for.gov.bc.ca/hfp/sof/2006/

Vancouver Foundation – Vital Signs
www.vancouverfoundationvitalsigns.ca/

4.6 Communications & Media

Coverage of your indicator report through the media can be an effective means of reaching a larger audience. There are a variety of approaches, which can be useful in engaging the media whether it is radio, newspaper or television. As a first step, a media release can be developed and sent to the news networks to promote the launch of an indicator report. These can be tailored to profile issues that are of particular relevance to the community that is served by the media. Meeting with the editorial board of a newspaper can provide an opportunity for a more interactive discussion about the key findings of an indicator report and identify potential stories or issues the media may like to pick up. It may be appropriate to provide the media with advance, embargoed copies of the report prior to the official launch. This will give the media time to review the material, ask questions and prepare articles that can be published on a schedule that coincides with the official launch of the report.

Media coverage can appear in a variety of formats. A journalist may prepare an article based on research on an indicator report. One or more editors may also prepare an editorial. An op-ed piece may be submitted by the organization that authored the indicator report, or perhaps by a third party. Lastly, an insert may also be created and distributed within a newspaper. For Snapshot 4, the Vancouver Sun partially sponsored the preparation of a newspaper insert that summarized the key findings from the indicator report. The FBC also contributed financially to enable this initiative, which resulted in the distribution of 300,000 copies of the insert to readers throughout BC on the day the full report was released. This significantly increased the reach of the report well beyond the distribution capabilities of the FBC on its own.

One suggestion at a recent FBC indicators workshop was to facilitate more regular contact with our constituencies. It was noted that there is often a big media splash when a new indicator report is released, but the coverage fades very quickly. It might be more effective if FBC engaged with the media and the public on a more regular, ongoing basis.

4.7 Dissemination, Outreach & Dialogue

KEY LESSONS

- Develop a communications plan early. Don't wait for the indicator report to be completed;
- Establish an outreach and engagement plan to ensure that you reach your target audience to facilitate conversations about the implications of the indicator findings.

Now it's time to "spread the word" and engage your target audience in dialogue about the findings and what it means on-the-ground. This is another important stage of public and stakeholder engagement.

Official launch events have been organized for each of the FBC reports. The basin-wide reports have all been launched and released at the biennial State of the Fraser Basin Conference while region-specific events have been organized to officially release the regional Snapshot reports. These events – particularly the FBC conferences – have been very well received and attended by a wide range of stakeholders. This pairing of an indicator report with a community event has been an effective approach for the Council. The report profiles significant information and analysis and the event provides an opportunity for diverse audiences to hear about and discuss the issues in a live, interactive way. It also provides an opportunity for the Council to receive feedback on the indicator reports.

Following the official launch events, numerous presentations have been offered to, or requested by, diverse audiences at various workshops, conferences and dialogue sessions. This has served to reach other audiences and to continue the dialogue about priority issues and opportunities for collaborative action.

5

Getting from Indicators to Action

KEY LESSONS

- Report dissemination and ongoing dialogue are part of the process to move from indicators into action;
- Evaluating the use and impact of indicator reports is useful to see if the overall project goals have been met and also helps inform the continual refinement of the indicator reporting process.

STEPS FOR SUSTAINABILITY

Climate Change & Energy – Be Power Smart and Climate Neutral

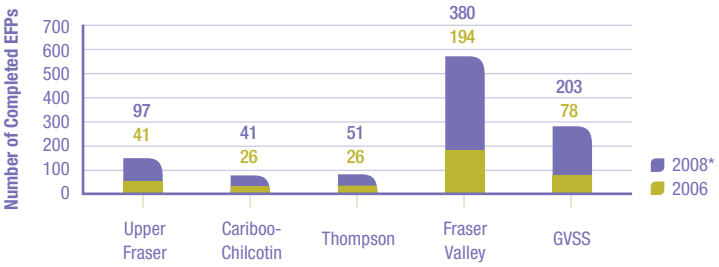
- Save money and energy by reducing your electricity consumption; take advantage of BC Hydro's energy saving tips, product information, and home upgrade incentives and rebates: www.bchydro.com.
- Take advantage of provincial and federal EcoEnergy Retrofit rebates, incentives and PST exemptions by improving your home's energy efficiency. An energy-efficient home will help you save money, increase comfort, and reduce your environmental footprint.
- Improve fuel efficiency and reduce air pollution by reducing engine idling. See www.idlefreebc.ca.
- Walk, cycle, carpool or take public transit instead of driving alone, especially to work and on short trips around your neighbourhood.
- Visit www.bcclimateexchange.ca for other ideas on improving energy efficiency and reducing GHG emissions.

