Indicators of Human Well-Being for the Central and North Coast: Review and Recommendations for Schedules C and G

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Disclaimer

This report was commissioned by the Ecosystem-Based Management Working Group (EBM WG) to provide information to support full implementation of EBM. The conclusions and recommendations in this report are exclusively the authors', and may not reflect the values and opinions of EBM WG members.

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EXECUTIVE SUMMARY

Introduction

In 2006, B.C. coastal First Nations and the provincial government signed Protocol Agreements committing to an Ecosystem-Based Management (EBM) approach to maintain and enhance ecological integrity and human well-being (HWB) in the North and Central Coast land use plan areas of British Columbia. An EBM Working Group is developing a monitoring framework to track the effects of EBM and other initiatives on defined social and economic objectives. Two matrices called Schedules C and G present six social and economic objectives, including indicators, rationale, data sources, and desired direction for each objective. The objectives cover economic, population, and cultural dimensions.

The EBM Working Group (EBMWG) commissioned Rubus EcoScience Alliance to propose a practical monitoring framework based on the most current available science on human well-being to measure impacts of land use decisions, agreements, and EBM and other strategies on HWB, using Schedules C and G as a starting place.

The project involved:

- literature review of frameworks and research on human well-being
- creation of logic models for each of the five components of human well-being to show the theoretical links between indicators and objectives
- establishment of indicator selection criteria
- identification of a full suite of primary and secondary indicators to define human well-being
- review of the existing indicators in Schedules C and G in light of the literature on HWB
- investigation of existing sources of social and economic statistics to determine their appropriateness for measuring the selected indicators
- compiling sample data for each indicator for which existing data are available
- descriptions of primary data collection methods

The literature that addresses human well-being is voluminous. There is debate among researchers about definitions and measures of human well-being and there is no one "right" choice for measuring HWB. Choosing indicators that are grounded in the literature, measurable, and that address Schedules C and G objectives is a delicate balancing act. New knowledge on human well-being, particularly in resource-based communities, is constantly unfolding.

Part 1 of the report summarizes a review of the literature on HWB frameworks and presents a full slate of indicators for human well-being. Part 2 discusses the assessment of existing indicators in Schedule C and G and describes primary data collection methods for measuring indicators for which there is no reliable existing data source.

Challenges and Limitations
There are several serious challenges and limitations that affect the choice of indicators and their reliability for comparing changes in human well-being over time. These include: problems with scale, poorly aligned boundaries of existing data sources and plan areas, difficulties attributing observed changes to land use planning or other interventions, difficulties comparing data over time, and inaccurate census data in First Nation communities.

Literature Review of HWB frameworks
The literature organizes indicators in terms of "indicator frameworks" that serve as the conceptual structures on which indicators are based. There are many ways social indicators are framed, depending on a given author's disciplinary background.

Assessing human impacts of land use decisions in British Columbia has historically relied on indicators relating to timber supply. However, assumptions that link HWB solely to timber supply are no longer supported in the literature. Now a more holistic approach that includes health, social processes, culture, and education in addition to regional economics is recommended.

Nine human well-being indicator frameworks and indices were reviewed and synthesized.

- Canadian Well-being Index
- MacKendrick/Parkins synthesis framework
- Human Development Index (HDI-United Nations Development Program)
- Human Development Index for Registered Indians
- First Nations Community Well-being Index
- Genuine Progress Index
- Quality of Life Index
- Prescott-Allen/Coast Information Team well-being index
- B.C. Stats Socio-Economics Index

Compared side by side, these frameworks and indices reveal five common themes ("components"). These themes form the recommended set of components for measuring HWB on the North and Central Coast, including:

1) Social processes (such as social capital and sense of place)
2) Education
3) Economics
4) Health (physical and mental)
5) Culture

Schedules C and G include objectives and indicators related to economics and culture, but not objectives or indicators related to education, health and social processes. Many studies show correlations between all five components. Many organizations that monitor HWB use indicators consistent with these components. The three additional classes of objectives are recommended to be added to Schedules C and G.

Based on the five components of HWB synthesized from the literature, 17 primary and 29 secondary indicators were selected to present a "full suite" of indicators of HWB. Primary indicators are considered the most direct measures of HWB, while secondary indicators are less direct, but still acceptable proxies for measuring HWB). Some indicators are available through existing sources, while others would require primary data collection to measure.

Assessing indicators in Schedules C and G

To assess the appropriateness of the existing Schedule C and G indicators for measuring HWB, nine questions were used as evaluation criteria to screen the indicators:

1. Is the indicator consistent with and supported by the current literature on human well-being?
2. Are there logical links between the indicator and the objective it purports to measure? (Is the indicator a valid measure of the objectives of Schedules C and G?)
3. Is the indicator comparable over time? Are there other indicators better suited for temporal comparisons?
4. Is the indicator relevant to both First Nations and non-First Nations populations where it doesn't stipulate one or the other?
5. Are there existing data at a local geographic scale?
6. Are there existing data where problems of overlapping boundaries can be overcome, if overlapping exists?
7. Where there are no existing data available at the appropriate scale and boundary overlap is a problem, is primary data collection logistically possible and affordable to measure this indicator?
8. Is the desirable direction of the indicator obvious (up or down)?
9. Is the indicator sensitive to change in the outcome, but relatively unaffected by other changes?

Developing targets

Specifying a target (such as a specific percent increase/decrease or number of individuals) for indicators is appropriate after baseline data are collected for all indicators, but not before. Kusek and Rist (2004) state that "*one cannot project performance into the future (set targets) without first establishing a baseline*." Establishing targets in the absence of baseline data could produce unrealistic expectations.

As a result of the screening process, some Schedule C and G indicators are recommended for replacement, and others are recommended as additions. The total list now includes the following:

Class of objective: First Nations cultural/traditional sustenance resources (listed as Section 3.1 in Schedule C and G):

Recommended indicators for First Nations Cultural/Traditional Sustenance Resources

Objective : Sustain cultural/traditional resources for First Nations' domestic use

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
E1 Number of First Nation community members in the plan area learning and speaking tribal languages	First Nations language programs have often linked the continuation and use of tribal languages with the survival of First Nations cultures.	Number per community attending formal courses/workshops and using languages outside the home	Proxy Method: Measured through interviews with key informants (elders, language teachers) in community.	Increased number of First Nation community members in the plan area learning and speaking tribal languages
E2 Number of First Nation community members using traditional cultural resources for non-commercial purposes	Many First Nations have related an increase in use of cultural resources to an increased and firmer connection with their culture and traditions, and as essential for the restoration of community viability.	Number per community involved in at least one cultural traditional practice per year	Proxy Method- measured through interviews with key informants (elders, tribal leaders) in the community.	Increased number of First Nation community members using traditional cultural resources for non-commercial purposes.

Objective : Sustain cultural/traditional resources for First Nations' domestic use

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
E3 Number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations	The number of new archaeological studies can serve as proxy for cultural/ traditional resources identified, inventoried, and protected and is measurable over time.	Number per plan area	Provincial archaeology and heritage resource inventories and surveys; research institutions (universities, tribal councils). Need to be compiled.	Increased number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations.
E4 Number of returning salmon to key waterways in plan area	Salmon are an integral part of First Nations culture in the plan areas.	Number by major waterway in plan areas	Canada Department of Fisheries and Oceans.	Number of returning salmon to key waterways in plan area.
E5 Number of hectares protected/managed specifically for enhancement of cultural resources	Provisions for First Nations cultural and heritage resources are more likely to lead to their protection and enhancement.	Number of hectares by plan area	Land management agency local plans. Need to be compiled. Available on demand.	Increased number of hectares protected/managed specifically for enhancement of cultural resources
E6 Number of hours of First Nation community member participation in the plan areas involved in traditional cultural activities	Involvement of First Nations citizens in traditional cultural activities is expected to lead to increased connection to the culture.	Number of hours by community in plan area	Proxy Method- measured through interviews with key informants (elders, tribal leaders) in the community.	Increased number of hours of First Nation community member participation in the plan areas involved in traditional cultural activities

Objective : Sustain cultural/traditional resources for First Nations' domestic use

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
E7 Percent of First Nations traditional territory covered by Traditional Use Studies within the plan areas	Traditional Use Studies provide valuable information on cultural resources so they can be enhanced and protected.	Percent of hectares of traditional territory	Information from provincial archaeology and heritage resource inventories and surveys; research institutions (universities); tribal councils, overlaid with traditional territory maps provided by tribal councils and First Nations.	Increased percent of First Nations traditional territory covered by Traditional Use Studies within the plan areas.

Current Schedule C and G indicators not recommended:

1. Identification of First Nations cultural traditional resources

Rationale: While identification of cultural resources is an important first step in increasing First Nations access and use of sustenance resources, this indicator is not useful for measuring change over time. The number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations is recommended because of its comparability over time.

Class of objective: Community viability (listed as Section 3.2 in Schedule C and G):

Recommended indicators for Community Viability

Objective: Promote Community Viability

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D5 Total population by community and plan area	Increasing population will boost economic activity	Number of people by community and plan area	Labour Market Census – Skeena Native Development Society for North Coast BC Stats- Central Coast available annually	Increased total population by community and plan area

Objective: Promote Community Viability				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
D8 Number and percent of workers in the plan area who are permanent residents	Increasing the economic and social viability of communities requires workers to be resident - their expenditures and time resources contribute to economics and social capital	Number and percent per plan area	Annual employment survey should include a question on residence of workers	Increased percent of workers in the plan area who are permanent residents

Class of objective: Economic contribution of resources to local communities (listed as Section 3.3 in Schedule C and G):

Recommended indicators for economic contribution of plan area resources to local communities

Objective : Promote plan area resource development by local individuals and communities, to contribute to local and provincial economies

Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
D11 Percent of AAC held by plan area residents and communities	Increase in local access to plan area resources increases the likelihood that revenue from those resources will enhance local economy through increased wages and purchase of goods and services	Percent by plan area	MOFR and BC Timber Sales annually.	An increase in AAC held by plan area residents and communities

Objective : Promote plan area resource development by local individuals and communities, to contribute to local and provincial economies

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D12 Number and volume of productive activity for Backcountry Tenures, Guide Outfitter Tenures, and Sport fishing lodge licenses by plan area residents	Same as above	Angler days, fish catch, animals bagged	Provincial ministries and Dept. of Fisheries and Oceans (available annually but recommend to collect each three years – average over three years)	Increase in number and volume of productive activity for Backcountry Tenures, Guide Outfitter Tenures, and Sport fishing lodge licenses by plan area residents
D13 Percent of Backcountry Tenures, Guide Outfitter Tenures, Sport fishing lodge licenses owned by plan area residents and percent of productive activity by plan area companies	Same as above	Percent by regional district	Provincial ministries and Dept. of Fisheries and Oceans (available annually but recommend to collect each three years – average over three years)	Increase in Percent of Backcountry Tenures, Guide Outfitter Tenures, Sport fishing lodge licenses owned by plan area residents and percent of productive activity by plan area companies
D14 Percent of aquaculture tenures owned by plan area residents and percent of productive activity by plan area residents	Same as above	Percent by regional district	Provincial ministries (available annually but recommend to collect each three years – average over three years)	Increased percent of fin fish and shell fish tenures owned by plan area residents and percent of productive activity by plan area residents
D15 Percent of Mineral Exploration tenures owned by plan area residents and percent of productive activity by plan area companies	Same as above	Dollars per plan area owned by plan area residents and percent of productive activity by plan area companies.	B.C. Ministry of Energy, Mines, and Petroleum Resources website. Available annually.	Increased percent of Mineral Exploration tenures owned by plan area residents and percent of productive activity by plan area companies

Objective : Promote plan area resource development by local individuals and communities, to contribute to local and provincial economies

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D16 Percent of other natural resource tenures owned by plan area residents and percentage of productive activity by plan area companies	Same as above	Percent by regional district	Provincial ministries (available annually but recommend to collect each three years – average over three years)	Increased percent of other natural resource tenures owned by plan area residents and percentage of productive activity by plan area companies
D6 Tourism room revenue	Tourism room revenue will provide a proxy for changes in the tourism sector in the plan areas	Dollars per regional district	BC Stats collects monthly and reports annually by regional district	Increased tourist room revenue in the each of the two plan areas
D18 Annual resource revenues to First Nations, compared with revenues to province	Resource revenues to First Nation communities lead to economic and social development	Dollars per plan area	Collected through band administrative offices. Could be available annually	Increased resource revenues to First Nations

Class of objective: Economic diversification (listed as Section 3.4 in Schedule C and G):

Recommended indicators for Economic Diversification

Objective: Diversify the economies of First Nations and other communities

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D1 Economic diversity index (compared with North Island and province)	Community economies that rely on multiple sectors are considered to have stronger economic health than those who are dependent on only one or a few sectors	Index score by census sub-division. Data to be compared with North Island census subdivision and province.	The diversity index is produced by BC Stats. Economic diversity index is based on Census data. It is available every five years approximately two years after the Census year[1].	Increased economic diversity index scores and increased scores relative to North Island and province
D9 Commercial loan levels	An increase in commercial credit accessed usually is associated with economic activity in a region	Dollars per plan area	Commercial loan information by Credit Unions, Community Futures Development Corporations, and other focused lenders (no single existing source available)	Increased commercial loan levels in the plan areas

Objective: Diversify the economies of First Nations and other communities

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D10 Commercial equity investment	An increase in commercial equity investment is associated with economic activity in a region.	Dollars per plan area	Data are not available on a regional or sub-regional basis. A proxy calculation could be prepared annually based on coefficients from key industries based on information obtained regarding loan debt (from above). In addition the major projects inventory prepared by the Ministry of Economic Development by Regional Districts could be used to estimate commercial equity investment.	Increased commercial equity investment
D20 Public infrastructure investment	Infrastructure is critical to economic development in the plan areas.	Dollars of public infrastructure investment per plan area.	Compiled from local government and First Nations government, regional districts, and provincial ministries (i.e. Health and Transportation). No single existing source.	Increased public infrastructure investment

[1] http://www.bcstats.gov.bc.ca/pubs/econ_dep.asp
[2] http://www.bcstats.gov.bc.ca/data/dd/income.asp

Current Schedule C and G indicators not recommended:

1. Assessed property values

Rationale: Assessment of property values is limited mainly to freehold land of which there is very little in the Central Coast and only slightly more (primarily Prince Rupert) in the North Coast. The value of the assessed property has much more to do with the general economy, e.g., Prince Rupert's new container port, than provincial land use policy. The same will hold true for the freehold land in the Bella Coola valley if a major development takes place in or near the plan areas. In addition a large portion of the Central Coast population lives on lands

that are not individually assessed (Indian Reserves). The same holds true for most communities in the North Coast excluding Prince Rupert.

Class of objective: Employment (listed as Section 3.5 in Schedule C and G):

Recommended indicators for employment

Objective: Improve prospects for employment				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
D7 Number of businesses and employment per employer in each of the key basic and non-basic sectors	Employment survey will show employment levels by sector	Number of employees, number of businesses, and numbers per sector by plan area	Employment survey- annually	Increased number of businesses and employment per employer, in each of the key basic and non-basic sectors
D17 Number of jobs in forestry and wood processing per cubic meter harvested in land use area	Increase in jobs per cubic meter indicates greater economic utility of the resource (value added)	Number of jobs and volume harvested by plan area	MOFR and Statistics Canada- annually	Increased number of jobs in forestry and wood processing per cubic meter harvested in land use area

Indicator not recommended:

1. Number of individuals on EI and BC benefits

Rationale: Recent policy changes for EI and BC Benefits (now called Employment and Income Assistance) eligibility have made both of these categories poor measures of anything except those who match the very narrow criteria.

Class of objective: Wages and Income (listed as Section 3.6 in Schedule C and G):

Recommended indicators for Wages and Income

Objective: Promote growth in incomes

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D2 Number of individuals with formally reported incomes	The number of individuals who file tax returns approximates the number of individuals who obtain formal sector incomes. This indicator will provide information on income obtained from employment and other sources.	Number by regional district	Available annually through BC Stats tax filer data[1].	Increased number of individuals with formally reported incomes.
D3 The number of individuals with formally reported annual income above $25,000 annually (adjusted for inflation)	The goals of community economic development is to increase individual and family incomes	Number by regional district	Available annually through BC Stats tax filer data[1].	Decreased number of individuals with formally reported incomes above $25,000 annually (adjusted for inflation).
D4 Number of income earners in the lower two income brackets (less than $15,000 and $15,000 to $24,999 annually) as a percent of number of income earners for the plan areas or the number of middle income earners ($35,000+ and $50,000+ categories)	The literature indicates that as the gap in distribution of income decreases, the quality of well- being increases.	Number and percent by regional district	Available annually through BC Stats tax filer data[1].	Decreased number of income earners in the lower two income brackets as a percent of income earners or percent of middle income earners.

[1]http://www.bcstats.gov.bc.ca/data/dd/income.asp

Class of objective: Education (could be listed as a new Section 3.7 in Schedule C and G)

Recommended indicators for Education.

Objective: Increase educational levels				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
C1 Percent of graduates from Grade 12 as a percentage of those in Grade 12	Graduation from Grade 12 reflects the individual, community, and school's success in completing formal education required for advanced education.	Percent by school district	Available annually by school and by school district through the Ministry of Education. Private and independent schools will need to be contacted directly.	Increased percent of graduates from Grade 12 as a percentage of those in Grade 12.
C2 Number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree	Formal post secondary school training is required for trades, technologies and professional employment. Increases in skills and formal education often results in increased economic activity.	Number and percent by regional district (BC Stats) Percent by community (Proxy Method)	Data are available every five years through Census – long form and available for purchase ($25 for 2001 data) from BC Stats. Data could be collected for First Nations communities using the Proxy Method.	Increased number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree.

Objective: Increase educational levels				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
C3 Percent of students who enter Grade 8 but do not complete Grade 12	This is an indicator of the high school drop-out rate. It characterizes the willingness and ability of students to complete a high school education. The information would need to be compared with migration statistics (to account for students that leave the area during the high school years).	Percent by school	Available from each school annually (total number of dropped out after Grade 8, divided by total number of those entering Grade 8 x 100).	Decreased percent of students who enter Grade 8 and do not finish Grade 12.

Class of objective: Physical and Mental Health (could be listed as a new Section 3.8 in Schedule C and G)

Recommended indicators for Physical and Mental Health

Objective: Improve human health

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
B1 Potential Years of Life Lost Due to Suicide/Homicide	Suicide and homicide rates are considered by BC Stats to be an indicator for mental health of a population.	(Average per 1,000 population). by Local Health Area	BC Stats/ 2001-2005 average	Decreased potential Years of Life Lost Due to Suicide/Homicide
B2 Teen Pregnancies	Teen pregnancy rates are considered by BC Stats to be an indicator for mental health of a population.	(Average per 1,000 Women age 15-17). by Local Health Area	BC Stats/ 2002-2004 average	Decreased teen pregnancy rates
B3 Life expectancy at birth	Life expectancy rates are considered by BC Stats and many international development organizations to be an indicator for physical health of a population.	(Average, in years) by Local Health Area	BC Stats/ 2002-2006 average	Increased number of years of life expectancy

Objective: Improve human health

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
B4 Infant Mortality Rate	Infant mortality rates are considered by BC Stats and many international development organizations to be an indicator for physical health of a population.	(per 1,000 live births). by Local Health Area	BC Stats/ 2001-2005 average	Decreased infant mortality rates
B5 Potential years of life lost natural and accidental	Average years of life lost to accidents and natural causes are considered by BC Stats to be indicators for physical health of a population.	(Average per 1,000 population) by Local Health Area	BC Stats/ 2001-2005 average	Decreased potential years of life lost

Class of objective: Social Processes (could be listed as a new Section 3.9 in Schedule C and G)

Recommended indicators for Social Processes

Objective: Increase social capital and sense of place				
Indicator	**Rationale**	**Unit/description**	**Data source/frequency**	**Desired direction**
A1 Average index score for generalized trust (level of trust in people)	Social capital literature relevant to North and Central Coast says that generalized trust can serve as proxy for social capital	Index score calculated through Likert- scale questions (Level of agreement with statements about trust), by community	A household survey need to be conducted that would include a question about perceptions of increased social support networks	Increased average index score for generalized trust (level of trust in people)
A2 Commitment to place (average scores on commitment-to-place survey question)	Sense of place literature says that willingness to stay in community even if a good job comes up elsewhere is a reliable measure of sense of place	Likert scale survey question (Level of agreement with statement about willingness to stay in community even if good job comes up elsewhere, by community	A household survey would include a question about willingness to stay in community	Increased commitment to place (average scores on commitment-to-place survey question)

Data collection
Data for many indicators are available through existing sources such as B.C. Stats and Statistics Canada, but they need to be used with caution because of several limitations for measuring indicators on the North and Central Coast. For indicators which there are no existing data at the appropriate scale or where there are boundary overlap issues, the following data collection methods are recommended: **an annual employment survey, a household survey (every 5 years), and a local census using a method called Proxy Method (every 3 years)**.

a. Employment survey
An annual telephone survey of all employers in each plan area to inventory total number of employers (including unincorporated businesses), number of new businesses, employment by employer, and number of workers who are permanent residents in the area. The survey would cost approximately $7,000 in direct costs plus approximately $5,000 for analysis and write-up for the North Coast. Using the same survey developed for the North Coast plan area, conducting the survey would cost approximately $2,000, plus $3,000 for analysis and write-up on the Central Coast. In subsequent years, costs will be reduced because the data base and methodology will be established.

The survey is recommended annually because of the frequent changes in businesses, and because the effort would not be expensive or time consuming after the first year. Once businesses become accustomed to an annual survey, they are more likely to be prepared to compile the information than if the survey was done less frequently. An annual survey would also ensure that the results are not biased if a business has an atypical year. The frequency can be re-evaluated after the first few years to determine if a less frequent survey would be warranted.

b. Household mail survey
To quantitatively measure social process indicators (social capital and sense of place), it will be necessary to obtain information directly from individuals in the plan areas through written surveys. Because many of the communities in the plan area are remote, the surveys will probably need to be administered in person with a surveyor on site in the more remote communities. It will be expensive to conduct surveys in dispersed First Nations communities, but a random selection of communities and households within the communities will eliminate the need to survey every community and every household in the community and will keep costs to a minimum. Significant "front end" work in the communities to secure buy-in for the surveys will lead to a higher response rate than without "front end" work. It's suggested that a survey company or organization with experience conducting data collection in remote Aboriginal communities be contracted.

With a rough estimate of 3,500 households in the two plan areas, if a 5% error and 95% confidence interval are desired and a 20% response rate is expected, 512 completed surveys would be required (calculated using the sample size calculator at http://www.custominsight.com/articles/random-sample-calculator.asp) to obtain ability to

generalize to results across the plan area. A stratified approach where random samples are drawn from municipalities and from more remote communities is recommended. The survey is recommended every five years. Costs would depend on the desired level of confidence but would range from $10,000 to $30,000.

c. Local census using 'Proxy Method'

A community-based census survey modeled after the Skeena Native Development Society annual Labour Market Survey called the "Proxy Method" would enable measurement of indicators not available through existing sources or the other two surveys. The approach is used to obtain community and individual data in remote First Nations villages by working with band offices and by hiring local interviewers who interview key informants. Recommended frequency is three years. Costs would roughly estimate $35,000-$45,000 total for both plan areas.

Conclusion- Key messages

1) Human well-being involves more than economic or material factors; it includes other factors such as health, education, culture and social processes. These factors interact with each other in complex feedback loops. Selection of indicators should reflect this broad definition of human well-being.

2) To reflect the theories of human well-being, indicators can be framed in an "indicator framework" that is either selected or synthesized from the literature. There are many conceptual indicator frameworks currently in use by both practitioners and academics. None of the nine frameworks reviewed is recommended to be adopted "as is" for the North and Central Coasts; thus the set of recommended HWB components is a synthesis of the nine indicator frameworks based on dominant themes across all frameworks. There is no single "right" way to develop a monitoring framework.

3) Selecting the criteria ("screening questions") is nearly as important as the selection of the indicators themselves. It would be unfortunate if selected indicators don't work because the criteria have not been carefully considered in advance, or if the criteria are debated after the fact. Involving community members and stakeholders in the development of criteria could be an important step in establishing buy-in for the indicators.

4) There are serious limitations in the use of existing data for the North and Central Coast because the boundaries of the plan areas don't closely match the boundaries of the existing sources, and because of the small populations in the plan areas that make data sets too small for meaningful comparisons over time.

5) Despite higher costs of community-level primary data collection, it offers more reliable data that can be compared over time than most existing sources of data.

6) While many sources of existing data are available annually, compiling them annually is unlikely to reveal meaningful trends. Compiling existing data every three to five years (and averaging across the years) is likely enough to show trends in most indicators, even if they are available annually.

7) The advantage of this literature-driven ("expert driven") approach for indicator selection is that it ensures a theoretical basis, but it lacks local perspective and community knowledge that may improve the selection of indicators. The most efficient and effective indicator selection processes may be where experts and community members "meet in the middle" and select indicators collaboratively, taking advantage of both sets of expertise.

8) Developing specific targets for these indicators is most appropriate after baseline data have been collected for each of the indicators. Selecting desired levels of improvement is inherently political and based on values so should involve stakeholders and community members.

9) There are many important and relevant indicators that could be selected but because of affordability issues or difficulty with measurability over time, were not recommended for measurement at the plan area level. For example, workshop participants suggested that the percent of household expenditures spent inside the plan area as a measure of economic leakage as an economic indicator but it would require a sample of households to record their expenditures by category of expenditure over a period of time. These types of indicators would require considerable resources to set up and implement at the plan area level and are recommended for individual community level indicators that can be measured on a smaller scale.

Recommendations for the EBMWG:

- Develop and incorporate three new objectives on health, education, and social processes for Schedule C and G in addition to the existing objectives.

- Accept that existing sources of data for the North and Central Coast have serious limitations, and that primary data collection may be the best way to get reliable information that can be tracked over time.

- Consider the selection of indicators as an iterative process and accept that indicators will likely change as baseline data collection is attempted and further limitations and opportunities are uncovered.

- Consider that local communities within the plan areas will have their own local priorities and definitions of human well-being. This list can serve as a menu or template for local communities who adapt and create their own localized lists.

- Set specific targets after baseline data are collected, and do so in consultation with stakeholders, community members and organizations involved in community development initiatives.

- Consult with community members and stakeholders about the criteria for selecting indicators. Take advantage of community knowledge by reviewing these proposed indicators collaboratively between experts and community members.

- Consider three types of primary data collection: employment survey, household survey, and community-based census using the Proxy Method.

1.0 INTRODUCTION

Ecosystem-based management (EBM) has emerged as a dominant approach to managing land and marine resources and the environment across many jurisdictions over the past 20 years (UNEP 2006). The Coast Information Management Team (CIT) has defined Ecosystem-based Management as:

> *"…an adaptive approach to managing human activities that seeks to ensure the coexistence of healthy, fully functioning ecosystems and human communities. The intent is to maintain those spatial and temporal characteristics of ecosystems such that component species and ecological processes can be sustained and human well-being supported and improved"* (Coast Information Team 2004).

In 2006, BC coastal First Nations and the provincial government signed agreements committing to the implementation of an EBM approach that involves maintaining the ecological integrity of terrestrial resources and enhancing human well-being (HWB) in the North and Central Coast land use plan areas of British Columbia. The Working Group is developing a monitoring framework to track EBM approaches on the objectives in the agreements over time. Two agreements outlined six social and economic objectives and indicators to support the goal of enhancing human well-being in two Land and Resource Management (LRMP) plan areas on the coast of British Columbia: "Schedule C" of the Turning Point Protocol (North Coast plan area) and "Schedule G" of the KNT Agreement in Principle (Central Coast plan area).

A key characteristic of EBM is that human populations and economic and social systems are seen as integral parts of the ecosystem. EBM approaches recognize that plant, animal, and human communities are interdependent. Human well-being in EBM is defined as "*a condition in which all members of society can determine and meet their needs and have a large range of choices and opportunities to fill their potential*." Ecosystem-based management on the North and Central Coast may be unique because of its equal emphasis on ecological integrity and human well-being.

Another defining characteristic of EBM is that it is an "an adaptive process," which means that managers systematically observe and record changes in the physical and human environment as they carry out strategies to achieve long-term objectives. Collecting and comparing information on changes over time enables managers to correct or adjust their strategies. Collecting and analysing data on indicators of human well-being is a new task for many managers who are accustomed to implementing strategies but not necessarily evaluating them, particularly their impacts on individuals and communities (UNEP 2006). EBM bridges the scientific method with management, bringing together the worlds of researchers and practitioners. Monitoring changes in individual and community conditions introduces social science to resource management, which is also a new area for most managers.

The social and economic objectives in the agreements cover cultural, demographic (population) and economic factors. Schedules C and G include a matrix of objectives

with indicators, rationale, data sources, and desired direction for each indicator. These objectives include:

- Sustaining First Nations cultural/traditional sustenance resources (1 indicator)
- Promoting community viability (2 indicators)
- Promoting resource development by local individuals, communities and contributing to local and provincial economies (4 indicators)
- Diversifying the economies of First Nations and other communities (5 indicators, with data to be collected specifically for First Nations for 3 of them)
- Improving prospects for employment (3 indicators)
- Promoting growth in income (2 indicators)

For the six objectives, a total of 16 indicators (including several that prescribe data specific for First Nations) were identified by the authors of the agreements.

Tracking changes in human conditions is not a new process. Countless studies have been conducted by social scientists such as anthropologists, sociologists, and public health researchers on individuals and societies for many decades. Agencies that specialize in social data such as Statistics Canada (through the national census) and BC Stats collect and compile data on human behaviors, social conditions, and other indicators of human well-being and make it available on websites and reports at various scales.

1.1 PURPOSE AND SCOPE OF WORK

In May 2007, The EBM Working Group (EBMWG) commissioned Rubus EcoScience Alliance, a consortium of consultants, to propose a monitoring framework. This framework is designed to measure the impacts of land use decisions, agreements, EBM and other strategies on HWB on the North and Central coasts of BC. The Framework is based on the indicators outlined in Schedules C and G in the agreements. The EBMWG desires a monitoring framework that is based on the most current available science on human well-being, but also is practical to measure in the remote communities of the coast.

The project has involved:

- **literature review of frameworks of human well-being and review of current work on human well being measurement relevant to the North and Central Coast area.** Nine frameworks used in Canada and globally were reviewed and are summarized in Table 1 (page 18). Five themes were common in the frameworks: social processes, health, economics, education, and culture. These themes are considered to define the concept of well-being and provide categories ("components") to frame the indicators selected.

  Local indicator processes reviewed included the Statistics Canada Human Well-Being indicators posted on the website of the Center for Community Enterprise (CEE), the University of British Columbia Resilient Communities and Coastal Communities Projects, the B.C. Healthy Communities which posts the Social

Planning and Research Council B.C.'s Tool for Change initiative (SPARC), and the B.C. Progress Board. The reviews are summarized in Section 4.2.

- **creation of logic models for each of the five components of human well-being**. Logic models are diagrams used by program planners to show theoretical links between indicators and objectives. They demonstrate how shorter-term indicators can serve as suitable substitutes ("proxies") for longer-term objectives through logical links (shown by arrows in each diagram). These logic models help to justify the selection of the indicators by showing the theoretical links between factors that affect HWB. We based the creation of the logic models on the literature on HWB.

- **development of selection criteria.** This step involved determining the screening process for the selection of indicators. Criteria were adapted from the literature on monitoring and evaluation, from the Request for Proposals, and from judgment.

- **review of the existing indicators in Schedules C and G** for their practicality, as well as their adherence to the current HWB literature and their validity for measuring the six objectives in Schedules C and G and other selection criteria. Where existing indicators did not fit the selection criteria, replacements were recommended.

- **identification of a full suite of primary and secondary indicators to define human well-being.** Indicators were selected using the selection criteria, including how well they were supported in the current literature on human well-being. This list became the "master list" from which additional and replacement indicators for Schedule C and G were recommended. Primary indicators are those indicators that most directly measure the desired long-term outcome. Secondary indicators are less robust measures, but still are linked to longer-term outcomes. Often secondary indicators are used because the measurement of primary indicators is too expensive or logistically impossible; secondary indicators are theoretically linked and thus considered acceptable indicators.

- **investigation of existing sources of social and economic statistics** to determine their appropriateness for measuring the selected indicators. The investigation was a process of moving back and forth between indicator selection and investigation of existing sources until a suitable indicator that met the selection criteria was found. Once the indicator was selected, a sample of data for each proposed indicator was collected to illustrate its availability.

- where no existing data that met the criteria were available, **primary data collection methods were suggested.** Descriptions of how data could be collected, including costs, were included.

Kusek and Rist, authors of the book, "Ten steps to a Results Based Monitoring and Evaluation System: a Handbook for Development Practitioners" (World Bank 2004) say

that indicators answer two fundamental questions: “how will we know success or achievement when we see it?” and “are we moving toward achieving our desired outcomes?” They say that the selection of indicators has two dimensions that must be considered: technical and policy. Indicators must be technically feasible and address the desired objective. In addition, they must consider the context of the policy arena. In other words, if there are policies that hinder or work against the desired objective that the indicators measures, then the indicator is not likely to be relevant or useful.

While this report provides an overview of frameworks for human well-being, any one of the five components of human well-being could be explored in greater depth and become a comprehensive study on its own. This report does not discuss strategies to affect human well-being; that too could be a stand-alone project. For each indicator that would require primary data collection, a research plan, including decisions on questionnaire design such as scale to be used (i.e. nominal, ordinal), sample frame selection, acceptable confidence and error levels, and coding and analysis methods will need to be outlined. Costs suggested are only broad estimates; actual costs can be more closely estimated when a research plan is developed.

In many ways, communities of the North and Central Coast of BC are similar to other natural resource-dependent communities on the west coast of North America whose members aim to develop strategies to improve and measure human well-being. One author of this report worked during the 1990s in the communities of Mill City, and Gates, Oregon which faced social and economic upheaval related to reductions in timber harvest levels on federal forest land. In their attempt to address social and economic issues, community members looked to the current literature for help in selecting strategies and measures for improving social and economic conditions in their communities. They found a study conducted by the Heartland Center for Leadership Development in Nebraska called “20 Clues to Community Survival” (Luther and Wall 1998) based on case study research of communities that had undergone similar transitions. The Center found that there were common factors across communities that had “survived and thrived” and common factors among those that had not. The findings were synthesized by the Heartland Center into 20 key indicators of community resiliency (Luther and Wall 1998, found at http://www.heartlandcenter.info/clues.htm). This research-based list of indicators was used by community members in Mill City and Gates as a scorecard for tracking improvements over time – they wrote grant proposals citing this research and developed strategies to improve upon the indicators. It was posted on bulletin boards throughout the communities. It helped focus community development efforts. It gave the community organizations a manageable list of indicators to track over time to assess the level of success in efforts to improve conditions in the communities.

Significantly more research on community and human well-being has been conducted since the Heartland study was released. There is now an overwhelming body of literature that addresses the determinants of health, economics, community and individual resiliency, and other factors of human well-being, including many focused on resource-dependent communities. There are dozens of studies that offer indicators of well-being and ways of measuring it. Additionally, there is significant debate among researchers

about definitions, indicators, and ways of measuring human well-being. Since there are many academic views on the topic, there is no single "right" choice for measuring human well-being. There are many reasonable approaches to a monitoring framework, depending on which researcher's work is perceived as credible and resonates with decision makers, and many suitable indicators that can be selected within the frameworks. Arguments both "for" and "against" the use of various indicators can be found. For example, McHugh *et al.* have developed an extensive searchable on-line database of indicators (http://sustain.forestry.ubc.ca) that contains hundreds of indicators with associated rationales and methodologies. A list of indicators used by municipalities is available on the Environment Canada—Sustainable Communities Indicators Program Web site (http://www.ec.gc.ca/soer-ree/English/scip/guidelines.cfm#list_indicator).

This project represents one attempt to sort through the vast array of literature and to suggest one approach for monitoring human well-being on the North and Central Coast that is both grounded in research and as practical as possible. It should be noted that this process represents an expert-driven approach to indicator selection. The degree to which the First Nations and other community members should or could be involved in selecting these indicators has not been addressed.

Choosing indicators that are grounded in the literature, measurable, and that address Schedule C and G objectives is a delicate balancing act (see Figure 1). New knowledge on human well-being is constantly unfolding. There are on-going research projects at the University of British Columbia and elsewhere that could eventually add to the list of relevant indicators to Schedule C and G objectives. Further, agencies and organizations that collect social and economic data are continually in flux. A data set that has been collected or compiled in 2007 does not mean it will be collected or compiled in 10 years. Selection of indicators needed to carefully consider the likelihood that existing data will be available in subsequent years for comparison.

Indicator selection is, by its nature, an iterative process. Kusek and Rist (2004) state that "developing good indicators inevitably takes more than one try, and arriving at the final set of indicators will take time." It is fully expected that the indicators will continue to be modified and refined as baseline data collection is collected, and as limitations of existing data become clearer.

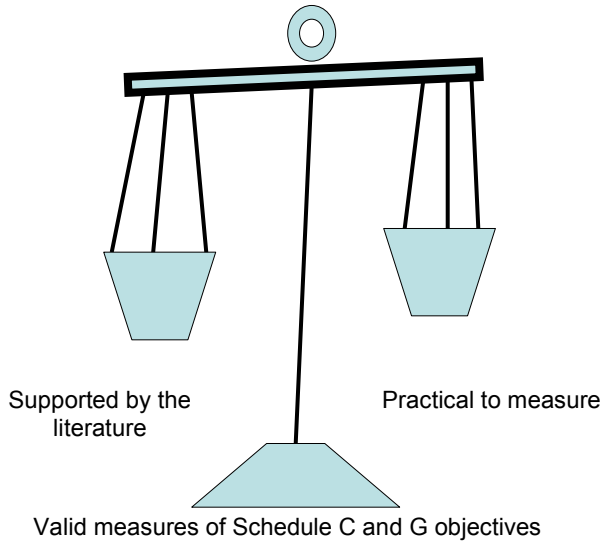


Figure 1. Selection of human well-being indicators for the North and Central Coast is a balance between matching the literature on human well-being and choosing indicators that are practical to measure, while being valid measures of Schedules C and G objectives.

In light of diverse academic views and the volume of literature on human well-being, it was impossible (and not the intent) to resolve academic debates in this limited project. The goal of this project was to identify what indicators would be appropriate on the North and Central Coast and how they could be measured. This represents one approach to balancing practicality with academics.

It is hoped that the indicators could eventually provide a succinct, manageable scorecard based on the science of human well-being that would serve as a focal point for strategy development and evaluation across the communities and organizations on the coast. In the authors' views, choosing a set of indicators and starting to use it for community development is equally as important as spending time seeking the cutting edge "theory-based" approach. Trying to use the most conclusive study on human well-being will be a continual catch-up game. It is most important to take some indicators that fit the selected criteria and begin to take action in communities.

1.2 THE PLAN AREAS

The North and Central Coast plan areas (Figures 2 and 3) are sparsely populated with fewer than 21,000 people, many of whom are First Nations. The North Coast plan area includes the municipality of Prince Rupert (14,000 population), as well as First Nations and other communities. The Central Coast plan area includes the communities such as Bella Bella, Shearwater, Klemtu, Bella Coola Valley and remote First Nation and other communities. Natural resources, including fisheries and forestry, play a primary role in the economy in the plan areas.

There is a long history on the coast of a non-locally controlled resource extraction industry involving a high percentage of workers who are not permanent residents. Unemployment and other social issues are significant compared to provincial averages.

Figure 2. North Coast plan area (LRMP boundary). Map from the Province of BC.

Figure 3. Central Coast plan area (LRMP boundary). Map from the Province of BC.

1.3 HOW THE REPORT IS ORGANIZED

This report is divided into two key sections. Part 1 presents the "big picture view" of human well-being described in the current literature. It outlines a full suite of indicators with its associated rationale, data sources, desired direction, and costs for measuring HWB.

The list of indicators in Part 1 is divided into "primary" indicators (indicators that are considered the most direct measures of HWB), and "secondary" indicators (indicators that are less direct, but still acceptable proxies for HWB). This "master" list has a total of 17 primary indicators and 28 secondary indicators. For each indicator for which there is an existing data source, there is an example of data pulled from websites such as BC Stats and Ministry of Education to demonstrate the availability of the existing data.

Part 2 focuses on indicators specific to Schedules C and G. The recommended set of indicators in Part 2 is a subset of the master list in Part 1. Part 2 also describes data

collection methodologies for the indicators that would require primary data collection. For readers most interested in methods for monitoring Schedules C and G objectives and less interested in the full suite or theoretical foundation of the selection of HWB indicators, Part 2 provides the "meat" of the report.

2.0 METHODOLOGY AND SELECTION CRITERIA

This section describes the steps taken to define human well-being and the criteria used to assess Schedule C and G indicators.

2.1 STEP 1: LITERATURE REVIEW

The first step in indicator development is the selection of a framework that helps organize the indicators around theories and provides categories for the indicators. Once a framework is identified, the indicators can be selected based on selected criteria such as measurability.

Thus, the first step in the project was a review of current literature on the state of knowledge and frameworks of human well-being. This enabled us to determine if Schedule C and G indicators were supported by the literature, and if there were dimensions of HWB that were missing in Schedules C and G. Using web searches, recommendations from steering committee members, and our own niche libraries, we reviewed frameworks used by various agencies in Canada and globally to measure human well-being. Our search and review continued until the same frameworks were cited by other frameworks and we concluded that we had identified the most prevalent and often-cited HWB frameworks in the literature. The search concluded with nine frameworks, including one that was itself a synthesis of others.

We built a spreadsheet that allowed us to see the themes (components) of each framework side by side (see Table 1, page 18). Five themes - social processes, health, education, economics, and culture - emerged across frameworks which we adopted as the five components of human well-being for this project. In addition to the nine frameworks, we reviewed websites of local initiatives, such as the UBC-led Coastal Communities Project (and its predecessor, the Resilient Communities Project), BC Healthy Communities, and BC Progress Board to ensure that no obvious HWB components currently used in BC were missed. These are summarized in Section 4.2.

In addition to reviewing the HWB literature, we conducted a brief review of literature on monitoring and evaluation processes, including guidelines for developing reliable indicators (such as Hart 2000 and Kusek and Rist 2004).

2.2 STEP 2: DEVELOPING LOGIC MODELS

Based on the research, we developed conceptual models called "logic models" for each of the components of human well-being to reveal the theoretical links for the indicators that were to be selected. Logic models are graphical presentations of "if-then" relationships

that show links between strategies designed to induce change and desired long term outcomes of the strategies. They are commonly used by program planners and evaluators to show how interventions lead to short term (interim) changes which, in turn, lead to longer term changes. Although they are typically drawn as linear charts (from left to right), impacts of strategies are rarely that simple or linear, and it is recognized that circular feedback loops exist in reality. The logic models allow program planners and evaluators to measure short-term changes as proxies for longer term desired changes when it is not possible to measure longer-term changes. Indicators are typically quantifiable measures of the accomplishment of the short and long term outcomes.

2.3 STEP 3: ESTABLISHING SELECTION CRITERIA AND REVIEWING SCHEDULE C AND G INDICATORS

Drawing on the literature on evaluation and monitoring as well as information in the Request for Proposal, and our own judgment, we assessed the appropriateness of Schedule C and G and other HWB indicators for measuring human well-being using the following nine screening questions (selection criteria):

1. Is the indicator consistent with and supported by the current literature on human well-being?
2. Are there logical links between the indicator and the objective it purports to measure? (Is the indicator a valid measure of the objectives of Schedules C and G?)
3. Is the indicator comparable over time? Are there other indicators better suited for temporal comparisons?
4. Is the indicator relevant to both First Nations and non-First Nations populations where it doesn't stipulate one or the other?
5. Are there existing data at a local geographic scale?
6. Are there existing data where problems of overlapping boundaries can be overcome, if overlapping exists?
7. Where there are no existing data available at the appropriate scale and boundary overlap is a problem, is primary data collection logistically possible and affordable to measure this indicator?
8. Is the desirable direction of the indicator obvious (up or down)?
9. Is the indicator sensitive to change in the outcome, but relatively unaffected by other changes?

Some existing Schedule C and G indicators "passed the test," (fit the criteria) and in other cases we chose to recommend an alternative indicator for measuring the Schedule C and G objective. The justification for our recommendations for specific indicators is found in Section 5.1.

2.4 STEP 4: SELECTING ADDITIONAL INDICATORS NOT ADDRESSED IN SCHEDULES C AND G

The literature review revealed that there were three components of HWB that were not addressed by Schedule C and G objectives: health, education, and social process. We identified possible indicators for these three areas based on the literature. The process of

identifying additional indicators was iterative -- there were many "false starts." We chose indicators based on the literature but later had to replace them because they were not practical to measure on the North and Central Coast or didn't fit other selection criteria. What resulted was a compromised set of indicators that was less-than-ideal from a theoretical standpoint (served only as indirect proxies to the objective), but were most practical to measure.

2.5 STEP 5: COLLECTING REPRESENTATIVE DATA SAMPLES

We collected a representative sample of data for each proposed indicator in our final list for which existing data were available. The examples are provided in tables throughout Section 5.1. Most of the examples were obtained on publicly available websites, while others were obtained from provincial agency staff.