As noted earlier in this report, the primary purpose of indicators for the Fraser Basin Council is to raise awareness and understanding about complex sustainability issues to encourage decisions, actions and behaviours that advance sustainability.

There are four general ways in which the FBC has designed and delivered its indicator reports to encourage information uptake and action. The first approach is with the presentation of the basic indicator data and results. By collating best available data and presenting it in a way that is visually appealing and intellectually compelling the Council hopes to inspire and enable more informed decision-making by readers of the indicator reports. The second approach is by profiling case studies, local initiatives and inspiring stories about real projects working on the ground to implement sustainability. The intention here is to illustrate a wide variety of great work that is already underway that could be adapted by other communities or regions. The third approach is by describing suggested actions and steps for sustainability that individuals and organizations can take to advance sustainability. In Snapshot 4, the Steps for Sustainability section also included numerous links and resources for more information on taking action. Lastly, through outreach and dialogue sessions, the FBC has facilitated numerous events for decision makers and other audiences to learn about the results, have dialogue about priority issues and explore areas where there may be opportunities for collaborative action.

An important, but often overlooked component of an indicator and reporting project is to evaluate the use and impact of the indicator reports. Evaluation of the use and impact of indicator reports is a difficult task. FBC has most commonly used feedback forms to gather information about how audiences are using the indicator reports. In addition, interviews with a selection of report users along with anecdotal reports have provided the Fraser Basin Council with some insight into the various ways the Sustainability Snapshot reports are being used.

Completed Environmental Farm Plans in Fraser Basin Regions (2006–2008)



**2008 data represents new EFPs completed since 2006*

The following uses of the FBC indicator reports have been verified through interviews and feedback forms:

- Increasing public awareness of sustainability issues
- Monitoring progress towards sustainability
- Helping individuals set work priorities
- Raising awareness and/or changing behaviour
- Informing decision-making
- Informing policy development
- Informing program planning and/or strategic planning
- Informing business decisions
- Informing lifestyle choices and/or consumer choices
- Setting monitoring or research priorities
- Preparing briefing notes
- Informing participation in public events
- Provision of information for high school and post-secondary course work and assignments
- Priority setting in addressing sustainability challenges
- Building partnerships among diverse interests
- Identifying information gaps.

For reference, a sample of the feedback form developed for Snapshot 4 is provided in Appendix 6.4. In discussion with other indicator practitioners, we have confirmed that this list of potential uses is relevant to many other indicator projects.

STEPS FOR SUSTAINABILITY

Consumption & Waste – Use Resources Wisely

- Reduce, reuse and recycle wherever possible. See Recycling Council of BC (www.rcbc.bc.ca) and BC Industrial Materials Exchange (www.bcimex.ca).
- Properly dispose of special wastes. See Product Care (www.productcare.org) to learn about accepted products, disposal depots and other information.
- Conduct a waste assessment in your organization to reduce waste and save money. Waste assessments help determine the weight, volume and types of waste materials being generated and identify options for reducing, reusing, or recycling.
- Communities can participate in Waste Reduction Week (third week of October): www.wrwcanada.com.
- Businesses and industries can ensure production processes use resources efficiently (for example, water, wood, paper and energy).

6

Appendices

6.1 Resources

Print Resources

International Institute of Sustainable Development. 2009. BellagioSTAMP: Sustainability Assessment and Measurement Principles.
www.iisd.org/measure/principles/progress/bellagiostamp/

SPARC of BC. 2008. Tools for Action Series: An Assessment of the Impacts of BC Indicator Projects.
www.sparc.bc.ca/resources-and-publications/category/36-community-indicators-resources

SPARC of BC. 2008. Tools for Action Series: A Resource Guide for Designing a Community Indicator Project.
www.sparc.bc.ca/resources-and-publications/category/27-sprout-resources-for-social-change

SPARC of BC. 2004. Tools for Change: BC Community Indicators Resource Guide.
www.sparc.bc.ca/resources-and-publications/category/31-social-planning

Donella H. Meadows. 1998. Indicators and Information Systems for Sustainable Development. The Natural Step.