2.6 STEP 6: RECOMMENDING PRIMARY DATA COLLECTION METHODS

For many indicators, especially those related to social processes, there is no agency or organization already compiling statistics. We researched methodologies for collecting primary data, including contacting local First Nations organizations already involved in community-based data collection in the North Coast, and recommended three primary data collection projects.

2.7 STEP 7: WORKSHOP AND FINAL DRAFT

After a first draft of the report was prepared, a workshop was held to explain and discuss the recommended set of indicators and to fine tune the indicators. Approximately 40 suggestions given at the workshop were considered. Following the workshop, input was summarized and incorporated into the final draft.

3.0 CHALLENGES AND LIMITATIONS

There are several serious challenges and limitations in choosing a framework and selecting measurable indicators for human well-being on the North and Central Coast. These challenges affect the choice of indicators and their reliability for measuring changes in human well-being over time.

3.1 SCALE AND BOUNDARY OVERLAP IN EXISTING DATA

It is a challenge to balance the theoretical approach to human well-being found in the literature with the reality of selecting indicators for which there is existing data or where collection of data in the plan area is feasible and affordable. The choice of indicators depends in part on the tolerance for imprecision in the data—how precise they need to be to be useful and satisfactory for decision making. Much data from BC Stats and Statistics Canada are free or very inexpensive, but often not precise because of scale and overlapping boundary problems. In some cases, because the population is small enough, census data are suppressed (not compiled) by Statistics Canada or BC Stats, leaving gaps in information for certain communities in the plan area, especially on the Central Coast.

For example, Statistics Canada and the Canadian Institute for Health Information compiled a research-based list of human health indicators, but the data for these indicators are only available at a very broad Health Region level. Some indicators, such as self-reported health status, are only available at an even larger provincial scale. Given that the North and Central coast plan areas are smaller geographic subsets of the Health Regions, Statistics Canada health data were not useful. The most localized source of health data for the North and Central coast plan areas is BC Stats at the Local Health Area (LHA) scale, however there is a trade-off between using appropriate scales and using indicators where the numbers are too small to detect changes meaningfully over time. Using LHAs forces the use of BC Stats indicators (see Appendix A for a map of the Local Health Areas) which lead to very small numbers of respondents.

The Canadian Community Health Survey (CCHS) that is conducted every two years offers a wide array of health indicators, but the data also are only available at the Health Region level. According to Statistics Canada, it is technically possible to "drill down" and obtain the data by postal code, but the confidence interval would be very poor and results would have low statistical reliability because of the small sample size used in the survey (Statistics Canada only surveys 130,000 people across the country for the CCHS). If data were to be made available the local level, the chance for error in reporting from one time period to the next would be significant. The data could show a significant improvement over time that did not occur, or it could show that things got worse in an area even if they did not.

Existing data for the North and Central Coast have limitations as follows:

1) **Health data at Local Health Area level (LHAs):** Local Health Areas are the most localized data available on health statistics, but the LHA boundaries do not follow the plan area boundaries, making it difficult to

report accurately. For example, the Vancouver Island North and Campbell River LHAs are in the Central Coast plan area, however they also include Vancouver Island, (thus Campbell River statistics are included with Central Coast data). Kitimat LHA also includes an area much larger than the North Coast plan area.

2) **Regional District (RD):** Some economic information is available at the regional district scale, but there are administrative boundary differences between regional district and LRMP area boundaries. Mt. Waddington RD includes the southern end of the Central Coast plan area, but also includes northern Vancouver Island. The Central Coast RD does not include the southern part of the plan area. The Kitimat-Stikine RD is a huge district that includes much farther north than the North Coast plan area. In addition, for many indicators, Central Coast and Stikine Regional Districts, economic data are suppressed (unavailable) because of small populations.

3) **Health Service Delivery Area (HSDA):** Many health statistics are available at the HSDA level. This is about the same size as the Regional Districts, with the same disadvantages.

4) **School District:** Port Hardy School District includes Northern Vancouver Island as well as the Central Coast. Kitimat School District includes much farther inland and farther north than the North Coast plan area.

See the Appendices for maps of Health Service Delivery Areas, Local Health Areas, Regional Districts, and School District boundaries.

3.2 ATTRIBUTION

As discussed in Morford (2007), one of the greatest challenges in assessing the social and economic impacts of land use planning and EBM is the ability to attribute observed changes to those interventions. Given that there are many factors that influence social and economic conditions in a given plan area (including factors such as provincial policy, climate change, interest rates, and U.S. dollar exchange rates), the ability to confidently link social and economic changes to land use planning and EBM is limited. There are many indirect effects whose linkages can only be assumed.

3.3 COMPARISONS OVER TIME

Some indicators that are readily available, such as the BC Stats Socio-Economic Index, are developed with methodology that doesn't allow for comparisons over time. The Socio-Economic Index was designed to compare one geographic area with another, not compare one area's change over time. While these indices could be handy composite indicators, using the index scores for temporal comparisons could lead to erroneous conclusions (see http://www.bcstats.gov.bc.ca/data/sep/method.pdf, page 2).

3.4 CULTURALLY INAPPROPRIATE CENSUS METHODOLOGY

Statistics Canada census methodologies have been described by some First Nations as inappropriate for collecting data in First Nations communities. Culturally inappropriate methodologies have been reported to lead to inaccurate census results. Since many social and economic statistics are derived from census data, this could represent an issue when relying on existing data.

3.5 SETTING TARGETS FOR INDICATORS

Specifying a target (such as a specific percent increase/decrease or number of individuals) for indicators is appropriate after baseline data are collected for all indicators, but not before. Kusek and Rist (2004) state that "*one cannot project performance into the future (set targets) without first establishing a baseline*." Choosing a specific target (such as "33% of tax filers") for any indicator without knowing the baseline data for that indicator could create unrealistic expectations. For example, if a target for the percent of people with incomes above $25,000 were to be set at 63% in 10 years on the North Coast before baseline data were collected, and the baseline study later revealed that the current percentage was 30%, expecting a 33% increase in 10 years may have been unrealistic.

Additionally, targets are subjective and related to policy decisions and community values. To some people, seeing no change in an indicator could be seen as success because "things didn't get worse." Discussing indicators in terms of desired directions also is incomplete since increases or decreases in some indicators have diminishing returns or become undesirable when the number or percent continues to change in one direction. These issues can be resolved once the baseline data are collected and the desired level of improvement is established with consultation with community members and decision makers. Who determines the desired level of improvement is itself a political decision.

For these reasons, this report discusses desired direction of each indicator (increase/decrease), but not specific numbers and suggests that targets be established after baseline data are collected for these indicators. Figure 4 shows the process for devising performance targets adapted from Kusek and Rist (2004).

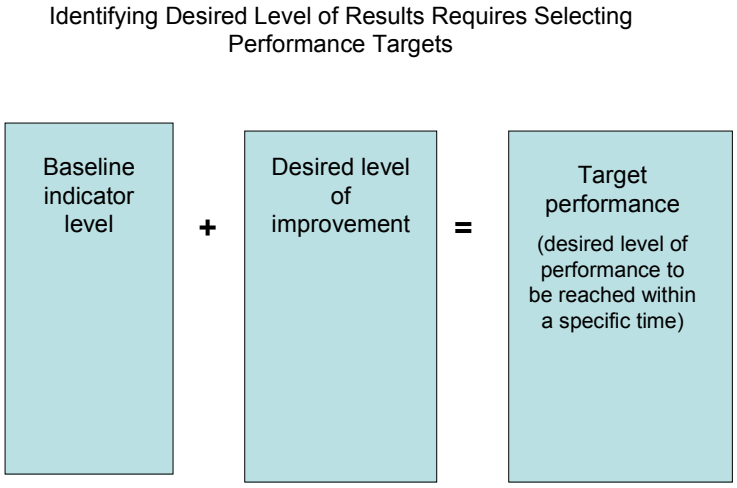


Figure 4. The process for determining targets (Kusek and Rist 2004)

3.6 CORRELATION VERSES CAUSE-AND-EFFECT

The social science literature on human well-being describes linkages between factors (such as economics and health factors) that have been revealed through research but except for rare exceptions, much of the social science research typically does not involve the use of experimental design where a treatment is compared with a control. Because research is conducted on humans, social scientists typically use methodology that does not include treatments and controls; inducing research subjects to experience poverty to test its affect on health for example, is considered unethical. Thus, social science results typically refer to correlations (factors happening coincidentally) rather than a factor "causing" something else to occur. Compared with biological science where manipulating factors in a laboratory or field site is possible, social science research that results in assertions of associations rather than cause-and-effect may provide less comfort to some.

3.7 TRADE-OFF BETWEEN LOCALIZING AND GENERALIZING INDICATOR DATA

Communities within the plan area are unique from each other. Some indicators selected for measuring change across an LRMP area may be relevant to some communities within the plan area, and less relevant to others. There is an inherent limitation in establishing indicators that can be applied and measured across large geographic areas because they generalize results and do not reveal locally specific characteristics. Likewise, conducting random surveys within a plan area forces the indicator to report on averages without the ability to "drill down" to specific communities. As a result, it is most useful for regional indicator selection processes such as this one to be accompanied by local indicator selection initiatives conducted by individual communities.

4.0 PART 1: LITERATURE REVIEW AND FULL SUITE OF INDICATORS OF HUMAN WELL-BEING

4.1 COMPONENTS OF HUMAN WELL-BEING

The purpose of investigating the human well-being literature is to ensure that the indicators selected to measure HWB on the North and Central Coast are framed in the most current academic work on human well-being.

The literature review on human well-being was begun in a project previously done for the BC Ministry of Agriculture and Lands (MOAL) in February 2007 (Morford 2007). That project involved a review of recent Socio-Economic and Environmental Assessment (SEEAs) social indicators for each land use plan to assess them in light of the emerging research on social indicators. The project included a preliminary review of the current literature on community sustainability and human wellness.

There have been many initiatives to define human well-being in Canada, North America and internationally. Indices and indicator sets have been developed by many organizations and authors representing diverse academic world views. The use of social indicators has a long history in many fields beginning in the middle of the last century and the use of social theory to guide the development of indicators has matured since the 1970s. The *Journal of Social Indicators Research* has chronicled social indicator research since 1974 and includes an increasing number of articles that report on theories of indicators (Morford 2007).

The current literature discusses indicators in terms of various "indicator frameworks" that serve as the conceptual structures on which indicators are based. The literature shows that there are many different ways social indicators are framed, depending on a particular author's disciplinary background. The large number of different frameworks (and disciplines they represent) found in the literature can be overwhelming to practitioners who are trying to operationalize the use of indicators in land use planning or other initiatives. Typically, authors base their framework on their academic world view, leaving the practitioner to decide which framework best fits their own world views. The selection of indicators is typically left to practitioners who select them based on a defined set of criteria, such as measurability and availability of data.

Sociologists and rural development researchers have built indicator frameworks based on sociological concepts such as community capacity and resiliency, using the community as the unit of analysis. Other authors have built indicator frameworks based on systems theories that include resilience and adaptation to change, or human health, using individuals as the unit of analysis.

Until recently, assessing human impacts of land use decisions in British Columbia relied on indicators relating to community economic stability (usually timber supply-related). Kaufman and Kaufman (1946) first drew the link between the sustainability of the timber resource and the sustainability of rural communities. Later researchers such as Marchak

(1983) and Lee and Eckert (2002) conducted some of the foundational work on the social conditions of communities economically reliant on natural resources. However, the assumptions that link community and individual well-being solely to timber supply are not supported in the current literature. The complexity of factors affecting human communities and increased knowledge of their dynamic ecology have led to a call for a more holistic approach to indicator selection that includes dimensions such as health and education in addition to economic factors.

Human well-being is a subjective concept; some people assert that health status is the defining factor in well-being while others believe that life satisfaction is the ultimate factor. For this project, nine human well-being indicator frameworks and indices representing various fields of study (such as sociology and health) and world views were reviewed. Several provide a well-being index score that is calculated through a formula, while others provide structures in which indicators are framed. The frameworks and indices include:

- Canadian Well-being Index
- MacKendrick/Parkins synthesis framework
- Human Development Index (HDI-United Nations Development Program)
- Human Development Index for Registered Indians
- First Nations Community Well-being Index
- Genuine Progress Index
- Quality of Life Index
- Prescott-Allen/Coast Information Team well-being index
- BC Stats Socio-Economics Index

Table 1 shows the nine frameworks and indices reviewed for this report. Compared side by side, five themes emerged that are dominant across indices and frameworks. These include:

1) Social processes
2) Education
3) Economics
4) Health (physical and mental)
5) Culture

Table 1. Human well-being frameworks and indices reviewed

	Canadian Well-being Index	MacKendrick / Parkins Synthesis Framework of Indicators	Human Development Index (HDI)	HDI for Registered Indians	BC Stats Socio-Economics Index	First Nations Community Well-being Index	Genuine Progress Index	Quality of Life Index	Prescott Allen (CIT)
Economic & Material	Living Standards	Economic capital	Income- access to material goods (GDP per capita)	Average annual income, life expectancy	Index of economic hardship	Income and Housing quantity and quality	Livelihood security, equity	Income equality, monetary savings rate, per capital income	Housing, wealth, economic foundations
Health	Healthy populations	Physical and mental health	Health- life expectancy at birth (only indicator)		Index of health problems		Health		Health
Ecosystem Health	Ecosystem health	Natural capital and ecological integrity					Environmental quality	Major environmental treaties	Ecosystem health
Education	Educated populace	Human capital	Knowledge (Education and adult literacy)	Education	Index of education concerns	Education	Education	Mastery- Physicians per capita. Education- college/university attendance	Education attainment index
Social Processes	Community vitality & civic engagement	Social capital and process indicators						Coordinated social interaction and survival and welfare of groups	
Recreation, Arts & Culture	Arts and Culture	Recreation							Cultural participation
Other (are these not part of Social Processes?)	Time Allocation		Gender development index		Youth at risk, Children at risk, & crime		Free time	Subjective well-being	Aboriginal rights & title, population, crime rates

The literature supports the theory that HWB is linked to environmental factors, and asserts that monitoring HWB should include monitoring of environmental factors as well as the five other factors, but they are not discussed here. Indicators for the sixth theme, ecosystem health/environment, are being developed under a separate project.

Each of the nine frameworks/indices has limitations and strengths and no framework or index "does it all." For example, the new Canadian Well-Being Index is an exciting leading-edge framework that includes a full range of indicators, but the index scoring formula has not yet been released (Michalos, pers. comm. 2007). The HDI for Registered Indians and the BC Stats Regional Socio-Economics Index provide a score that enables comparisons across geographic areas, but not temporal comparisons (over time) in one area. The Genuine Progress Index includes measures of free/recreational time, but not culture.

Because of these limitations, none of the nine frameworks is recommended to be adopted "as is" for the North and Central Coasts; thus the set of recommended HWB components is a synthesis of the nine indicator frameworks based on dominant themes across all frameworks.

4.2 OTHER HUMAN WELL-BEING MEASUREMENT PROCESSES OF RELEVANCE TO THE NORTH AND CENTRAL COAST

There are many provincial-level and local processes, research, and indicator sets related to the components of human well-being in B.C., including two that directly involve communities on the North and Central Coast. Examples are shown in Sections 4.2.1 through 4.2.5.

4.2.1 Statistics Canada indicators of Human Well-Being

Statistics Canada provides a spreadsheet with 170 HWB indicators under topics such as economics, work, families, social participation and connections, time use, population structure, and others. The ease of accessibility of the data and a source for each indicator is listed on the website of the Centre for Community Enterprise. (http://www.cedworks.com/benchmarks.html#contents). Each indicator is rated as either:
-Currently available from Statistics Canada
-Data exist but requires manipulation
-Data exist but require custom desegregation
-Indicator exists from non-Statistics Canada source
-Data exist but require manipulation from non-Statistics Canada source
-Requires creation of new data

4.2.2 Resilient Communities Project

The Resilient Communities Project at the University of British Columbia has involved compiled aggregate and summarized data from the Canadian Census for the years 1986, 1991, 1996, and 2001 for 24 coastal communities including population, age distribution, marital status, ethnic origin, housing , families, citizenship and immigration, five-year

mobility, schooling and education, employment and income. The data were collected through a mail-out survey which was conducted from 2002 to 2004. Information was gathered on age, gender, length of time in community, First Nations membership, religious affiliation, how often respondents attend religious ceremonies, education level, income, sources of income, opinions about community, measures of sense of place, social capital and trust, social action, media use, and self-reported health. The project has led to the development and testing of quantitative indices for measuring trust (generalized and institutional) as indicators of social capital, as well as measures of sense of place (commitment to place) in coastal B.C. communities. The research tested correlations between trust, social networks, and individual and community economic and social characteristics and commitment to place. The surveys included a series of questions for measuring trust that was developed into a scale and tested for reliability. The results of the research on social processes (social capital and commitment to place) conducted by UBC have informed the process of selecting indicators for social capital and sense of place for this project.

4.2.3 Coastal Communities Project (CCP)

A multi-year research project that replaced the Resilient Communities Project, the CCP is an initiative of the University of British Columbia and the Coastal Communities Network in partnership with coastal communities, including both First Nations and municipalities.

One CCP project theme is "Community Health and Wellness" that aims to help coastal communities develop health services that reflect and respond to local conceptions of health and local needs.

The project is based on the premise that good health and human well-being are linked with community resilience. The approach to health and well-being includes cultural, economic, social and environmental components. The research team is working with municipal and First Nation partners to develop monitoring tools to evaluate the impact of new health services approaches.

4.2.4 B.C. Healthy Communities Project

The B.C. Healthy Communities Project website features documentation and links to community indicators processes, such as the 2004 publication "Tools for Change" that describes over 40 community indicator projects in B.C. Published by the Social Planning and Research Council of B.C. (SPARC), the document outlines some 30 indicator processes, including local community indicator projects (such as the "Gulf Islands: Measuring Our Progress"), and 15 provincial initiatives such as the BC Socio-Economic Profiles of B.C. Stats Indices and "Measuring BC's Performance – Toward Northstar 2010 of the B.C. Progress Board." The SPARC publication is available at http://www.sparc.bc.ca/resources_publications/resources_and_publications.

4.2.5 BC Progress Board

The BC Progress Board is an independent panel established to measure and benchmark British Columbia's social, economic, and environmental progress over time and compared with other jurisdictions. The Progress Board established a monitoring framework that includes indicators for social conditions, economic growth, environmental quality, jobs, health, and standard of living.

The 2006 benchmarking report, "Building on Our Progress - Striving for Excellence," contains core performance indicators and targets, international comparisons, urban-rural comparisons and other topics, see http://bcprogressboard.com.

4.2.6 Community Capacity Model

Adapted from Beckley et al (2002), the Community Capacity Model is derived from a research project examining rural community change in Canada called the New Rural Economy Project (MacKendrick and Parkins 2004). The model identifies four types of capital central to community capacity: natural, human, economic, and social. The four types of capital are used to frame several logic models shown in Figures 5-9.

4.3 HUMAN WELL-BEING FRAMEWORKS AND SCHEDULES C AND G

The five components of human well-being synthesized from the literature above (culture, economics, health, education, and social processes) are the components recommended for the monitoring plan for the North and Central Coast plan areas. Two of the components, culture and economics, encompass the indicators listed in Schedules C and G. However, three components recommended in the literature on HWB are not represented by objectives in Schedules C and G, as shown in Table 2 below, including education, health and social processes. Table 2 shows the comparison of Schedule C and G classes of objectives, and the components synthesized from the literature.

Table 2. Comparison of Schedule C and G classes of objectives and recommended components of human well-being synthesized from the literature

Schedule C and G Class of Objective	Component of HWB from literature
First Nations cultural/traditional sustenance resources	Culture
Community viability (population)	Economics
Economic Contribution of Plan Area Resources to Local Communities	Economics
Economic Diversification	Economics
Employment	Economics
Wages and Income	Economics
(no equivalent objective)	Education
(no equivalent objective)	Health (mental and physical)

(no equivalent objective)	Social processes

4.4 DESCRIPTIONS OF HUMAN WELL-BEING COMPONENTS

Most researchers recognize that factors affecting human well-being are woven together in a complex web and cannot be fully isolated from each other. While these components are often studied as isolated individual factors, they have extensive feedback loops. Health and education influence economics; social processes influence health status and so on. However, for purposes of measurement and assessment, they are necessarily separated into individual components.

4.4.1 Social processes

Social processes refer to the set of indicators that describe the community processes that lead to other factors of HWB ("how things got to be this way") (Beckley et. al 2002). This includes social networks (capital), social cohesion, and sense of place that are purported to exist in varying degrees within communities and are increasingly reported in the literature to affect individual well-being factors such as economics and health. Woolcock (2001) says, "well-connected people are more likely to be housed, healthy, hired, and happy." Woolcock found that individuals who report high levels of social networks also perform better on indicators relating to economics, health, employment, and life satisfaction. He adds that "the message rippling through the social capital literature is that how we associate with each other, and on what terms, has enormous implications for our well-being."

Beckley et al. (2002) listed social capital, and sense of place, and leadership as among the indicators for social processes. The Heartland Center for Leadership Development also includes several social process indicators among their 20 Clues for Community Survival: leadership, evidence of community pride, and a strong belief and support of education. Social process indicators are increasingly recognized as key determinants in both human and community well-being by a series of recent authors and researchers who are conducting studies specifically in resource-dependent communities (Beckley et al. (2002), Parkins et al. (2004), Matthews (2005), and others). Some authors assert that social processes underpin and enable all other HWB processes.

Matthews (2005) and others at the University of British Columbia have been studying the links between social capital, economic factors, and population health in coastal BC. In a household survey across more than 20 communities on the B.C. coast between 2002 and 2004, Matthews et al.(2004) investigated the relationship between social capital and trust and found that generalized trust (trust in other people) can serve as a proxy for social capital. Matthews et al. also found a lack of correlation between civic engagement and institutionalized trust (trust in institutions and political authorities), which may make civic engagement a questionable indicator for social capital in the plan areas (disagree, people may become engaged precisely because they don't trust but any community

engagement would build social capital, would it not?). They concluded that while generalized trust is good proxy for social capital, institutionalized trust is not. Knack and Keefer (1997) also found that trust and civic cooperation have significant impacts on aggregate economic activity.