Online Resources

Indicator Networks

Canadian Sustainability Indicators Network
www.csin-rcid.ca

Community Indicators Consortium
www.communityindicators.net/

Indicator Reporting Systems

BC Ministry of Environment
– State of Environment Reporting Office
www.env.gov.bc.ca/soe/

BC Ministry of Forests, Lands and Natural Resource Operations – State of BC's Forests
www.for.gov.bc.ca/hfp/sof/2006/

BC Progress Board
www.bcprogressboard.com/

Conservation Ontario
www.conservation-ontario.on.ca/watershed_monitoring/index.html

Environment Canada – Pacific Region
www.ecoinfo.ec.gc.ca/index_e.cfm

Fraser Basin Council
www.fraserbasin.bc.ca/publications/indicators.html

Georgia Basin - Puget Sound Ecosystem Indicators Report (2002)
www.ecy.wa.gov/biblio/0201002.html
www.pyr.ec.gc.ca/georgiabasin/reports/EnvInd_Report/summary_e.htm

Metro Vancouver
www.metrovancouver.org/about/sri/Pages/measuring.aspx

Puget Sound Georgia Basin Ecosystem (2006)
www.epa.gov/region10/psgb/indicators/

Sightline
www.sightline.org/

Translink
www.translink.ca/~/media/documents/about_translink/corporate_overview/sustainabilitysustainability_report.ashx

Vancouver Foundation – Vital Signs
www.vancouverfoundationvitalsigns.ca/

Web-Accessible Datasets

BC Statistics
www.bcstats.gov.bc.ca/

Community Mapping Network
http://cmnbc.ca/

Statistics Canada
www.statcan.gc.ca/

6.2 Sample Writing Template – Sustainability Snapshot 4

For General Reference – different topics will be of a different length, with most being about 4 pages in length

# of Pages	Word Count (approx. 300 words per page)	# of Graphs
4 pages	1000-1350 (+ actions section)	3-4

TITLE OF SUSTAINABILITY TOPIC

Sustainability Highlights (approx. 200-300 words)

1. Short description of the connections between this topic and social, environmental and economic sustainability Length: one short paragraph (2-3 sentences).

2. Most significant stories and take-home messages about a given topic, considering the most relevant indicator data and trends:
   • Good / Getting Better; Fair / Mixed Results; Mixed Results / Poor; Poor / Getting Worse

3. Highlights of key statistics.

Issues and Trends (approx. 400-500 words)

• This is the main content to present the indicators and analysis.

• Provide a sub-heading for each indicator topic (e.g., for the Health write-up, include a sub-heading for Life-Expectancy, etc.).

• Develop a discussion of the trends and current conditions for each sub-heading to describe the trends that are illustrated in the graphs and charts and other relevant trends for which graphs and charts are not included.

• Clearly identify if the trend is going up, down, flat, or otherwise.

• Consider and specify if different trends are occurring over different time periods (e.g., short versus long-term trends) or within different regions. In particular, please highlight trends that have changed since the 2006 Snapshot (if any).

• Include linkages and cross-references with other topics and indicators where applicable (e.g., air quality and health).

References and Explanatory Notes used (approx. 100-150 words)

• Author / organization. Name of report. Time period. If reference a website, include “Accessed on date”

• References and explanatory notes should be identified numerically (1, 2, 3 . . .) as endnotes both under the sub-heading, within the body of the report (if necessary) and at the end of the title of graphs to link the indicator data with the source.

• Provide explanatory notes as required (e.g., descriptions of indicators and/or regions, translation of necessary technical terms and/or acronyms, sources of definitions used, etc.)

• References and footnotes should be listed in chronological order as they appear within the main body of text for each individual topic.

• Use Endnotes function of MS Word.

Actions / Stories (approx. 300-400 words)

6.3 Sample Media Release

MEDIA RELEASE

Fraser Basin Council releases fourth "State of the Fraser Basin" report

Conference draws over 300 people from across all sectors seeking new ways to make change for sustainability

Vancouver, BC (February 19, 2009) – The Chair of the Fraser Basin Council, Dr. Charles Jago, opened the sixth biennial State of the Fraser Basin Conference in Vancouver today by offering words of warning on the health of the Fraser River Basin and its communities, based on the newly released Sustainability Snapshot 4 report

"I believe we live in an era of over-leveraged ecosystems, many of which are threatened with collapse," said Dr. Jago. He noted that the current economic crisis brings into sharper focus the urgent need for long-term thinking and integrated action – economically, environmentally and socially.

Dr. Jago said there is value in a shared vision and in targets, adding that the Council is interested in exploring the concept of how that can be done collaboratively to engage as many people as possible.

One of the tools the Council has developed to help people become more sustainable is the State of the Fraser Basin Reports, the Sustainability Snapshots. The current report, Snapshot 4, is the fourth published since 2003 and covers 18 indicators, detailed quantitative and qualitative reporting, profiles of sustainability in action, and specific steps towards sustainability that private and public organizations as well as individuals can take.

Dr. Jago noted three broad categories of indicators: 1) the current well-being of human populations and human communities in the Basin; 2) the current state of the natural environment; and 3) the current interaction between people and the natural environment. The report's initial assessment of human populations and human communities in the Basin is Fair to Good, with the exception of the ongoing need for improved living conditions among BC's First Nations and other people such as those on low-incomes, especially the homeless.

The Snapshot's scores the natural environment Fair to Poor. For example, over the past two years salmon stocks have recorded continued declines and there are also concerns about biodiversity. The Fraser Basin is home to six of the eight ecosystems identified as being at risk in BC.

For the interaction between human activities and the environment, the results are Mixed, but tending to Fair. Greenhouse gas emissions were at a 16-year high in 2004, but decreased by 5% from 2004 to 2006. There were high rates of household environmental activities – such as a reported 99% rate of recycling, according to one survey – but an 18% increase in solid waste disposal from 1996 to 2006.

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Notes for Media:

- **State of the Fraser Basin Conference:** The Conference runs through to noon on February 20 at the Vancouver Convention & Exhibition Centre. Media are welcome to attend both plenary and concurrent sessions at the Conference. Please sign in at the registration desk.

  On Friday, there are three speakers on "Redefining Wealth": **Virginia Greene** of the Business Council of BC, **Tamara Vrooman** of Vancity and **Pierre Gratton** of the Mining Association of British Columbia. See the Conference program at www.fraserbasin.bc.ca.

- **BC Youth Congress:** Three youth speakers will be available for interviews about their own work in sustainability. The Council hosted its first-ever BC Youth Congress on sustainability on February 18, in which 80 youth, aged 17 to 29, participated.

- ***Sustainability Snapshot 4:*** The Snapshot covers 18 sustainability topics, and includes a breakdown of regional data across the Fraser Basin. Data and charts that are available on request. "Steps for Sustainability" may be used as "tips" helpful to public and private sector organizations and to people from every walk of life.

* * *

The **Fraser Basin Council** is a non-profit society established in 1997 to bring people together to find solutions to longstanding issues and conflicts, and take advantage of opportunities to advance sustainability in the Fraser River Basin and beyond. The Fraser Basin Council works to ensure that the decisions made today will protect and advance the economic, environmental and social dimensions of sustainability into the future. For more information on the Council, visit www.fraserbasin.bc.ca.

Media Contact:
Denise Palmer, Communications Manager
T: 604 488-5352 E: dpalmer@fraserbasin.bc.ca

6.4 Sample Feedback Form

Feedback & Evaluation: Sustainability Snapshot 4

The Fraser Basin Council would like to hear your views about Sustainability Snapshot 4.

1. In general, how would you rate Snapshot 4: (please select)

a. Content	Poor ☐	OK ☐	Good ☐	Excellent ☐
b. Design & Layout	Poor ☐	OK ☐	Good ☐	Excellent ☐
c. Usability	Poor ☐	OK ☐	Good ☐	Excellent ☐

2. Is the report useful in helping you to better understand sustainability?

a. In General	Yes ☐	No ☐
b. In the Fraser Basin	Yes ☐	No ☐
c. In your Region	Yes ☐	No ☐

Please elaborate:

CONTENT

3. Do you think Snapshot 4 covered the most relevant sustainability topics? Yes ☐ No ☐

If no, please elaborate:

4. Is there any specific information missing from the report (such as background information, indicator data or sustainability topics)? Yes ☐ No ☐

If yes, please elaborate:

DESIGN & LAYOUT

5. Was the layout of Snapshot 4 easy to navigate? Yes ☐ No ☐

If no, please elaborate:

6. Would you recommend any changes to the layout or design for future Snapshot reports? Yes ☐ No ☐

Please elaborate:

USABILITY

7. Which parts of Sustainability Snapshot 4 did you find most useful or applicable to you?

1. Introduction	☐	12. Energy	☐
2. Aboriginal & Non-Aboriginal Relations	☐	13. Fish & Fisheries	☐
3. Agriculture and Food	☐	14. Forests & Forestry	☐
4. Air Quality	☐	15. Health	☐
5. Biodiversity	☐	16. Housing	☐
6. Business & Sustainability	☐	17. Income & Employment	☐
7. Climate Change	☐	18. Population	☐
8. Community Engagement	☐	19. Water Quality & Quantity	☐
9. Consumption & Waste	☐	20. Regional Summary	☐
10. Economy	☐	21. Summary of Sustainability Highlights	☐
11. Education	☐	22. Steps for Sustainability	☐

8. Is Snapshot 4 a useful document for:

a. Raising awareness	Yes ☐	No ☐
b. Changing behaviour	Yes ☐	No ☐
c. Informing decision making	Yes ☐	No ☐
d. Reaching a diverse audience	Yes ☐	No ☐

9. Is Snapshot 4 applicable to your organization's planning or decision making processes? Yes ☐ No ☐

Please elaborate:

10. In what ways will you (or your organization) use the information from Snapshot 4?

Please select where applicable:

a. Lifestyle choices at home ☐
b. Consumer choices when shopping ☐
c. Business decisions at work ☐
d. Policy development in government or in business ☐
e. Program planning in government, business or non-profit organizations ☐
f. Strategic planning ☐
g. Setting priorities for monitoring and/or research ☐
h. Other ways (please specify:) ☐

11. How could Snapshot 4 be improved to be more useful and useable?

12. Please select the category that best describes you or your affiliation:

a. Student ☐
b. Educator ☐
c. Non-profit organization ☐
d. Business / industry ☐
e. Government (federal, provincial, local, First Nations) ☐
f. Professional ☐

6.5 Fraser Basin Council Collaboration with Indicator Initiatives

The Fraser Basin Council has collaborated with numerous other initiatives, which have taken a variety of different approaches to measuring and reporting. The nature of this collaboration has varied according to the needs of the partners and the capacity of FBC staff to contribute. This has facilitated an exchange of information and lessons learned.

Implementation Role

1. Fraser River 10-Year Monitoring Report, Canadian Heritage Rivers Board, on behalf of the BC Ministry of Environment (2010)
2. Transboundary Ecosystem Indicators – Data Discovery, Environment Canada (2009)
3. Olympic Games Impact Baseline Report, Vancouver Organizing Committee for the 2010 Winter Olympic and Paralympic Games (2007)
4. City of Quesnel – State of Our Community: Moving Sustainability Forward (2002)

Advisory Role / Sharing Lessons Learned / Good Practices:

1. Canadian Sustainability Indicators Network (2001 – 2011)
2. State of Rossland Report, City of Rossland (2009)
3. Fraser Valley Indicators Initiative (2009)
4. Clayoquot Biosphere Trust (2009)
5. State of the Basin Report, Columbia Basin Trust (2008)
6. Greater Vancouver - Social Sustainability Indicators (2007-2008)
7. Metro Vancouver Vital Signs, Vancouver Foundation (2006-2007)
8. Regional Vancouver Urban Observatory, Simon Fraser University (2006)
9. Philippines – Canada Environmental and Economic Management (2005)
10. Genuine Progress Index – Pacific (2002-2004)

Review & Advisors for Indicator Reports:

11. Canada's Rivers at Risk, World Wildlife Fund (2010)
12. Georgia Basin - Puget Sound Ecosystem Indicators, Environment Canada (2002-2007)
13. Fraser River Estuary Management Program – Monitoring Report, FREMP (2006)
14. State of Canada's Freshwater Ecosystems, Environment Canada (2005-2006)
15. BC's Coastal and Marine Environment, BC Ministry of Environment (2006)

6.6 References

[1] Fraser Basin Council. 2000. Sustainability Indicators for the Fraser Basin: Workbook. www.fraserbasin.bc.ca/publications/indicators.html [Accessed January 2011].

[2] Statistics Canada, Advisory Services, Western Region and Northern Territories. Surveys From Start to Finish.

Fraser Basin Council

Social well-being supported by a vibrant economy and sustained by a healthy environment

The Fraser Basin Council (FBC) is a not-for-profit organization dedicated to advancing sustainability in the Fraser Basin and across BC.

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