Kawachi et al. (1999), Cote (2001), Veenstra (2001), ARAD (2007) and Knack and Keefer (1997) have studied the role of social capital on health. In a study by Kawachi et al. (1999), indicators of social capital (trust, levels of perceived reciprocity, and per capita membership in voluntary organizations) were found to be correlated with increased life expectancy in the U.S. Individuals who lacked social connections had two to three times the risk of dying from all causes compared with well-connected individuals. The Applied Research and Analysis Directorate (ARAD) (2007) published a working paper that discusses the relationship between social capital and health factors such as mortality rates, efficacy of health program promotion, and health behaviors at various geographic scales. The ARAD report adds that "the higher the level of social capital in a community, the better the health status." The ARAD concluded that "despite the presence of debate [in the literature], there is some consensus on the indicators that are used most frequently to measure social capital. These include: trust (both generalized and trust in institutions) as measured through survey questions that ask respondents to rate their level of generalized and institutional trust; civic engagement as measured by participation in organizations and community/cultural activities. These lead to increased social networks measured by individual perceptions of their social support. In addition, identification with the community as a critical part of their personal identity has been identified as a key measure by Matthews, Knack and Keefer, and others.

The concept of social capital was brought to public light by author Robert Putnam in his 2000 book *Bowling Alone: America's Declining Social Capita* and earlier work in Italy that showed links between social networks and other HWB factors. Putnam observed that declining social networks and organizations were associated with declining social and economic conditions. While many measurements of HWB are well established and data are available through Statistics Canada, the measurement of social processes requires primary data collection.

Sense of place is defined as the meanings and attachment held for a geographic area by individuals and has been shown to contribute to social capital, and thus health and economic well-being. Sense of place has been measured three ways: satisfaction towards the condition of the place, attachment to the place as a reflection of one's sense of self, and descriptions of meanings a place has for an individual (Stedman 1999). The logic of sense of place would imply that strategies that lead to increased percentage of workers in the North and Central Coast who are permanent residents would lead to increased sense of place and social capital and thus have both positive health and economic implications. Matthews et al. (2005) assessed sense of commitment to place in coastal B.C. communities by asking survey respondents to respond to the statement "*I would move away from this community if a good job came up somewhere else*." They found that individual and community social characteristics were correlated with willingness to stay but economic factors were not significantly correlated with willingness to stay.

The literature on social networks specific to First Nations is generally quite weak. Most of the research on social capital is on European-based systems. In those systems, social networks refer to formal membership (joining groups) or informal networks ('number of people you know inside and outside the community' and the strengths of those relationships). Pickering et al. (2006) studied social capital in Native American communities and suggested that social capital is a community-specific phenomenon and must, therefore, be studied at the local level.

Pickering et al. found that Native American respondents were more likely to be involved in informal organizations based on social relationships, than formal memberships. For Oglala Lakota respondents for one study, for example, community was not a geographic concept but rather a kinship concept that embraced extended family members living in distant geographic communities. Different native communities answered differently on interview questions designed to measure social capital such as "*How many people in your community would help in a water emergency*?" and "*Do you feel you have a sense of responsibility with people in need*," and whether a respondent felt excluded or left out from their community, and respondent's connections outside of their community. This demonstrates that how social capital is defined varies from community to community and suggests that monitoring of social capital should be tailored to the types of social capital present in a given community.

Implications for Schedule C and G: For measurement across the plan areas, two primary social process indicators (generalized trust and commitment to place) can be measured in the communities using the primary data collection methods outlined in Section 8.1. Matthews et al (2004) found that generalized trust can be used as an acceptable proxy for social capital and they developed and tested a scale for generalized trust. The scale includes a compilation of results of four statements that survey respondents can be asked to respond to which are then given an index score. This index score can be compiled and compared across time and geography. These questions include:

-*Most people can be trusted*
-*Most people in this community can be trusted*
-*Young people in this community can be trusted*
-*Most people in this community are [not] likely to take advantage of you if they get the chance.*

Thus, the compiled index score can serve as the indicator of social capital in the North and Central Coast.

Using the results from the Matthews et al study on commitment to place, one survey question can be used to assess people's sense of place: level of agreement to the statement, "*I would move away from this community if a good job came up somewhere else."*

The averaged responses to this survey question could serve as the indicator for sense of place in the North and Central Coast.

4.4.2 Physical and mental health

Physical and mental health appeared as key components of human well-being across all of the nine HWB frameworks reviewed. Studies focusing on the determinants of health are voluminous. Studies have shown, for example, that disparities in the size of the gap or inequality in social and economic status between groups within a given population greatly affect the health status of the whole. The larger the gap, the lower the health status of the overall population (Wilkinson and Marmot 1998).

Many agencies collect, analyse, and report on health statistics. Several organizations in Canada have developed indicators to track the health status and health determinants of populations. For example, the Public Health Agency of Canada (2007) found 12 key factors associated with health status, such as income and social status, social support networks, education and literacy, physical environment, and culture (including lack of culturally appropriate health care services). Many of these factors overlap with other components of HWB.

BC Statistics (BC Stats) compiles data on potential years of life lost, teen pregnancies, life expectancy, infant mortality, and per capita alcohol sales as proxies for health. ACTNOW BC, a provincial health initiative, collects health behavior information that it concludes are key determinants of health, including tobacco use, obesity, nutrition, physical activity levels, and attitudes of pregnant women about alcohol use.

The Canadian Community Health Survey is conducted every two years by Statistics Canada to compile estimates of health determinants, health status, and health system utilization.

The Statistics Canada Statistical report on the health of Canadians lists 31 health status indicators. They include measures of general well-being, general health and function, injuries, conditions and diseases, and death.

Health indicator data are available through a number of sources, including Statistics Canada through the biennial Canadian Community Health Survey, and the province through various ministries and BC Stats and BC Vital Statistics. There are several scales at which the data are available in BC: Six Health Regions, 16 Health Service Delivery Areas (HSDA), and 89 Local Health Areas. Unfortunately, none of these geographic areas overlay cleanly on the North and Central Coast plan areas. Further, the Statistics Canada indicators are only compiled at the HSDA level, which is too large a scale to be useful for the North and Central Coasts whose populations are small. For many health indicators, data are simply not offered by Statistics Canada at the HSDA level because of the small sample size on the North and Central Coast.

Because of these limitations, the primary health indicators below are adopted from BC Stats, which makes the data available at the smallest scales- the Local Health Area. The secondary health indicators, "health behaviors," are available only at the HSDA level.

In some reports, the theoretical foundation for the selection of these indicators is plainly described. For other indicator sets, the research basis for the indicators is less clear.

Implications for Schedule C and G: Despite the range of health indicators available in the literature and available from health agencies and organizations, there are few data that are measured at the appropriate geographic scale on a regular basis for the North and Central Coast. The BC Stats data are the only ones compiled on a regular basis at a small enough scale to be useful on the North and Central Coast, but even those indicators have limitations because of the small populations in the plan areas.

4.4.3 Education

All nine frameworks referred to education and/or human capital as key factors in human well-being. Human capital refers to the knowledge, skills, competencies, and attributes of individuals that facilitate the creation of personal, social and economic well-being. Many authors such as Cote (2001), Luther and Wall (1998), and Parkins et al. (2004) discuss human capital and a commitment to education as factors in well-being at the community scale. Veenstra (2001) has linked educational attainment with individual health indicators. Baum and Payea (2004) discuss the high correlations between education and higher earnings, as well as lower unemployment, poverty rates, smoking rates, incarceration rates, and levels of civic participation. They show that education has a high social and economic return on investment for students from all racial and ethnic groups, for both genders, and for those from all family backgrounds. Education results in higher tax revenues and lesser demands on social support programs. The Public Health Agency of Canada (PHAC, 2004) also found that health status improves with the level of education.

Implications for Schedules C and G:
There are currently no indicators in Schedules C and G to measure education. Given the importance of education in the literature as a factor linked to many other factors of HWB, the addition of education-related indicators is recommended.

4.4.4 Economics

There is little debate in the literature that material and economic well-being is a key factor in human well-being. All nine HWB frameworks included dimensions of economics such as living standards, income, housing, and livelihood security. Some indicators were measurable at an individual level, while others were measurable at a community scale. As discussed above, the literature links economics with many other factors, including social processes, health, and education in feedback loops that affect each other.

The PHAC report (2004) describes that the degree of control people have over life circumstances is a key influence on health. The report also shows that large income distribution gaps lead to increases in social problems and poorer health among the population as a whole. Health status increases with job rank. Income is linked to job status. There is a correlation between economic position and disease resistance (PHAC 2004).

A BC Stats report on economic diversity and economic dependency is based on the premise that a diversified economic base will provide more community stability in volatile economic times (Horne 2004). Veenstra (2001) also cites studies showing that societies with a high degree of income inequality are also ones with low social cohesion or social capital. He adds that social capital may influence health related behaviors by promoting diffusion of health-related information.

Implications for Schedules C and G: While Schedule C and G include several appropriate and measurable indicators, there are more indicators that are recommended to paint a more complete picture of the economic status of the North and Central Coast, including income distribution, number of businesses, number of workers who are permanent residents, and others. Because of the importance of economic indicators, and the available existing sources for economics, both primary and secondary indicators are recommended for measurement.

4.4.5 Culture

The Public Health Agency of Canada (PHAC) considers culture a determinant of health, stating that "some persons or groups may face additional health risks due to a socio-economic environment that is largely determined by dominant cultural values that contribute to the perpetuation of conditions such as marginalization, stigmatization, loss or devaluation of language and culture and lack of access to culturally appropriate health care and services" (PHAC 2004). The Statistical Report on the Health of Canadians reports that despite major improvements since the 1970s, First Nations infant mortality rates were twice as high as the population as a whole and the prevalence of major diseases is significantly higher in Aboriginal communities. PHAC advocates for programs that enhance cultural identity, pride and participation.

Turner and Ommer (2003) have also documented the association between traditional foods and physical health among Aboriginal people.

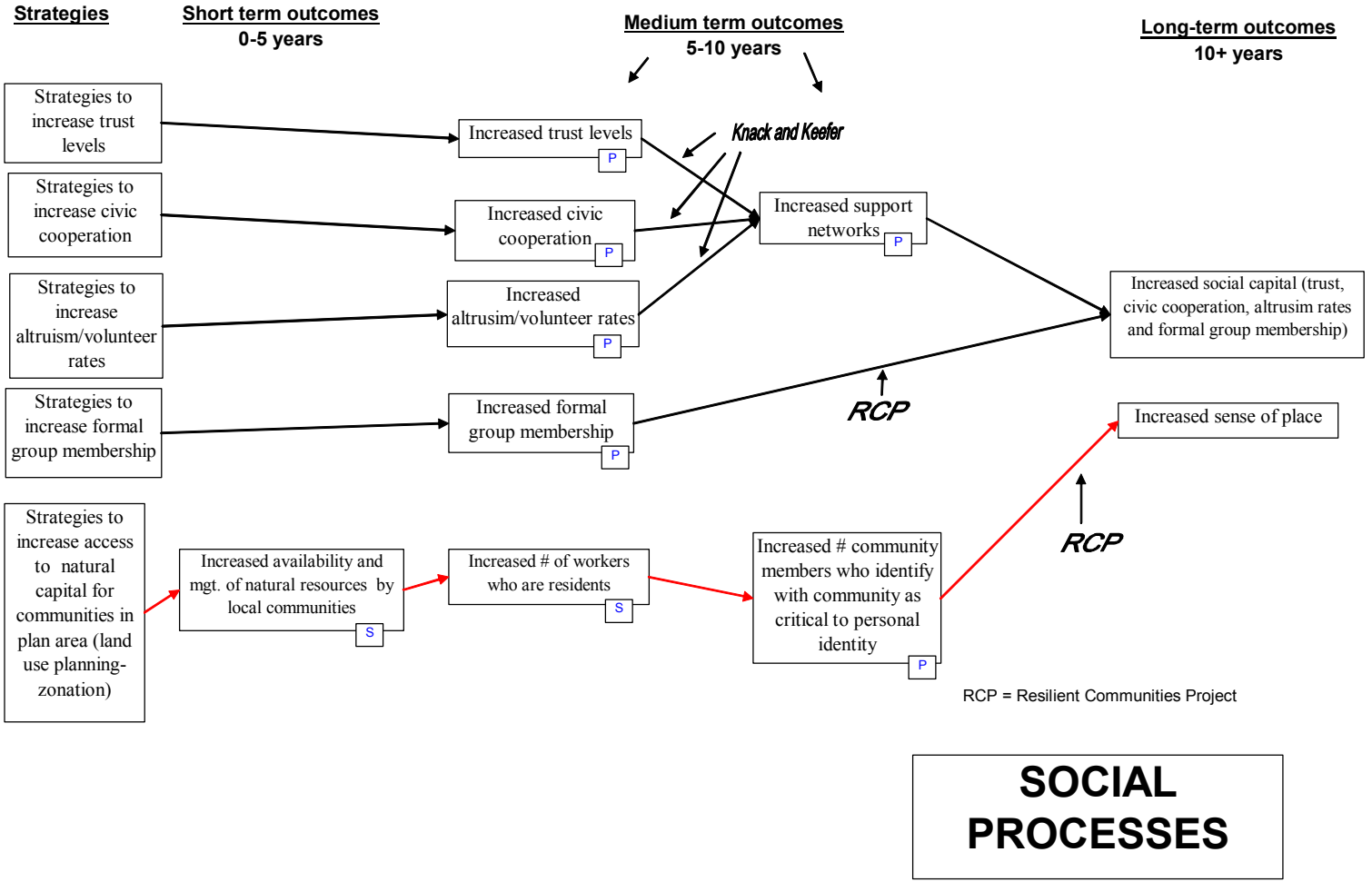
Implications for Schedules C and G: Not all HWB frameworks included culture as a key determinant in HWB, and some frameworks combined culture with recreation and arts. However, given the importance of culture in Schedules C and G and the high First Nations population in the plan areas, this component remains recommended as a key component in HWB for the North and Central Coast.

None of the indicators recommended for inclusion in Schedule C and G have been selected in consultation with First Nation community members on the North and Central Coast.

5.0 LOGIC MODELS FOR HUMAN WELL-BEING

The logic models drafted for each of the five components of human well-being show the linkages between factors using arrows connecting the factors. The acronyms (such as RCP) between arrows between the boxes indicate the research conducted that substantiates the association between factors (see Figures 5 through 9).

The short, medium, and longer term outcomes of the five components of HWB selected for the North and Central Coast plan areas are depicted in the logic models.



red arrows refers to links with land use planning
bold indicates comparable to Schedule C and G
P= primary data collection would be required
S= secondary data is available
The bolded words along the arrows = the authors of the research that supports the association between factors

Figure 5. Social Processes Logic Model. Shows the influence of land use planning and other strategies to affect social processes.

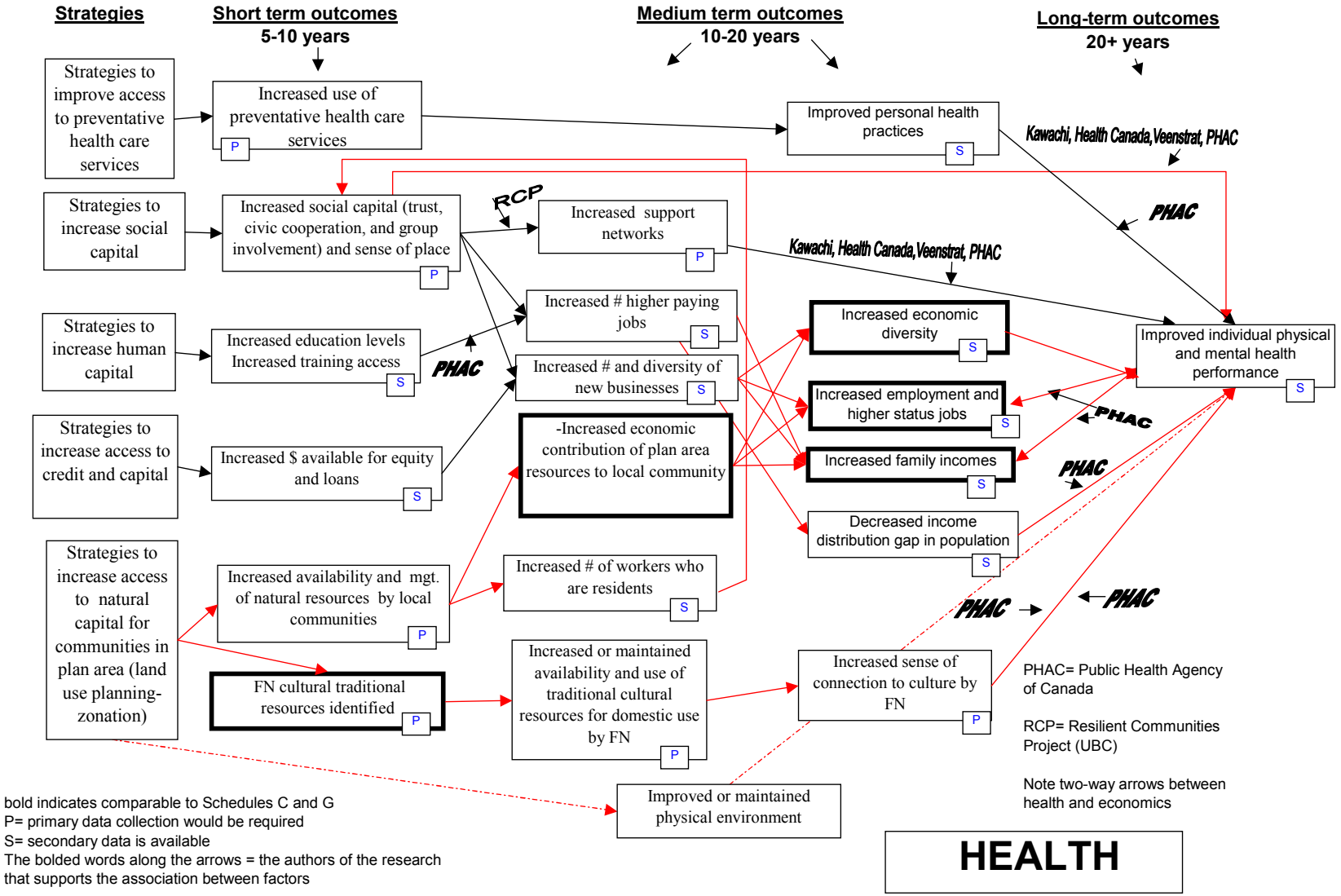


Figure 6. Health Logic Model. Shows the influence of land use planning and other strategies to affect individual human health performance.

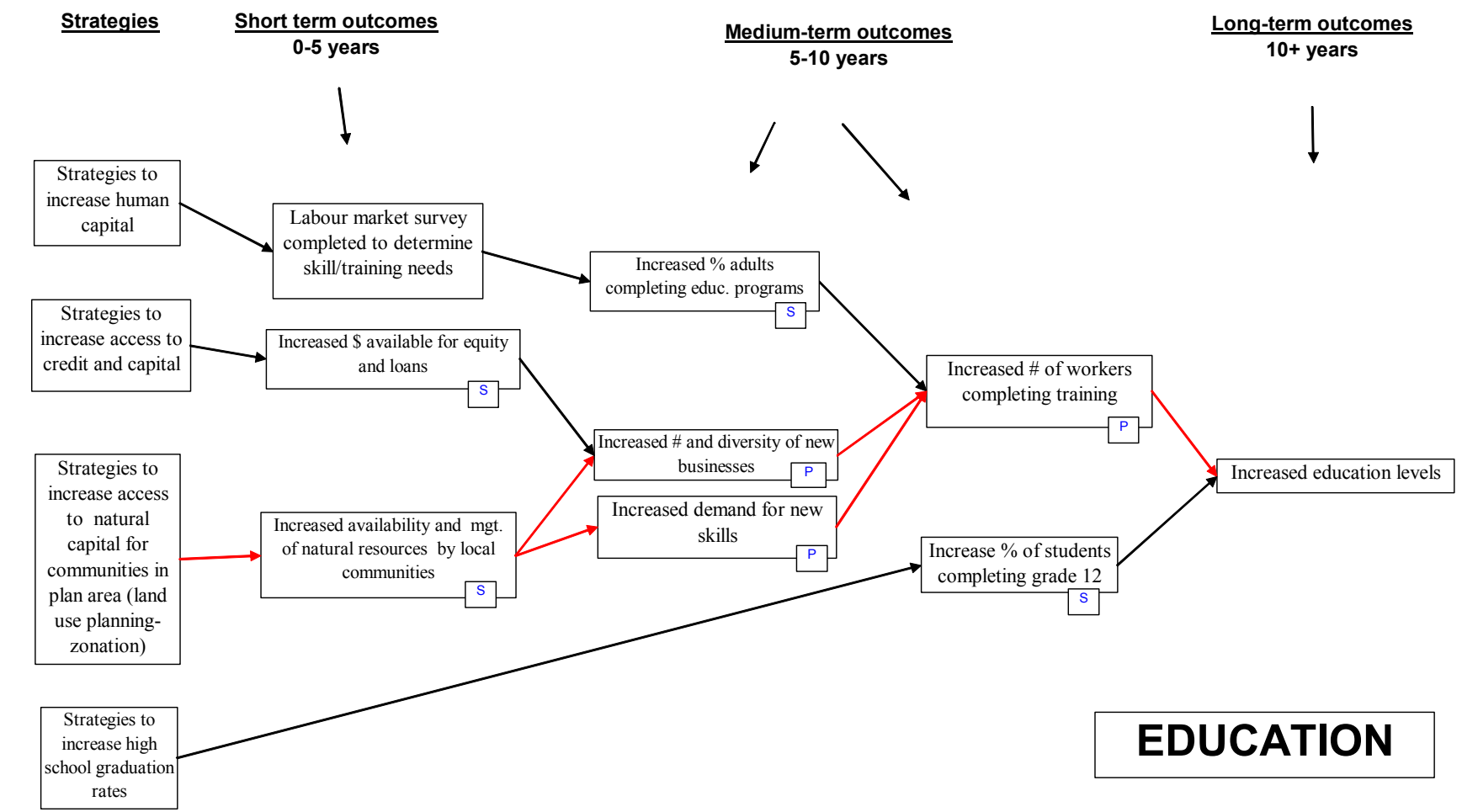


Figure 7. Education Logic Model. Shows the influence of land use planning and other strategies to affect education levels.

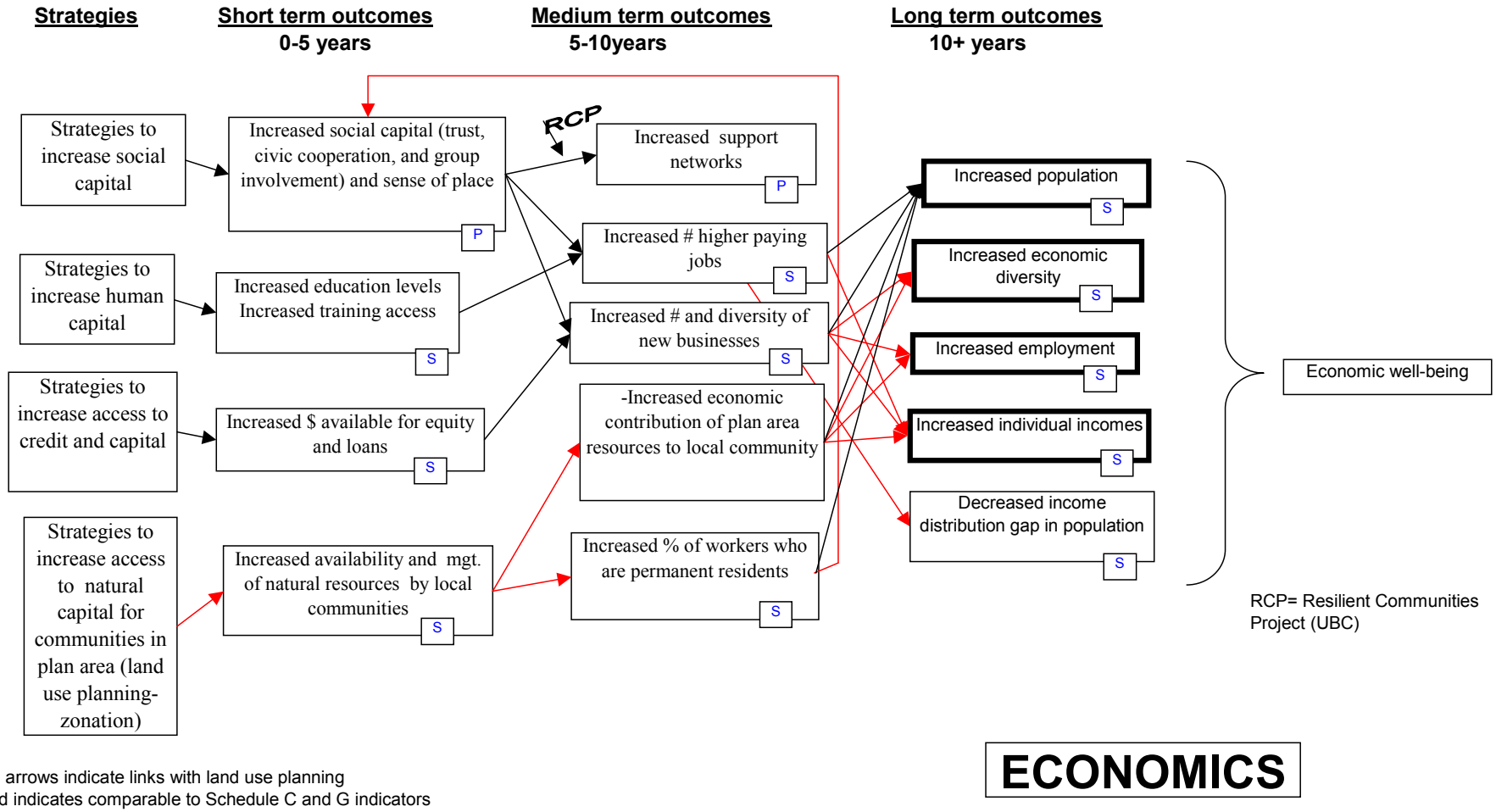
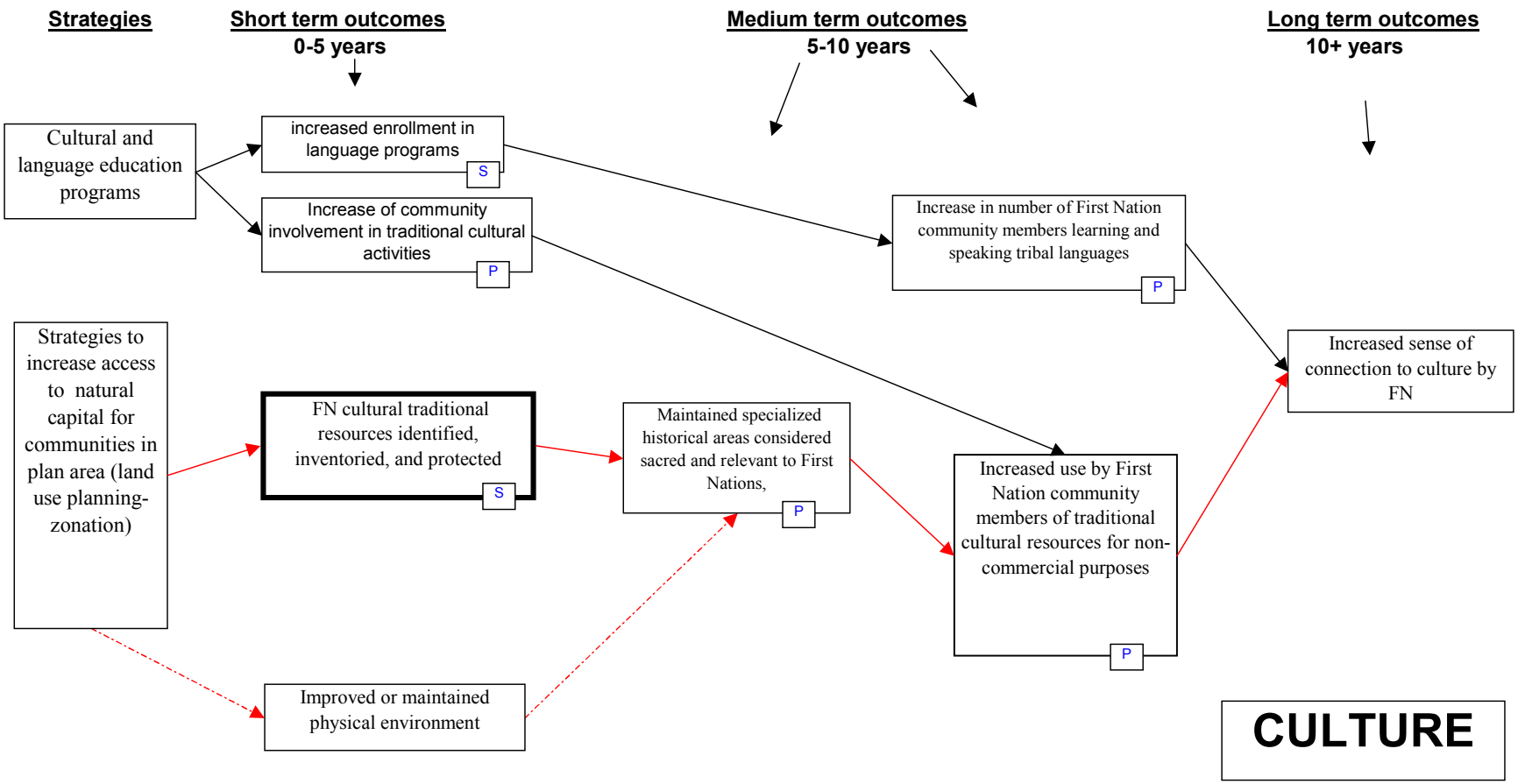


Figure 8. Economics Logic Model. Shows the influence of land use planning and other strategies to affect economics.

INFLUENCE OF LAND USE PLANNING AND OTHER STRATEGIES TO AFFECT CULTURAL INFLUENCES ON WELL BEING



red arrows indicate link with land use planning
bold indicates comparable to Schedule C and G indicators
P= primary data collection would be required
S= secondary data is available

Figure 9. Culture Logic Model. Shows the influence of land use planning and other strategies to affect cultural influences on well being.

5.1 SUGGESTED FULL SUITE OF INDICATORS FOR HUMAN WELL-BEING

Table 3 shows the "master list" of primary and secondary indicators that have been selected to describe human well-being for each of the five HWB components described in the literature (See Section 6 for indicators specific to Schedules C and G). While there are literally dozens of indicators that can reasonably be used to measure these components, this list was selected because they best met the criteria discussed in Section 2.3.

In general, primary indicators are the most direct measures of a desired outcome, while secondary indicators provide an alternative set of indicators that can serve as indirect measures, or proxies for a desired outcome. Secondary indicators can be used as a substitute when primary indicators cannot be measured. For example, a primary indicator of health is "life expectancy in years," while a secondary indicator is health behaviors. Measuring health-related behavior of individuals (such as tobacco use) is not a perfect measure of health, but it can serve as a proxy for health if life expectancy data are not available.

In Table 3, the right hand column indicates whether the indicator is found in Schedule C or G. Details of each indicator are described following this table.

Table 3. Primary and secondary indicators selected for human well-being

Components of Human Well-being	Primary measurable indicators	Secondary measurable indicators	Found in Schedule C or G?	Schedule C or G objective (if applicable)
A. Social Processes	A1 Average index score for generalized trust (level of trust in people)		No	n/a
	A2 Commitment to place (average scores on commitment-to-place survey question)		No	n/a
		A3 Civic cooperation levels	No	n/a
		A4 Altruism rates (volunteerism rates	No	n/a
		A5 Formal group membership rates	No	n/a
B. Physical and Mental Health	B1 Potential Years of Life Lost Due to Suicide/Homicide (Average per 1,000 population)		No	n/a

Components of Human Well-being	Primary measurable indicators	Secondary measurable indicators	Found in Schedule C or G?	Schedule C or G objective (if applicable)
	B2 Teen Pregnancies (Average per 1,000 Women age 15-17)		No	n/a
	B3 Life expectancy at birth (Average, in years)		No	n/a
	B4 Infant Mortality Rate (per 1,000 live births)		No	n/a
	B5 Potential years of life lost (Average per 1,000 population), natural and accidental		No	n/a
		B6 Percent of population, aged 15 and older, that uses tobacco products	No	n/a
		B7 Percent of total population (18 and older) that is obese/overweight	No	n/a
		B8 Percent of population reporting consuming fruit/vegetables at least 5 or more times a day	No	n/a
		B9 Percent of population considered active or moderately active (burning more than 1.5 kcal/kg/day)	No	n/a
		B10 Knowledge and attitude among women in the plan area about alcohol use during pregnancy	No	n/a
C. Education	C1 Percent of graduates from Grade 12 as a percentage of those in Grade 12		No	n/a

Components of Human Well-being	Primary measurable indicators	Secondary measurable indicators	Found in Schedule C or G?	Schedule C or G objective (if applicable)
	C2 Number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree		No	n/a
	C3 Percent of students who enter Grade 8 but do not finish Grade 12		No	n/a
D. Economics	D1 Economic diversity index of plan areas (compared with North Island and province)		Yes	"Diversify the economies of First Nations and other communities in the Plan Areas."
	D2 Number of individuals with formally reported incomes		No	n/a
	D3 The number of individuals with formally reported annual income above $25,000 annually (adjusted for inflation)		No	n/a
	D4 Number of income earners in the lower two income brackets (less than $15,000 and $15,000 to $24,999 annually) as a percent of number of income earners for the plan areas or the number of middle income earners ($35,000+ and $50,000+ categories)		No	n/a
	D5 Total population by community and plan area		Yes	"Promote stable or growing population levels in Central Coast and North Coast Plan Areas"

Components of Human Well-being	Primary measurable indicators	Secondary measurable indicators	Found in Schedule C or G?	Schedule C or G objective (if applicable)
		D6 Tourism room revenue	Yes	"Diversify the economies of First Nations and other communities in the Plan Areas."
		D7 Number of businesses and employment per employer in each of the key basic and non-basic sectors	No	n/a
		D8 Number and percent of workers in the plan area who are permanent residents	No	n/a
		D9 Commercial loan levels	No	n/a
		D10 Commercial equity investment	No	n/a
		D11 Percent of AAC held by plan area residents and communities	Yes	"Promote Plan Area resource development by local individuals and communities, to contribute to local and provincial economies."
		D12 Number and volume of productive activity for Backcountry Tenures, Guide Outfitter Tenures, and Sport fishing lodge licenses (angler days, fish catch, animals bagged) by plan area residents	No	n/a

Components of Human Well-being	Primary measurable indicators	Secondary measurable indicators	Found in Schedule C or G?	Schedule C or G objective (if applicable)
		D13 Percent of Backcountry Tenures, Guide Outfitter Tenures, and Sport fishing lodge licenses owned by plan area residents and percent of productive activity by plan area companies	No	n/a
		D14 Percent of aquaculture tenures owned by plan area residents and percentage of productive activity by plan area companies	Yes	"Promote Plan Area resource development by local individuals and communities, to contribute to local and provincial economies."
		D15 Percent of Mineral Exploration tenures owned by plan area residents and percent of productive activity by plan area companies	Yes	"Promote Plan Area resource development by local individuals and communities, to contribute to local and provincial economies."
		D16 Percent of other natural resource tenures owned by plan area residents and percent of productive activity by plan area companies	Yes	"Promote Plan Area resource development by local individuals and communities, to contribute to local and provincial economies."
		D17 Number of jobs in forestry and wood processing per cubic meter harvested in plan area	No	n/a
		D18 Annual resource revenues to First Nations, compared with	Yes	"Promote Plan Area resource development by local individuals and

Components of Human Well-being	Primary measurable indicators	Secondary measurable indicators	Found in Schedule C or G?	Schedule C or G objective (if applicable)
		revenues to province		communities, to contribute to local and provincial economies."
		D19 Average income per tax filer and average family income	Yes	"Promote growth in annual incomes."
		D20: Public infrastructure investment	No	
E. Culture (First Nations cultural/traditional sustenance resources)	E1 Number of First Nation community members in the plan area learning and speaking tribal languages		No	n/a
	E2 Number of First Nation community members using traditional cultural resources for non-commercial purposes		No	n/a
		E3 Number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations	No	n/a
		E4 Number of returning salmon to key waterways in plan area	No	n/a
		E5 Hectares protected/managed specifically for enhancement of cultural resources	No	n/a

Components of Human Well-being	Primary measurable indicators	Secondary measurable indicators	Found in Schedule C or G?	Schedule C or G objective (if applicable)
		E6 Numbers of hours of First Nation community member participation in the plan areas involved in traditional cultural activities	No	n/a
		E7 Percent of First Nations traditional territory covered by Traditional Use Studies within the plan area	No	

The following sections (5.1.1 through 5.1.5) discuss rationale, data sources, and desired direction for primary and secondary indicators. If there are costs for compiling existing data, an additional category for costs is also included. If costs only include staff time to look up data on line, costs are not included.

5.1.1 Social processes

PRIMARY INDICATORS

Support networks (social capital)

Indicator A1: Average index score for generalized trust (level of trust in people)

Rationale: An increasing number of publications are recognizing social capital as a key factor in human well-being. Matthews et al. (2004) found that generalized trust can be used as a proxy for social capital.

Data source: While there is growing literature identifying the link between social capital/sense of place and health and economic outcomes, there are no existing sources of social capital and sense of place data available for the North and Central Coasts. Primary data collection needs to be conducted (methods are outlined in Section 8.1).

Desired direction: Increased average index score for generalized trust (level of trust in people).

Identity with community as critical part of personal identity (sense of place)

Indicator A2: Commitment to place (average scores on commitment-to-place survey question)

Rationale: Results of research by Matthews et al. (2005) indicate that expressed 'willingness to stay in a community even if a good job came up elsewhere' is a reliable indicator of sense of place (commitment to place) on the North and Central Coast.

Data source: Primary data collection through a household survey

Desired direction: Increased average scores on commitment-to-place survey question.

SECONDARY INDICATORS

Support networks (social capital)

IndicatorA3: Civic cooperation

IndicatorA4: Altruism rates (volunteer rates)

IndicatorA5: Formal group membership

Rationale: Knack and Keefer (1997) indicate that increased civic cooperation, altruism/volunteer rates, and formal group membership can be considered measures of social capital.

Data source: A household survey could include questions as follows:

1) To measure perceptions about civic cooperation, Knack and Keefer (1997) used responses to questions about whether each of several described behaviors "can always be justified, never be justified, or something in between," such as 'cheating on taxes if you have the chance, keeping money that you found, etc'. They assessed formal group membership by asking survey respondents if they belonged to any of several types of organizations (religious, social welfare, cultural, professional etc).

2) Putnam (2001) recommends compiling number of volunteer hours as recorded by local organizations and reported philanthropy rates (how much money people give away per year). Since measurement of both of these indicators can be limiting for First Nations who may have different ways of volunteering and giving away money than non-native community members, First Nations social capital can be measured through proxies related to involvement in traditional cultural activities, as discussed below.

Desired direction: Increasing levels of civic cooperation, volunteer rates, and group membership.

5.1.2 Physical and mental health

PRIMARY INDICATORS

Mental health performance

Indicator B1: Potential Years of Life Lost Due to Suicide/Homicide (Average per 1,000 population).

Rationale: Suicide and homicide rates are considered by BC Stats to be an indicator for mental health of a population.

Data source: BC Stats, measured at Local Health Area level.

Desired direction: Decreased potential Years of Life Lost Due to Suicide/Homicide.

Indicator B2: Teen Pregnancies (Average per 1,000 Women age 15-17).

Rationale: Teen pregnancy rates are considered by BC Stats to be an indicator for mental health of a population.

Data source: BC Stats, measured at Local Health Area level.

Desired direction: Decreased teen pregnancy rates.

Physical health performance

Indicator B3: Life expectancy at birth (Average, in years).

Rationale: Life expectancy rates are considered by BC Stats and many international development organizations to be an indicator for physical health of a population.

Data source: BC Stats, measured at Local Health Area level.

Desired direction: Increase in number of years of life expectancy.

Indicator B4: Infant Mortality Rate (per 1,000 live births).

Rationale: Infant mortality rates are considered by BC Stats and many international development organizations to be an indicator for physical health of a population.

Data Source: BC Stats, measured at Local Health Area level.

Desired direction: Decrease infant mortality rates.

Indicator B5: Potential years of life lost (Average per 1,000 population), natural and accidental.

Rationale: Average years of life lost to accidents and natural causes are considered by BC Stats to be indicators for physical health of a population.

Data source: BC Stats, measured at Local Health Area level.

Desired direction: Decreased Potential years of life lost.

Table 4. Health related data by Local Health Area for the North and Central Coast, 2006

	BC average	Nisga'a	Prince Rupert	Kitimat	Bella Coola Valley	Van. Is. N	CR/Van Is. W	Central Coast
Local Health Area # (LHA)		**92**	**52**	**80**	**49**	**85**	**72**	**83**
Potential years of life lost to suicide/homicide	4.3	22.2	6.3	1.7	7.5	10.8	4.6	n/a
Teen pregnancy (ave. per 1000)	17.8	55.6	43.3	11.6	50.5	46.5	26.3	n/a
Life expectancy (ave. in years)	80.9	72.8	78	79.9	77.0	78.3	78.7	n/a
Infant mortality (per 1000 live births)	4.2	13.9	5.1	5.8	12.3	13.6	4.6	n/a
Potential years of life lost-natural (ave. per 1000)	33.2	65.2	42.2	33.2	60.7	50.7	39.4	n/a
Potential years of life lost-accidental (ave. per 1000)	8.6	25.6	12.8	11.2	49.4	11.5	13.3	n/a

source: BC Stats

SECONDARY INDICATORS

The following data have been deemed by ACTNOWBC (http://www.actnowbc.ca) as indicators for personal health behaviors that provide risk and protective health factors for individuals. Formed in 2005, ACTNOW is a multi-year provincial health promotion program in BC. Inactivity, poor nutrition, overweight and obesity, tobacco use, and unhealthy choices in pregnancy are the considered key risk factors contributing to the main chronic disease categories in BC.

These seven health practice indicators are tracked by ACTNOWBC using data of the Canadian Community Health Survey (CCHS). The Canadian Community Health Survey is conducted every two years by Statistics Canada to compile estimates of health determinants, health status, and health system utilization.

ACTNOW staff developed a baseline report in Nov. 2006 but baseline data are only compiled at the Health Service Delivery Area level (a larger scale than Local Health Areas). Because of the small sample size used by the CCHS (130,000 individuals nationally), it would not be reliable to use the data at a smaller scale. However, the data at the HSDA level are readily and freely available and would provide some indication of changes in the plan areas. See Appendix D for a map of Health Service Delivery Areas.

Physical health performance

Indicator B6: Percent of population, aged 15 and older, that uses tobacco products.

Rationale: Tobacco use is among the key risk factors contributing to the main chronic disease categories in BC, and one of the five health risk targets for the BC Government, according to ACTNOW BC.

Data source: ACTNOW BC data is based on Canadian Community Health Survey conducted every two years.

Desired direction: Decrease percent of population that uses tobacco products.

Indicator B7: Percent of total population (18 and older) that is obese/overweight.

Rationale: Obesity is among the key risk factors contributing to the main chronic disease categories in BC, and one of the five health risk targets for the BC Government, according to ACTNOW BC.

Data source: ACTNOW BC based on Canadian Community Health Survey every two years.

Desired direction: Decrease percent of total population (18 and older) that is obese/overweight.

Indicator B8: Percent of population reporting consuming fruit/vegetables at least 5 or more times a day.

Rationale: Poor diet is among the key risk factors contributing to the main chronic disease categories in BC, and one of the five health risk targets for the BC Government, according to ACTNOW BC.

Data source: ACTNOW BC based on Canadian Community Health Survey every two years.

Desired direction: Increased percent of population reporting eating 5 servings of fruits/vegetables per day.

Indicator B9: Percent of population considered active or moderately active (burning more than 1.5 kcal/kg/day).

Rationale: Lack of physical activity is among the key risk factors contributing to the main chronic disease categories in BC, and one of the five health risk targets for the BC Government, according to ACTNOW BC.

Data source: ACTNOW BC based on Canadian Community Health Survey every two years. Data are based on an index of average daily physical activity over the past three months.

Desired direction: Increased percent of population considered active or moderately active (burning more than 1.5 kcal/kg/day).

Table 5. Health practice indicators, by HSDA

Indicator	Health Service Delivery Area (HSDA)		
	North Shore Coast Garibaldi	North Van Is.	Northwest
Percent of population that uses tobacco	15.1	20.4	23.2
Percent of population obese/overweight	39.3	52.7	49.9
Percent of population consuming 5 fruits/vegetables/day	46.7	43.3	39.4
Percent of population active	64.3	60.6	59

source: ACTNOW BC

Indicator B10: Knowledge and attitude among women in the plan area about alcohol use during pregnancy.

Rationale: Fetal alcohol syndrome and lack of knowledge of the negative health impacts of alcohol use during pregnancy among women are considered among the key risk factors contributing to the main chronic disease categories in BC, and one of the five health risk targets for the BC Government, according to ACTNOW BC.

Data source: ACTNOW BC measures service provider awareness and education and distribution of educational materials as proxies for increased knowledge of negative health impacts of alcohol use during pregnancy among women. However, a better source of data on knowledge levels and attitudes among women about negative impacts of alcohol use during pregnancy can be obtained through household surveys in the plan areas by asking Likert-scale question (strongly agree, agree, disagree or strongly disagree with a statement about the dangers of using alcohol during pregnancy).

Desired direction: Increase in knowledge and change in attitude among women in the plan area about alcohol use during pregnancy.

5.1.3 Education

PRIMARY INDICATORS

Indicator C1: Percent of graduates from Grade 12 as a percentage of those in Grade 12

Rationale: Graduation from Grade 12 reflects the individual, community, and school's success in completing formal education required for advanced education. Information is comparable across the province and across time.

Data Source: These data are available annually by school and by school district through the Ministry of Education, usually within six months of the completion of the school year. The data are located at: http://www.bced.gov.bc.ca/reporting/grad/grad-rpt.php. Private and independent schools will need to be contacted directly.

Desired direction: Increased percent of graduates from Grade 12 as a percentage of those in Grade 12.

Indicator C2: Number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree.

Rationale: Formal post secondary school training is required for trades, technologies and professional employment opportunities. The level of training achieved often is related to the level of jobs available. Increases in skills and formal education often results in increased economic activity.

Data Source: Data are available every five years through Census – long form (see Census long form pages 16-19) and available for purchase ($25 for 2001 data) from BC Stats and is comparable across the province and the country. However, there is often a considerable lag between the Census period and release of the data, e.g. 2006 Census results are not expected until 2008.

Desired direction: Increased number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree.

Table 6 shows graduation data from Sir Alexander Mackenzie Secondary and represents the Central Coast plan area. Sir Alexander Mackenzie Secondary is the only reporting secondary school in the Central Coast plan area. Acwsalcta Band School is an independent school that also has high school students, however data from this school are suppressed because of small populations.

Table 6. High School Graduation Data for Central Coast

	Female	Male	All Students	Aboriginal
2001/02				
Total First-time Grade 12	8	15	23	11
# Who Graduate	6	13	19	8
% Who Graduate	75%	83%	87%	73%
% with Honours	25%	13%	17%	0%
2002/03				
Total First-time Grade 12	8	11	19	8
# Who Graduate	8	8	16	6
% Who Graduate	100%	73%	84%	75%
% with Honours	38%	36%	37%	13%
2003/04				
Total First-time Grade 12	10	15	25	12
# Who Graduate	6	10	16	6
% Who Graduate	60%	67%	64%	50%
% with Honours	40%	20%	28%	0%
2004/05				
Total First-time Grade 12	12	8	20	11

# Who Graduate	7	7	14	5
% Who Graduate	58%	88%	70%	45%
% with Honours	42%	25%	35%	27%
2005/06				
Total First-time Grade 12	7	8	15	n/a
# Who Graduate	6	7	13	n/a
% Who Graduate	86%	88%	87%	n/a
% with Honours	57%	50%	53%	n/a

Source: BC Ministry of Education

Table 7 highlights the highest level of schooling obtained for residents of the Central Coast Regional District who were 20 years or older in 2001.

Table 7. Highest Level of Schooling for residents 20 years and older, 2001

Education Level	Central Coast RD	BC
Less than Grade 12	31.5%	24.3%
Grade 12	12.6%	12.3%
Trade Diploma	12.0%	12.8%
College No Diploma	9.5%	7.2%
College Diploma	16.6%	16.7%
University No Degree	5.2%	9.1%
University Degree	12.6%	17.6%

Source: Statistics Canada, 2001 Census

Indicator C3: Percent of students who enter Grade 8 but do not finish Grade 12.

Rationale: This is an indicator of the high school drop-out rate. While this statistic does not address why students drop out, this indicator does characterize the willingness and ability of students to complete a high school education. The information would need to be compared with migration statistics (to account for students that leave the area during the high school years).

Data Source: This data would be available from each school annually (percent is calculated by total number of those who leave school after Grade 8, divided by total number of those entering Grade 8 x 100).

Desired direction: Decreased percent of students who enter Grade 8 but do not finish Grade 12.

Cost: Costs would include time to contact each school in the plan areas for their statistics.

5.1.4 Economics

PRIMARY INDICATORS

Economic diversity

Indicator D1: Economic diversity index of plan areas (compared with North Island and province)

Rationale: Community economies that rely on multiple sectors are considered to have stronger economic health than those who are dependent on only one or a few sectors. The economic diversity index score is used to compare the diversity in the economies across geographic areas and is freely available every five years from BC Stats. The index score is calculated through a formula that measures the variability of the "dependency values" of 11 basic industries (forestry, fisheries, mining, agriculture, tourism, high-tech, public/government, construction, transfer payments and other non-employment income, and other, including transportation), which is calculated from the income earned from each industry type. The index score for any given area would be zero if the area were entirely dependent on one of the 11 sectors. At the other extreme, the diversity index would be 100 if an area was equally dependent on the 11 sectors. Most areas have an index score of between 50 and 70. Because the BC Stats Economic Diversity Index is based on five-year census data and then reported at least two years after the Census is taken, it does not provide a useful measure of annual progress. An alternative diversity index could be calculated based on the results of the annual employment survey described in Section 8.1.1.

Data Source: The diversity index is produced by BC Stats and available on their website. The Economic Diversity Index is based on Census data. It is available every five years approximately two years after the Census year. (http://www.bcstats.gov.bc.ca/pubs/econ_dep.asp). The geographical unit used is the Census subdivision (CSD). The most recent source of data used was the 2001 Census, which is received by 20% randomly selected households (Horne 2004). In 2001, BC Stats calculated the economic diversity index by LRMP area (see http://www.bcstats.gov.bc.ca/pubs/econ_dep/la_tabs.pdf) but combined the Central and North Coast. It's uncertain if this compilation by LRMP area will occur on a regular basis.

Desired direction: Increase in economic diversity index scores.

Costs: Developing an alternative diversity index is expected to cost $20,000 for preparing the methodology and initial result, with a cost of approximately $10-15,000 to prepare future years using the established methodology. The project monies would be used to contract a regional economist to prepare the methodology, create the equation for preparing the sector estimates, collected the necessary data and preparing the resulting index.

Table 8. Economic Diversity Index scores by Census Sub-division by census year for several coastal Census sub-divisions

Census sub-division	2001	1996	1991
11 Campbell River	70	66	71
12 Bute Inlet	75	76	81

14 Alert Bay	65	67	73
15 Port Hardy	52	52	66
16 Central Coast	60	69	75
53 Prince Rupert	66	69	76
54 Kitimat-Terrace	70	71	75

Table 9 Economic Diversity Index scores in 2001 by LRMP area

LRMP area	Economic Diversity Index Score (2001)
Prince George	66
Robson Valley	67
Queen Charlotte Islands	60
Vanderhoof	59
Cariboo/Chilcotin	62
Taku-Atlin	57
Mackenzie	29
Sea to Sky	69
Central Coast - North	59

Employment

Indicator D2: Number of individuals with formally reported incomes.

Rationale: The number of individuals who file tax returns approximates the number of individuals who obtain formal sector incomes. This indicator will provide information on income obtained from employment and other sources.
Data Source: Available annually through tax filer data provided by BC Stats. http://www.bcstats.gov.bc.ca/data/dd/income.asp.
Desired direction: Increased number of individuals with formally reported incomes.

Table 10. Central Coast Employment Income Levels Total Tax Filers – 2003, 2004, 2005

Area	Total Tax Filers		
	2003	2004	2005
Central Coast D	470	470	450
Bella Bella 1	670	730	710
Bella Coola 1	890	910	890
Central Coast RD	2060	2150	2090

Source: BC Stats

Indicator D3: The number of individuals with formally reported annual income above $25,000 annually (adjusted for inflation).

Rationale: Community economic development strategies are designed to increase individual and household incomes obtained through a mix of income sources. It is important that more individuals obtain incomes that enable sustainable quality of life. This indicator will provide information on income obtained from employment and other sources.

Data Source: This data are available annually through tax filer data provided by BC Stats. http://www.bcstats.gov.bc.ca/data/dd/income.asp

Desired direction: Increased number of individuals with formally reported annual incomes above $25,000 annually (adjusted for inflation).

Table 11. Central Coast Employment Income Levels – 2003, 2004, 2005

Area	Total Tax Filers		
	2003	2004	2005
# With Total Income $15,000-24,999			
Central Coast D	280	270	280
Bella Bella 1	130	130	140
Bella Coola 1	290	300	300
Central Coast RD	720	720	740
# With Total Income $25,000-34,999			
Central Coast D	200	190	200
Bella Bella 1	70	70	80
Bella Coola 1	180	200	200
Central Coast RD	450	470	490
# With Total Income $35,000-49,999			
Central Coast D	130	120	130
Bella Bella 1	50	50	50
Bella Coola 1	120	130	130
Central Coast RD	300	310	320
# With Total Income $50,000-99,999			
Central Coast D	70	80	80
Bella Bella 1	20	30	30
Bella Coola 1	70	50	70
Central Coast RD	160	160	180
# With Total Income $100,000+			
Central Coast D			-
Bella Bella 1			-

Bella Coola 1			-
Central Coast RD	20	10	20

Source: BC Stats

Income distribution gap in population

Indicator D4: Number of income earners in the lower two income brackets (less than $15,000 and $15,000 to $24,999 annually) as a percent of number of income earners for the plan areas or the number of middle income earners ($35,000+ and $50,000+ categories).

Rationale: The literature indicates that as the gap in distribution of income decreases, the quality of individuals' well-being increases in the population.
Data Source: This information is available annually through tax filer data. http://www.bcstats.gov.bc.ca/data/dd/income.asp
Desired direction: Decreased percent of income earners in the lower two income brackets as a percent of income earners or percent of middle income earners.

Table 12. Central Coast Total Income Levels below $25,000 – 2003, 2004, 2005

# With Total Income $1-24,999	2003	2004	2005
Central Coast RD	1130	1200	1080
Percent of all tax filers – Central Coast	54.9%	55.8%	51.7%

Population

Indicator D5: Total population by community and plan area.

Rationale: Population usually only increases when there are increased income earning opportunities, or a perceived higher quality of life compared with other options. For example, there has been significant migration back to First Nations communities in the past two decades because of a perceived higher standard of living on First Nation's reserves for those of all income levels.
Data source: Labour Market Census – Skeena Native Development Society has collected community population information by community for all North Coast communities for 1997 to 2003 (annually) and 2006 based on their intense Proxy Method of surveying. – (http://www.snds.bc.ca/lmc06.htm). Other communities in the North Coast and all Central Coast communities need to rely on Statistics Canada results (every 5 years) and BC Stats estimates (annually) with substantial input data limitations. http://www.bcstats.gov.bc.ca/data/pop/popstart.asp http://www.bcstats.gov.bc.ca/data/dd/facsheet/facsheet.asp.
Desired direction: Increased population in communities and plan area

Table 13. Community population in selected northern villages

Community	Total membership	First Nations residency	Non-First Nations residency	Total community residency
Hartley Bay	661	186	4	190
Kitkatla	1806	567	15	582
Kitselas	495	298	14	312
Kitsumkalum	647	255	18	273
Lax Kw'alaams	3067	761	67	828
Metlakatla	732	113	1	114

Source: Skeena Native Development Society 2006 Labour Market Census

Table 14. 2006 population in Central and North Coast, by Census subdivisions

Census sub-division (CSD)	Population
Bella Bella 1	1066
Bella Coola 1	788
Katit 1	85
Port Edward	577
Prince Rupert	12,815

Source: BC Stats at http://www.bcstats.gov.bc.ca/data/cen06/csd2006n.csv

SECONDARY INDICATORS

Increase in tourist expenditures

Indicator D6: Tourism room revenue.

Rationale: One of the key emerging sectors in the economy is the tourism sector. Given the relative remoteness of the North and particularly the Central Coast, most visitors to the regions will require commercial overnight accommodation. Therefore tourism room revenue will provide a proxy for changes in the tourism sector in the plan areas. There are obvious short comings with tourism room revenue as an indicator, particularly where there are large number of visitors who arrive by boats not requiring accommodation or where the actual data collection system does not associate the expenditure to plan areas where it takes place, e.g. a fishing lodge with an owner registered in Campbell River yet the lodge is on the Central Coast. These data also do not distinguish between revenue from tourism and revenue from those whose accommodation is work-related.

Data Source: Quarterly data on room revenue are available through BC Stats – Ministry of Labour and Citizenship (BC Tourism Room Revenue by Region) annually. It provides a total for the Central Coast Regional District which matches the Central Coast Plan area and Skeena Queen Charlotte Regional District which does not match the North Coast plan area. Prince Rupert is broken out separately which accounts for most of the North Coast accommodation revenue, as there are

very few other commercial accommodation providers in other parts of the region. Therefore Prince Rupert data could be used as a proxy for approximately 90% - 95% of the accommodation revenue in the region. The place where the data for both the North and Central Coast falls short is the accommodation related to fishing and other remote lodges that might be recorded as accommodation in the region where the lodge is registered. Better information is available through BC Stats where a specific data run is purchased for lodges and their respective accommodation revenues. A budget of $500 is recommended for a special run for this data.

Desired direction: Increased tourism room revenue.

Number and diversity of new businesses

Indicator D7: Number of businesses and employment per employer in each of the key basic and non-basic sectors

Rationale: Obtaining the number of businesses in the two plan areas will provide an indicator of the growth in commercial activity in the region. The formal mechanism of counting the number of incorporated companies is currently poor since the location of many companies is recorded as the location of the company's legal advisor which is often outside the rural communities (particularly in the Central Coast).

Data Source: Information on the number of businesses is recorded annually by the regional district from those companies that submit payroll remittances to CRA, or have a minimum of $30,000 in annual sales or are incorporated. The data are available through BC Stats at http://www.bcstats.gov.bc.ca/data/bus_stat/busind/sm_bus/bus_est.pdf . The data do not account for small unincorporated companies with sales of less than $30,000. The Central Coast Regional District boundary matches the Central Coast plan area but the Skeena-Queen Charlotte Regional District boundaries do not coincide with the North Coast plan area boundaries. An annual survey of businesses is recommended to deal with boundary overlay issues and with the recognized businesses with declared incomes of less than $30,000 annually.

Desired direction: Increase in the number of businesses and employment per employer in each of the key basic and non-basic sectors

Workers who are permanent residents

Indicator D8: Number and percent of workers in the plan area who are permanent residents.

Rationale: Increasing the economic and social viability of communities requires workers to be resident as both their expenditures of financial resources and time resources contributes significantly to economic activities and social capital in the plan areas.

Data Source: Obtain a count of all workers, both resident and non-resident, through an annual employment survey by including a question in the survey on residence of workers.

Desired direction: Increased number and percent of workers in the plan area who are permanent residents.

Access to Credit and Capital

Indicator D9: Commercial loan levels.

Rationale: An increase in commercial credit accessed usually is associated with economic activity in a region. It is currently not possible to obtain accurate data on debt and equity expenditures by region as there are significant "leaks" in the system e.g. gaining credit from outside the region through credit cards. Therefore, only proxies are available for showing trends. There are obvious exceptions including increased debt investment by an outside owner that lowers local employment and increases profit leakage from the plan areas.

Data Source: Available data for proxies are as follows:

- Total commercial loan information by Credit Unions in the North Coast and the Central Coast is public information for all members. This information is available annually.
- Total commercial loan information by Community Futures Development Corporations in the region is usually available by special request to the CFDC North Coast and CFDC Cariboo Chilcotin. It is recommended that an annual request through regional board members and extension staff be done.
- Total commercial loan information to the region by other focused lenders, e.g. Peace Hills Trust, All Nations Trust or Tricorp may also be available through special request.

Desired direction: Increased commercial loan levels.

Costs: Proxy estimate calculated by a regional economist with experience in the region is estimated at 10 days at $500/day for the first year and 7 days for subsequent years.

Indicator D10: Commercial equity investment.

Rationale: An increase in commercial equity capital invested usually is associated with economic activity in a region. There are obvious exceptions including increased equity investment by an outside owner that lowers local employment and increases profit leakage from the region.

Data source: Data are not available on a regional or sub-regional basis. A proxy calculation could be prepared based on coefficients from key industries based on information obtained regarding loans debt (from above). In addition the major projects inventory prepared by the Ministry of Economic Development by Regional Districts could be used.

Desired direction: Increased commercial equity investment in the region.

Cost: Proxy estimate calculated by a regional economist with experience in the region is estimated at 10 days at $500/day for the first year and 7 days for subsequent years.

Access to Natural Capital for Communities

An increase in access to natural capital for communities can be measured through the availability and management of natural resources by local communities, and an increase

in the number of workers who are resident in the respective region. This is measured by absolute total economic activity in the plan area controlled/owned by local residents and communities (assumes provincial resources and not federal jurisdiction).

Indicator D11: Percent of AAC (Annual Allowable Cut) held by plan area residents and communities.

Data Source: MOFR and BC Timber Sales on an annual basis. Where BC Timber Sales holds the AAC, data should be collected on companies that won the BC Timber Sales bids on an annual basis.

Indicator D12: Number and volume of productive activity for Backcountry Tenures, Guide Outfitter Tenures, and Sport fishing lodge licenses (angler days, fish catch, animals bagged) by plan area residents.

Data source: Available annually through provincial ministries and Dept. of Fisheries and Oceans.

Indicator D13: Percent of Backcountry Tenures, Guide Outfitter Tenures, Sport fishing lodge licenses owned by plan area residents and percent of productive activity by plan area companies.

Data Source: Provincial ministries on an annual basis.

Indicator D 14: Percent of aquaculture tenures owned by plan area residents and percent of productive activity by plan area residents.

Data Source: Provincial ministries on an annual basis.

Indicator D15: Percent of mineral exploration tenures owned by plan area residents and percentage of productive activity by plan area companies.

Data Source: Provincial ministries on an annual basis.

Indicator D16: Percent of other natural resource tenures owned by plan area residents and percentage of productive activity by plan area companies.

Data Source: Provincial ministries on an annual basis.

The following rationale, desired direction, and cost apply to the six indicators above.

Rationale: An increase in access to natural capital for communities and individuals in those communities increases the likelihood that revenue from those same resources will flow through, and thus enhance, the local economy through increased employment based wages and the purchase of local goods and services.

Desired direction: An increase in the absolute total activity in the region controlled/owned by plan area residents.

Cost: Measuring absolute total activity in the plan areas owned by local residents (assumes provincial resources and not federal jurisdiction) is a research task requiring approximately 20 days of time at $500/day ($10,000) to collect data on all four indicators. None of these indicators are available from a single source.

Indicator D17: Number of jobs in forestry and wood processing per cubic meter harvested in plan area

Rationale: Increased number of jobs per cubic meter indicates greater economic utility of the resource (value added).

Data Source: Amount harvested available from Ministry of Forests and Range by district. Job information available from Statistics Canada using the North American Industrial Classification System by Census Subdivision.

Desired direction: Increased number of jobs per cubic meter.

Indicator D18: Annual resource revenues to First Nations, compared with revenues to province

Rationale: Resource revenues to First Nation communities lead to economic and social development. Comparing revenues to First Nations' community to the revenue received by the Province provides a gauge for the volume of resource revenues being extracted by the province from resources in the plan areas.

Data source: Available from band administrative offices. Provincial revenue data available from provincial agencies such as Forests and Range, Energy, Mines, and Petroleum.

Desired direction: Increased resource revenues to First Nations, and increased annual resource revenues to First Nations, compared with revenues to province.

Indicator D19: Average income per tax filer and average family income

Rationale: Income per tax filer and average family income are indicators of formal sector income, which is one indicator of economic health. Increasing numbers of First Nations members living on reserve are filing taxes because of child credit incentives. Does not include non-formal income sources.

Data source: BC Stats (tax filer data)

Desired direction: Increased income per tax filer and average family income

Table 15 Average family incomes in Central Coast Regional District, 2000

Average family income	Central Coast RD	BC
All census families	$43,630	$64,821
Couple families	$49,544	$70,033
Male lone-parent families	$19,348	$47,480
Female lone-parent families	$23,402	$33,829

source: B.C. Stats

Indicator D20: Public infrastructure investment in dollars.

Rationale: Infrastructure is critical to economic development in the plan areas and investment in infrastructure can serve as a proxy for expected economic activity.

Data source: Compiled from local government and First Nations government, regional districts, and provincial ministries (Health, Transportation). No single existing source.

Desired direction: Increased public infrastructure investment

5.1.5 Culture

PRIMARY INDICATORS

Use of local languages

Indicator E1: Number of First Nation community members in the plan area learning and speaking tribal languages.

Rationale: First Nations language programs have often linked the continuation and use of tribal languages with the survival of First Nations cultures.

Data source: Proxy Method: measured through retrospective interviews with key informants (elders, language teachers) in community.

Desired direction: Increased number of First Nation community members in the plan area learning and speaking tribal languages.

Use of traditional cultural resources by First Nations

Indicator E2: Number of First Nation community members using traditional cultural resources for non-commercial purposes.

Rationale: Many First Nations have related an increase in use of cultural resources to an increased and firmer connection with their culture and traditions, and as essential for the restoration of community viability.

Data source: Increased use of cultural resources is measured through retrospective interviews with key informants (elders, tribal leaders) in the community.

Desired direction: Increased number of First Nation community members using traditional cultural resources for non-commercial purposes.

SECONDARY INDICATORS

First Nations cultural and traditional resources identified, inventoried, and protected

Indicator E3: Number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations.

Rationale: The number of new archaeological studies can serve as proxy for cultural/ traditional resources identified, inventoried, and protected and is measurable over time. First Nations cultural and heritage resources have been impacted significantly by industrial activities throughout most of British Columbia, primarily because of a lack of awareness or recognition, on the part of the developers, of the existence of such resources. Over the past 20 years, the

level of awareness and recognition has increased substantially and First Nations cultural and heritage resources have been the subject of an increasing number of research studies and inventories.
Data Source: Provincial archaeology and heritage resource inventories, and surveys; research institutions (universities), and tribal councils.
Desired direction: Increased number of new archeological studies or Traditional Use Studies conducted and number reviewed by First Nations.

Indicator E4: Number of returning salmon to key waterways in plan area.
Rationale: Salmon have been an integral part of the First Nations culture for thousands of years. First Nations community members have a continued reliability and availability of salmon for their food and ceremonial purposes. Decrease in availability of salmon has cultural impacts on First Nations communities.
Data Source: Canada Department of Fisheries and Oceans monitors the escapement of fry and return of spawning adults for the five salmon species used by First Nations, compiled by key stream and species annually. Spreadsheets are available at no cost from Barb Spencer (North Coast) 250-627-3458 and Matt Mortimer (Central Coast) 250-286-5814.
Desired direction: Increased number of returning salmon to key waterways in plan area

Table 16 Summary of Area 3 Sub-area Chinook escapements, North Coast

Subarea	2000	2001	2002	2003	2004	2005	2000-09 Average
Observatory Inlet	45	50	100				65
Nass River	466	1,963	3,367	4,786	3,993	1,591	2,694
Portland Inlet	600	1,300	900	600	400	750	758
Total	1,111	3,313	4,367	5,386	4,393	2,341	3,485

Source: Department Fisheries and Oceans, Barb Spencer, Prince Rupert (250) 627-3458

Figure 10. Map of Area 3, North Coast, Department of Fisheries and Oceans. Source: Department of Fisheries and Oceans, http://www.pac.dfo-mpo.gc.ca/ops/fm/Areas/area_03_e.htm

Maintained specialized historical areas considered sacred and/or relevant to First Nations

Indicator E5: Hectares protected/managed specifically for enhancement of cultural resources.

> **Rationale:** Resource management plans classify land and natural resources, and designate lands for special management purposes: e.g., industrial developments, protected areas, parks, wildlife habitat, watersheds, fisheries management, and recreation. Provisions for First Nations cultural and heritage resources are more likely to lead to their protection and enhancement.
> **Data source:** Land management agency local plans.
> **Desired direction:** Increase in hectares protected/managed specifically for enhancement of cultural resources.

First Nation community involvement in traditional cultural activities

Indicator E6: Numbers of hours of First Nation community member participation involved in traditional cultural activities in the plan areas.

> **Rationale:** Involvement of First Nations citizens in traditional cultural activities is expected to lead to increased connection to the culture.

Data source: Interviews with key informants (elders, tribal leaders, FN resource managers).
Desired direction: Increased numbers of hours of First Nation community member participation involved in traditional cultural activities in the plan areas.

Indicator E7: Percent of First Nations traditional territory covered by Traditional Use Studies within the plan area.

Rationale: Traditional Use Studies provide valuable information on cultural resources so they can be enhanced and protected.
Data source: Information from provincial archaeology and heritage resource inventories and surveys; research institutions (universities); tribal councils overlaid with traditional territory maps provided by tribal councils and First Nations.
Desired direction: Increased percent of First Nations traditional territory covered by Traditional Use Studies within the plan area.

6.0 PART 2: INDICATOR FRAMEWORK FOR SCHEDULE C AND G

6.1 RECOMMENDED REVISED SCHEDULE C AND G INDICATORS

Tables 19-27 show the recommended indicators for Schedules C and G that measure the six social and economic objectives outlined in the Protocol Agreements. Below each table is a description of the current Schedule C and G indicators that are not recommended, and the rationale for not recommending them. The Schedule C and G indicators that are not included have been removed because they don't meet the selection criteria or there are indicators that better meet the criteria. The left-hand column of the tables indicates whether the indicator represents an indicator already in Schedule C and G, or if the indicator is a "new" or additional recommended one.

This set of indicators is appropriate for use at the plan area scale. Local communities in the plan area may wish to develop their own local-level indicators that are appropriate for measuring changes at the community level.

For details on the rationale, data sources, and desired direction for each of these indicators, refer to Section 5.1.

In addition to the six classes of objectives in Schedule C and G, three additional classes of objectives are recommended:

- education
- physical/mental health
- social processes

During the July 20, 2007 workshop, participants suggested several additional indicators that were carefully considered. Many were included in the final list of recommended

indicators, and some are not being included because they did not meet one or more of the selection criteria, not because they are poor indicators of human well-being. More than 15 indicators suggested at the workshop were added to the final list of recommended indicators.

Table 17 Indicators suggested at the July 20 workshop that are not included in final recommended list

Indicator suggested at workshop	Rationale for not including them in final recommended list
Percent of household expenditures spent inside the plan areas	Does not meet Criteria 7: "Where there are no existing data available at the appropriate scale and boundary overlap is a problem, is primary data collection logistically possible and **affordable** to measure this indicator?" (Rationale: This indicator would require an economic leakage study, which is very expensive to conduct - would require a random sample of households tracking their expenditures by week or month).
Number of First Nations who have migrated back to the community per year	Does not meet Criteria 8: "Is the desirable direction of the indicator obvious (up or down)?" (Rationale: Migration could be either a negative or positive indicator)
Number and percent of archeological studies that result in further study	Does not meet Criteria 2: "Are there logical links between the indicator and the objective it purports to measure?" (Rationale: There are many reasons why a given area is further studied so it would be impossible to isolate what led to further study)
First Nations harvest levels of cultural and traditional resources per capita	Does not meet Criteria 7: "Where there are no existing data available at the appropriate scale and boundary overlap is a problem, is primary data collection **logistically possible** and affordable to measure this indicator?" (Rationale: Too many different products, and there is variability in what constitutes harvesting)

Indicator suggested at workshop	**Rationale for not including them in final recommended list**
Discrimination that First Nations people experience in the mainstream society	Does not meet Criteria 3: "Comparability over time. Are there other indicators better suited for comparability over time?" (Rationale: This concept can be measured through indicators relating to trust and are best measured at the local community level, rather than a plan area scale that will generalize over the plan area).
Number of Band members with post secondary training who live on reserve as ratio of total number of band members with post secondary training	Does not meet Criteria 9: "Is the indicator sensitive to changes in the outcome, but relatively unaffected by other changes?" (Rationale: Doesn't account for Band members who live off reserve who take training. In that case, the training doesn't directly affect the community).
Number of students enrolled in adult basic education	Criteria 8: "Is the desirable direction of the indicator obvious (up or down)?" (Rationale: An increase in adult basic education could be considered either a positive or negative indicator for education. If the number of students enrolled in adult basic education increases, it could mean that fewer are graduating from high school).
Informal sources of income	Does not meet Criteria 7: "Where there are no existing data available at the appropriate scale and boundary overlap is a problem, is primary data collection logistically possible and **affordable** to measure this indicator? and Criteria 3: Comparability over time. Are there other indicators better suited for comparability over time?" (Rationale: Difficult and expensive to measure. Would require individual interviews or surveys to community members to inventory informal sources of income. Reliability of results could be questionable (under-reporting).

Indicator suggested at workshop	Rationale for not including them in final recommended list
Percent of food that is obtained non-commercially	Does not meet Criteria 7: "Where there are no existing data available at the appropriate scale and boundary overlap is a problem, is primary data collection **logistically possible** and **affordable** to measure this indicator?" (Rationale: Difficult and expensive to measure. Would require individual households to track their non-commercial food sources on weekly or monthly basis. Could be done by individual communities but not recommended on a plan area basis).

6.1.1 Class of objective: First Nations cultural/traditional sustenance resources (listed as Section 3.1 in Schedule C and G):

Table 18 Recommended indicators for First Nations Cultural/Traditional Sustenance Resources

Objective : Sustain cultural/traditional resources for First Nations' domestic use

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
E1 Number of First Nation community members in the plan area learning and speaking tribal languages	First Nations language programs have often linked the continuation and use of tribal languages with the survival of First Nations cultures.	Number per community attending formal courses/workshops and using languages outside the home	Proxy Method: Measured through interviews with key informants (elders, language teachers) in community.	Increased number of First Nation community members in the plan area learning and speaking tribal languages

Objective : Sustain cultural/traditional resources for First Nations' domestic use

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
E2 Number of First Nation community members using traditional cultural resources for non-commercial purposes	Many First Nations have related an increase in use of cultural resources to an increased and firmer connection with their culture and traditions, and as essential for the restoration of community viability.	Number per community involved in at least one cultural traditional practice per year	Proxy Method-measured through interviews with key informants (elders, tribal leaders) in the community.	Increased number of First Nation community members using traditional cultural resources for non-commercial purposes.
E3 Number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations	The number of new archaeological studies can serve as proxy for cultural/ traditional resources identified, inventoried, and protected and is measurable over time.	Number per plan area	Provincial archaeology and heritage resource inventories and surveys; research institutions (universities, tribal councils). Need to be compiled.	Increased number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations.
E4 Number of returning salmon to key waterways in plan area	Salmon are an integral part of First Nations culture in the plan areas.	Number by major waterway in plan areas	Canada Department of Fisheries and Oceans.	Number of returning salmon to key waterways in plan area.
E5 Number of hectares protected/managed specifically for enhancement of cultural resources	Provisions for First Nations cultural and heritage resources are more likely to lead to their protection and enhancement.	Number of hectares by plan area	Land management agency local plans. Need to be compiled. Available on demand.	Increased number of hectares protected/managed specifically for enhancement of cultural resources

Objective : Sustain cultural/traditional resources for First Nations' domestic use

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
E6 Number of hours of First Nation community member participation in the plan areas involved in traditional cultural activities	Involvement of First Nations citizens in traditional cultural activities is expected to lead to increased connection to the culture.	Number of hours by community in plan area	Proxy Method- measured through interviews with key informants (elders, tribal leaders) in the community.	Increased number of hours of First Nation community member participation in the plan areas involved in traditional cultural activities
E7 Percent of First Nations traditional territory covered by Traditional Use Studies within the plan areas	Traditional Use Studies provide valuable information on cultural resources so they can be enhanced and protected.	Percent of hectares of traditional territory	Information from provincial archaeology and heritage resource inventories and surveys; research institutions (universities); tribal councils, overlaid with traditional territory maps provided by tribal councils and First Nations.	Increased percent of First Nations traditional territory covered by Traditional Use Studies within the plan areas.

Current Schedule C and G indicators not recommended:

1. Identification of First Nations cultural traditional resources

Rationale: While identification of cultural resources is an important first step in increasing First Nations access and use of sustenance resources, this indicator is not useful for measuring change over time. The number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations is recommended because of its comparability over time.

6.1.2 Class of objective: Community viability (listed as Section 3.2 in Schedule C and G):

Table 19 Recommended indicators for Community Viability

Objective: Promote Community Viability				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
D5 Total population by community and plan area	Increasing population will boost economic activity	Number of people by community and plan area	Labour Market Census – Skeena Native Development Society for North Coast BC Stats- Central Coast available annually	Increased total population by community and plan area
D8 Number and percent of workers in the plan area who are permanent residents	Increasing the economic and social viability of communities requires workers to be resident - their expenditures and time resources contribute to economics and social capital	Number and percent per plan area	Annual employment survey should include a question on residence of workers	Increased percent of workers in the plan area who are permanent residents

6.1.3 Class of objective: Economic contribution of resources to local communities (listed as Section 3.3 in Schedule C and G):

Table 20 Recommended indicators for economic contribution of plan area resources to local communities

Objective : Promote plan area resource development by local individuals and communities, to contribute to local and provincial economies

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D11 Percent of AAC held by plan area residents and communities	Increase in local access to plan area resources increases the likelihood that revenue from those resources will enhance local economy through increased wages and purchase of goods and services	Percent by plan area	MOFR and BC Timber Sales annually.	An increase in AAC held by plan area residents and communities
D12 Number and volume of productive activity for Backcountry Tenures, Guide Outfitter Tenures, and Sport fishing lodge licenses by plan area residents	Same as above	Angler days, fish catch, animals bagged	Provincial ministries and Dept. of Fisheries and Oceans (available annually but recommend to collect each three years – average over three years)	Increase in number and volume of productive activity for Backcountry Tenures, Guide Outfitter Tenures, and Sport fishing lodge licenses by plan area residents

Objective : Promote plan area resource development by local individuals and communities, to contribute to local and provincial economies

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D13 Percent of Backcountry Tenures, Guide Outfitter Tenures, Sport fishing lodge licenses owned by plan area residents and percent of productive activity by plan area companies	Same as above	Percent by regional district	Provincial ministries and Dept. of Fisheries and Oceans (available annually but recommend to collect each three years – average over three years)	Increase in Percent of Backcountry Tenures, Guide Outfitter Tenures, Sport fishing lodge licenses owned by plan area residents and percent of productive activity by plan area companies
D14 Percent of aquaculture tenures owned by plan area residents and percent of productive activity by plan area residents	Same as above	Percent by regional district	Provincial ministries (available annually but recommend to collect each three years – average over three years)	Increased percent of fin fish and shell fish tenures owned by plan area residents and percent of productive activity by plan area residents
D15 Percent of Mineral Exploration tenures owned by plan area residents and percent of productive activity by plan area companies	Same as above	Dollars per plan area owned by plan area residents and percent of productive activity by plan area companies.	B.C. Ministry of Energy, Mines, and Petroleum Resources website. Available annually.	Increased percent of Mineral Exploration tenures owned by plan area residents and percent of productive activity by plan area companies
D16 Percent of other natural resource tenures owned by plan area residents and percentage of productive activity by plan area companies	Same as above	Percent by regional district	Provincial ministries (available annually but recommend to collect each three years – average over three years)	Increased percent of other natural resource tenures owned by plan area residents and percentage of productive activity by plan area companies

Objective : Promote plan area resource development by local individuals and communities, to contribute to local and provincial economies

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D6 Tourism room revenue	Tourism room revenue will provide a proxy for changes in the tourism sector in the plan areas	Dollars per regional district	BC Stats collects monthly and reports annually by regional district	Increased tourist room revenue in the each of the two plan areas
D18 Annual resource revenues to First Nations, compared with revenues to province	Resource revenues to First Nation communities lead to economic and social development	Dollars per plan area	Collected through band administrative offices. Could be available annually	Increased resource revenues to First Nations

6.1.4 Class of objective: Economic diversification (listed as Section 3.4 in Schedule C and G):

Table 21 Recommended indicators for Economic Diversification

Objective: Diversify the economies of First Nations and other communities

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D1 Economic diversity index (compared with North Island and province)	Community economies that rely on multiple sectors are considered to have stronger economic health than those who are dependent on only one or a few sectors	Index score by census sub-division. Data to be compared with North Island census subdivision and province.	The diversity index is produced by BC Stats. Economic diversity index is based on Census data. It is available every five years approximately two years after the Census year[1].	Increased economic diversity index scores and increased scores relative to North Island and province

Objective: Diversify the economies of First Nations and other communities

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D9 Commercial loan levels	An increase in commercial credit accessed usually is associated with economic activity in a region	Dollars per plan area	Commercial loan information by Credit Unions, Community Futures Development Corporations, and other focused lenders (no single existing source available)	Increased commercial loan levels in the plan areas
D10 Commercial equity investment	An increase in commercial equity investment is associated with economic activity in a region.	Dollars per plan area	Data are not available on a regional or sub-regional basis. A proxy calculation could be prepared annually based on coefficients from key industries based on information obtained regarding loan debt (from above). In addition the major projects inventory prepared by the Ministry of Economic Development by Regional Districts could be used to estimate commercial equity investment.	Increased commercial equity investment

Objective: Diversify the economies of First Nations and other communities

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D20 Public infrastructure investment	Infrastructure is critical to economic development in the plan areas.	Dollars of public infrastructure investment per plan area.	Compiled from local government and First Nations government, regional districts, and provincial ministries (i.e. Health and Transportation). No single existing source.	Increased public infrastructure investment

[1] http://www.bcstats.gov.bc.ca/pubs/econ_dep.asp
[2] http://www.bcstats.gov.bc.ca/data/dd/income.asp

Current Schedule C and G indicators not recommended:

1. Assessed property values

Rationale: Assessment of property values is limited mainly to freehold land of which there is very little in the Central Coast and only slightly more (primarily Prince Rupert) in the North Coast. The value of the assessed property has much more to do with the general economy, e.g., Prince Rupert's new container port, than provincial land use policy. The same will hold true for the freehold land in the Bella Coola valley if a major development takes place in or near the plan areas. In addition a large portion of the Central Coast population lives on lands that are not individually assessed (Indian Reserves). The same holds true for most communities in the North Coast excluding Prince Rupert.

6.1.5 Class of objective: Employment (listed as Section 3.5 in Schedule C and G):

Table 22 Recommended indicators for employment

Objective: Improve prospects for employment

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D7 Number of businesses and employment per employer in each of the key basic and non-basic sectors	Employment survey will show employment levels by sector	Number of employees, number of businesses, and numbers per sector by plan area	Employment survey- annually	Increased number of businesses and employment per employer, in each of the key basic and non-basic sectors

Objective: Improve prospects for employment				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
D17 Number of jobs in forestry and wood processing per cubic meter harvested in land use area	Increase in jobs per cubic meter indicates greater economic utility of the resource (value added)	Number of jobs and volume harvested by plan area	MOFR and Statistics Canada-annually	Increased number of jobs in forestry and wood processing per cubic meter harvested in land use area

Indicator not recommended:

1. Number of individuals on EI and BC benefits

Rationale: Recent policy changes for EI and BC Benefits (now called Employment and Income Assistance) eligibility have made both of these categories poor measures of anything except those who match the very narrow criteria.

6.1.6 Class of objective: Wages and Income (listed as Section 3.6 in Schedule C and G):

Table 23 Recommended indicators for Wages and Income

Objective: Promote growth in incomes

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
D2 Number of individuals with formally reported incomes	The number of individuals who file tax returns approximates the number of individuals who obtain formal sector incomes. This indicator will provide information on income obtained from employment and other sources.	Number by regional district	Available annually through BC Stats tax filer data[1].	Increased number of individuals with formally reported incomes.
D3 The number of individuals with formally reported annual income above $25,000 annually (adjusted for inflation)	The goals of community economic development is to increase individual and family incomes	Number by regional district	Available annually through BC Stats tax filer data[1].	Decreased number of individuals with formally reported incomes above $25,000 annually (adjusted for inflation).
D4 Number of income earners in the lower two income brackets (less than $15,000 and $15,000 to $24,999 annually) as a percent of number of income earners for the plan areas or the number of middle income earners ($35,000+ and $50,000+ categories)	The literature indicates that as the gap in distribution of income decreases, the quality of well- being increases.	Number and percent by regional district	Available annually through BC Stats tax filer data[1].	Decreased number of income earners in the lower two income brackets as a percent of income earners or percent of middle income earners.

[1] http://www.bcstats.gov.bc.ca/data/dd/income.asp

6.1.7 Class of objective: Education (could be listed as a new Section 3.7 in Schedule C and G)

Table 24 Recommended indicators for Education.

Objective: Increase educational levels				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
C1 Percent of graduates from Grade 12 as a percentage of those in Grade 12	Graduation from Grade 12 reflects the individual, community, and school's success in completing formal education required for advanced education.	Percent by school district	Available annually by school and by school district through the Ministry of Education. Private and independent schools will need to be contacted directly.	Increased percent of graduates from Grade 12 as a percentage of those in Grade 12.
C2 Number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree	Formal post secondary school training is required for trades, technologies and professional employment. Increases in skills and formal education often results in increased economic activity.	Number and percent by regional district (BC Stats) Percent by community (Proxy Method)	Data are available every five years through Census – long form and available for purchase ($25 for 2001 data) from BC Stats. Data could be collected for First Nations communities using the Proxy Method.	Increased number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree.

Objective: Increase educational levels				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
C3 Percent of students who enter Grade 8 but do not complete Grade 12	This is an indicator of the high school drop-out rate. It characterizes the willingness and ability of students to complete a high school education. The information would need to be compared with migration statistics (to account for students that leave the area during the high school years).	Percent by school	Available from each school annually (total number of dropped out after Grade 8, divided by total number of those entering Grade 8 x 100).	Decreased percent of students who enter Grade 8 and do not finish Grade 12.

6.1.8 Class of objective: Physical and Mental Health (could be listed as a new Section 3.8 in Schedule C and G)

Table 25 Recommended indicators for Physical and Mental Health

Objective: Improve human health				
Indicator	**Rationale**	**Unit/description/scale**	**Data source/frequency**	**Desired direction**
B1 Potential Years of Life Lost Due to Suicide/ Homicide	Suicide and homicide rates are considered by BC Stats to be an indicator for mental health of a population.	(Average per 1,000 population). by Local Health Area	BC Stats/ 2001-2005 average	Decreased potential Years of Life Lost Due to Suicide/Homicide

Objective: Improve human health

Indicator	Rationale	Unit/description/scale	Data source/frequency	Desired direction
B2 Teen Pregnancies	Teen pregnancy rates are considered by BC Stats to be an indicator for mental health of a population.	(Average per 1,000 Women age 15-17). by Local Health Area	BC Stats/ 2002-2004 average	Decreased teen pregnancy rates
B3 Life expectancy at birth	Life expectancy rates are considered by BC Stats and many international development organizations to be an indicator for physical health of a population.	(Average, in years) by Local Health Area	BC Stats/ 2002-2006 average	Increased number of years of life expectancy
B4 Infant Mortality Rate	Infant mortality rates are considered by BC Stats and many international development organizations to be an indicator for physical health of a population.	(per 1,000 live births). by Local Health Area	BC Stats/ 2001-2005 average	Decreased infant mortality rates
B5 Potential years of life lost natural and accidental	Average years of life lost to accidents and natural causes are considered by BC Stats to be indicators for physical health of a population.	(Average per 1,000 population) by Local Health Area	BC Stats/ 2001-2005 average	Decreased potential years of life lost

6.1.9 Class of objective: Social Processes (could be listed as a new Section 3.9 in Schedule C and G)

Table 26 Recommended indicators for Social Processes

Objective: Increase social capital and sense of place				
Indicator	**Rationale**	**Unit/description**	**Data source/frequency**	**Desired direction**
A1 Average index score for generalized trust (level of trust in people)	Social capital literature relevant to North and Central Coast says that generalized trust can serve as proxy for social capital	Index score calculated through Likert- scale questions (Level of agreement with statements about trust), by community	A household survey need to be conducted that would include a question about perceptions of increased social support networks	Increased average index score for generalized trust (level of trust in people)
A2 Commitment to place (average scores on commitment-to-place survey question)	Sense of place literature says that willingness to stay in community even if a good job comes up elsewhere is a reliable measure of sense of place	Likert scale survey question (Level of agreement with statement about willingness to stay in community even if good job comes up elsewhere, by community	A household survey would include a question about willingness to stay in community	Increased commitment to place (average scores on commitment-to-place survey question)

7.0 INDICATORS FOR WHICH EXISTING DATA ARE AVAILABLE

Table 28 below shows both primary and secondary indicators that are readily available from existing sources at low or no cost.

Table 27 Recommended C and G indicators for which there are existing data available

Number	Indicator	Number	Indicator
B1	Potential Years of Life Lost Due to Suicide/Homicide (Average per 1,000 population).	**D11**	Percent of AAC held by plan area residents and communities.
B2	Teen Pregnancies (Average per 1,000 Women age 15-17).	**D12**	Number and volume of productive activity for Backcountry Tenures, Guide Outfitter Tenures, Sport fishing lodge licenses (angler days, fish catch, animals bagged) by plan area residents.
B3	Life expectancy at birth (Average, in years).	**D13**	Percent of Backcountry Tenures, Guide Outfitter Tenures, Sport fishing lodge licenses owned by plan area residents and percent of productive activity by plan area companies.
B4	Infant Mortality Rate (per 1,000 live births).	**D14**	Percent of aquaculture tenures owned by plan area residents and percent of productive activity by plan area residents.
B5	Potential years of life lost (Average per 1,000 population), natural and accidental.	**D15**	Percent of Mineral Exploration tenures owned by plan area residents and percent of productive activity by plan area companies.
C1	Percent of graduates from Grade 12 as a percentage of those in Grade 12 (however the private and independent schools would need to be contacted directly).	**D16**	Percent of other natural resource tenures owned by plan area residents and percent of productive activity by plan area companies.
C2	Number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree.	**D17**	Number of jobs in forestry and wood processing per cubic meter harvested in plan area.
C3	Percent of students who complete Grade 8 but do not complete Grade 12.	**D18**	Annual resource revenues to First Nations, compared with revenues to province.
D1	Economic diversity index (compared with North Island and province).	**D19**	Average income per tax filer and average family income.
D2	Number of individuals with formally reported incomes.	**D20**	Public infrastructure expenditures.

D3	The number of individuals with formally reported annual income above $25,000 (adjusted for inflation).	**E3**	Number of new archaeological studies or Traditional Use Studies conducted and number reviewed by First Nations.
D4	Number of income earners in the lower two income brackets (less than $15,000 and $15,000 to $24,999 annually) as a percent of number of income earners for the plan areas or the number of middle income earners ($35,000+ and $50,000+ categories).	**E4**	Number of returning salmon to key waterways in plan area.
D5	Total population by community and plan area.	**E5**	Hectares protected/managed specifically for enhancement of cultural resources.
D6	Tourism room revenue.	**E7**	Percent of First Nations traditional territory covered by Traditional Use Studies within the plan area.
D9	Commercial loan levels.		
D10	Commercial equity investment.		

8.0 INDICATORS FOR WHICH PRIMARY DATA COLLECTION IS REQUIRED

Table 29 below shows primary and secondary indicators that will require primary data collection as well as the data collection method. Three data collection methods are described below.

Table 28 Primary indicators that would require primary data collection

Number	Indicator	Data collection method
D7	Number of businesses and employment per employer in each of the key basic and non-basic sectors	Employment survey
D8	Number and percent of workers in the plan area who are permanent residents.	Employment survey
A1	Average index score for generalized trust (level of trust in people)	Household survey
A2	Commitment to place (average scores on commitment-to-place survey question)	Household survey
E1	Number of First Nation community members in the plan area learning and speaking tribal languages.	Proxy Method
E2	Number of First Nation community members using traditional cultural resources for non-commercial purposes.	Proxy Method

Number	Indicator	Data collection method
E6	Numbers of hours of First Nation community member participation in the plan areas involved in traditional cultural activities.	Proxy Method
C2	Number and percent of adult population who complete Grade 12, certified job skills training, trades, college (diploma), University Degree, or Master Degree.	Proxy Method

8.1 PRIMARY DATA COLLECTION

The following types of data collection would be required to measure the indicators in Table 27. These include an annual employment survey, a household survey, and a local census using a method called Proxy Method that uses key informants in the community, modeled after a method used by the Skeena Native Development Society. These surveys could be conducted in partnership with other community organizations or agencies desiring community information so costs to any one organization could be minimized.

8.1.1 Employment survey

Description: A telephone phone survey of all employers in each plan area would focus on obtaining the total number of employers (including unincorporated businesses), number of new businesses, employment by employer, and number of workers who are permanent residents in the area. Because the number of employers is small, compilation would be relatively easy and inexpensive, particularly in the years following the creation of the initial database. There are approximately 600 businesses in the North Coast plan area (BC Stats) of which approximately 450 have less than 10 employees. The Central Coast has less than 100 businesses, with most of them having less than five employees. An employment survey using the data bases from business licenses and other local information (telephone books) would take about 10 minutes per business to conduct.

Frequency: The survey is recommended annually because of the frequent changes in businesses, and because the effort would not be expensive or time consuming after the first year. Once businesses become accustomed to an annual survey, they are more likely to be prepared to compile the information than if the survey was done less frequently. An annual survey would also ensure that the results are not biased if a business has an atypical year. The frequency can be re-evaluated after the first few years to determine if a less frequent survey would be warranted.

Cost: Approximately $7,000 in direct costs plus approximately $5,000 for analysis and write-up.

Using the same survey developed for the North Coast plan area, conducting the survey would cost approximately $2,000, plus approximately $3,000 for analysis and write-up.

Advantages and disadvantages of this method:

Since the population of business owners in the North and Central Coast is small, a 100% sample is possible for the survey, eliminating the risk of sampling error. It is likely that most businesses will have telephones and will be listed either in the telephone directory, websites, or obtained through business license information. By asking businesses that are being surveyed to share names and contact information for other local businesses, it will ensure that there are not businesses missed. Home-based and sole proprietor businesses that are not incorporated can be found this way. The greatest investment will be in the first year when the database is created. In subsequent years, the business database will be updated, but not created from scratch.

Employment data can be misleading if employees are seasonal or part-time. It will be important for the survey to include questions about seasonal and part-time employees so an accurate account of employment can be derived. Telephone surveyors will need to receive training and have the ability to read questions fluently and communicate verbally. Training will include information on the purpose of the survey, the survey sponsor, how to complete a call record, how to handle difficult questions from respondents, how many times to call back if no answer, and so on (Salant and Dillman 1994).

8.1.2 Household survey using randomly selected communities and households in the plan areas

Description: To quantitatively measure indicators such as social capital and sense of place, it will be necessary to obtain information directly from individuals in the plan areas through written surveys that will probably need to be administered in person with a surveyor on site in the more remote communities. It will be expensive to conduct surveys in dispersed First Nations communities, but a random selection of communities and households within the communities will eliminate the need to survey every community and every household in the community and will keep costs to a minimum. Significant "front end" work in the communities to secure buy-in for the surveys will lead to a higher response rate than without "front end" work. It's suggested that a survey company or organization with experience conducting data collection in remote Aboriginal communities be contracted.

With a rough estimate of 3,500 households in the two areas, if a 5% error and 95% confidence interval are desired and a 20% response rate is expected, 512 completed surveys would be required (calculated using the sample size calculator at http://www.custominsight.com/articles/random-sample-calculator.asp) to obtain ability to generalize to results across the plan area. A stratified approach where random samples are drawn from municipalities and random samples are drawn from more remote communities could be considered.

Frequency: Every five years

Cost: Costs will depend on number of communities and the number of households in each community surveyed. Cost estimates for most mail surveys range from $20-$30 per respondent (at 512 respondents, costs could be $10,000 to $15,000); however costs could

cost almost twice that amount if significant numbers of remote households are included in the sample frame and the survey is administered in person by surveyors ($20,000 to $30,000). Travel time and costs to remote villages would need to be carefully calculated in developing a budget.

Advantages and disadvantages of this method:
Administering quantitative surveys in remote communities is expensive, but would be the only realistic way to include remote First Nations communities in the data collection and analysis. Obtaining quantitative data from randomly selected communities and households that allow results to be generalized across the plan area would allow for comparisons across time.

8.1.3 Local Census using Proxy Method

Description: The Skeena Native Development Society (SNDS) is a non-profit economic development organization that provides resources to individuals for capacity growth and business development initiatives in Northwestern BC It conducts an annual Labour Market Survey for communities in its service area based on a data collection method it calls the Proxy Method. This approach is used to obtain community and individual economic, demographic and education related data in remote First Nations villages by working with band offices and by hiring local interviewers who interview key informants in the community. The survey is a source of existing data for the North Coast LRMP area, and it also can serve as a model for data collection methodology that could be conducted on the Central Coast.

Frequency: Every three years to correspond with the frequency of the Skeena Native Development Society census timeline.

Cost per time: Costs would roughly estimate $35,000-$45,000 total for both plan areas. Costs would be considerably higher for the first survey than subsequent surveys (perhaps 50% less) after the methodology is established.

Advantages and disadvantages of this method:
This community-based data collection method provides an opportunity for local First Nations community members to be employed and involved in the data collection effort. The method appears to overcome the under-reporting issues of the Canadian census in First Nations communities and enables information on subsistence uses of resources and cultural participation. It enables collection of data on indicators that are not available through existing sources such as BC Stats and Statistics Canada. This method can be used to field check and localize existing sources that are available. The methodology has already been established by the Skeena Native Development Society on the North Coast and would be relatively easy to adapt to the communities inside the Central Coast plan area. The frequency of data collection is flexible depending on budgets, frequency of change in the communities, and other factors that would influence the desired or necessary frequency of data collection.

Given that the method is already being used in the North Coast area by SNDS to collect economic data, it is not realistic to conduct a parallel census process on the North Coast to gather data on HWB indicators because community members would be surveyed twice. It may be possible to coordinate with (or hire) Skeena to expand their survey to include HWB-related questions.

While the method is relatively expensive compared with other social data collection methods, it may be the only realistic method for gathering HWB information in the remote communities of the North and Central Coast. Once a decision is made to use this methodology, it can be used to gather a range of community-based information of interest to community organizations.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The set of indicators outlined for Schedule C and G are intended to provide one defensible way to measure changes in the human condition on the North and Central Coast over time that meets the intent of Schedule C and G and addresses the full range of the dimensions of human well-being. It is an ambitious set of literature-driven indicators; it will need to be vetted and refined through budgetary and community input processes in the next phases of operationalization.

There are many ways to define human well-being, and indicators differ by author and academic world view. There is no single "perfect" framework, and no one "perfect" set of indicators. The existing data appropriate for the unique character of the North and Central Coast are limited, and the set of indicators recommended represents a compromise between theory and practicality. The unique boundaries of the LRMP areas, coupled with the small populations that make census-based data problematic makes the prospect of doing community-based data collection the most viable option. This list represents a plan-area scale set of indicators. It can provide a template or menu for local communities within the plan area who wish to create their own localized set based on local priorities and circumstances.

It is our hope that when they are refined and finalized, these indicators can help serve as a kind of human well-being "scorecard" for the North and Central Coast. We envision a list of indicators posted on office bulletin boards of people such as planners, decision makers, health workers, and community development specialists throughout the North and Central coast, as it can be used as a tool to help guide strategies and aid in grant writing and give the communities in the plan areas a common focus. While this set of indicators is imperfect and burdened with limitations, we believe they offer a one way to gather a "snapshot in time" of the story of the human condition on the North and Central Coast at the plan area scale.

9.1 KEY MESSAGES

Conclusion- Key messages

1) Human well-being involves more than economic or material factors; it includes other factors such as health, education, culture and social processes. These factors interact with each other in complex feedback loops. Selection of indicators should reflect this broad definition of human well-being.

2) To reflect the theories of human well-being, indicators can be framed in an "indicator framework" that is either selected or synthesized from the literature. There are many conceptual indicator frameworks currently in use by both practitioners and academics. None of the nine frameworks reviewed is recommended to be adopted "as is" for the North and Central Coasts; thus the set of recommended HWB components is a synthesis of the nine indicator frameworks based on dominant themes across all frameworks. There is no single "right" way to develop a monitoring framework.

3) Selecting the criteria ("screening questions") is nearly as important as the selection of the indicators themselves. It would be unfortunate if selected indicators don't work because the criteria have not been carefully considered in advance, or if the criteria are debated after the fact. Involving community members and stakeholders in the development of criteria could be an important step in establishing buy-in for the indicators.

4) There are serious limitations in the use of existing data for the North and Central Coast because the boundaries of the plan areas don't closely match the boundaries of the existing sources, and because of the small populations in the plan areas that make data sets too small for meaningful comparisons over time.

5) Despite higher costs of community-level primary data collection, it offers more reliable data that can be compared over time than most existing sources of data.

6) While many sources of existing data are available annually, compiling them annually is unlikely to reveal meaningful trends. Compiling existing data every three to five years (and averaging across the years) is likely enough to show trends in most indicators, even if they are available annually.

7) The advantage of this literature-driven ("expert driven") approach for indicator selection is that it ensures a theoretical basis, but it lacks local perspective and community knowledge that may improve the selection of indicators. The most efficient and effective indicator selection processes

may be where experts and community members "meet in the middle" and select indicators collaboratively, taking advantage of both sets of expertise.

8) Developing specific targets for these indicators is most appropriate after baseline data have been collected for each of the indicators. Selecting desired levels of improvement is inherently political and based on values so should involve stakeholders and community members.

9) There are many important and relevant indicators that could be selected but because of affordability issues or difficulty with measurability over time, were not recommended for measurement at the plan area level. For example, workshop participants suggested that the percent of household expenditures spent inside the plan area as a measure of economic leakage as an economic indicator but it would require a sample of households to record their expenditures by category of expenditure over a period of time. These types of indicators would require considerable resources to set up and implement at the plan area level and are recommended for individual community level indicators that can be measured on a smaller scale.

Recommendations for the EBMWG:

- Develop and incorporate three new objectives on health, education, and social processes for Schedule C and G in addition to the existing objectives.

- Accept that existing sources of data for the North and Central Coast have serious limitations, and that primary data collection may be the best way to get reliable information that can be tracked over time.

- Consider the selection of indicators as an iterative process and accept that indicators will likely change as baseline data collection is attempted and further limitations and opportunities are uncovered.

- Consider that local communities within the plan areas will have their own local priorities and definitions of human well-being. This list can serve as a menu or template for local communities who adapt and create their own localized lists.

- Set specific targets after baseline data are collected, and do so in consultation with stakeholders, community members and organizations involved in community development initiatives.

- Consult with community members and stakeholders about the criteria for selecting indicators. Take advantage of community knowledge by

reviewing these proposed indicators collaboratively between experts and community members.

- Consider three types of primary data collection: employment survey, household survey, and community-based census using the Proxy Method.

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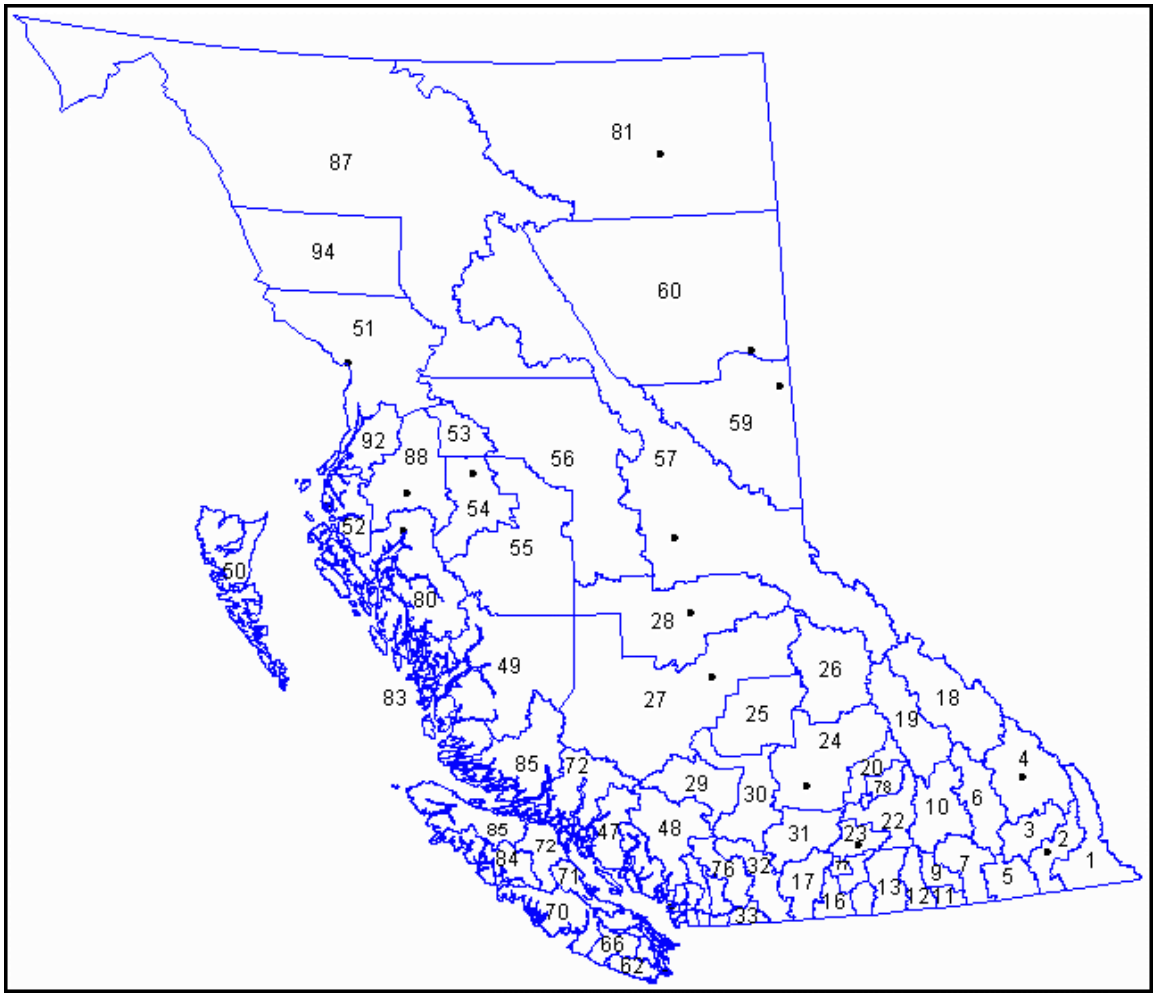
APPENDIX A: LOCAL HEALTH AREA MAP

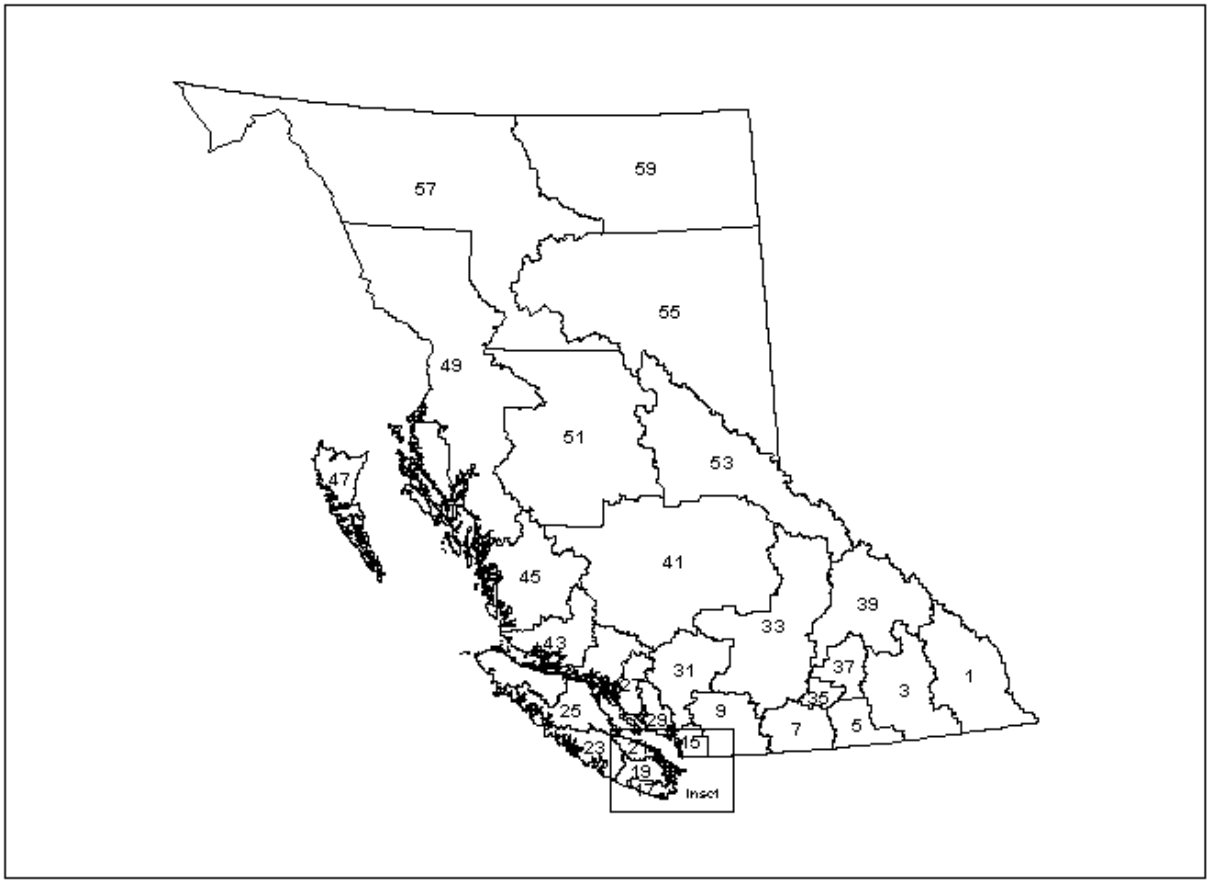
Source: BC Stats



1	Fernie	47	Powell River
2	Cranbrook	48	Howe Sound
3	Kimberley	49	Bella Coola Valley
4	Windermere	50	Queen Charlotte
5	Creston	51	Snow Country
6	Kootenay Lake	52	Prince Rupert
7	Nelson	53	Upper Skeena
9	Castlegar	54	Smithers
10	Arrow Lakes	55	Burns Lake
11	Trail	56	Nechako
12	Grand Forks	57	Prince George
13	Kettle Valley	59	Peace River South
14	Southern Okanagan	60	Peace River North
15	Penticton	61	Greater Victoria
16	Keremeos	62	Sooke
17	Princeton	63	Saanich
18	Golden	64	Gulf Islands
19	Revelstoke	65	Cowichan
20	Salmon Arm	66	Lake Cowichan
21	Armstrong - Spallumcheen	67	Ladysmith
22	Vernon	68	Nanaimo
23	Central Okanagan	69	Qualicum
24	Kamloops	70	Alberni
25	100 Mile House	71	Courtenay
26	North Thompson	72	Campbell River
27	Cariboo - Chilcotin	75	Mission
28	Quesnel	76	Agassiz - Harrison
29	Lillooet	77	Summerland
30	South Cariboo	78	Enderby
31	Merritt	80	Kitimat
32	Hope	81	Fort Nelson
33	Chilliwack	83	Central Coast
34	Abbotsford	84	Vancouver Island West
35	Langley	85	Vancouver Island North
36	Surrey	87	Stikine
37	Delta	88	Terrace
38	Richmond	92	Nisga'a
39	Vancouver Aggregate	94	Telegraph Creek
40	New Westminster	161	City Centre
41	Burnaby	162	Downtown Eastside
42	Maple Ridge	163	North East
43	Coquitlam	164	West Side
44	North Vancouver	165	Midtown
45	West Vancouver-Bowen Island	166	South Vancouver
46	Sunshine Coast	201	Surrey
		202	Surrey/White Rock

APPENDIX B: REGIONAL DISTRICT MAP

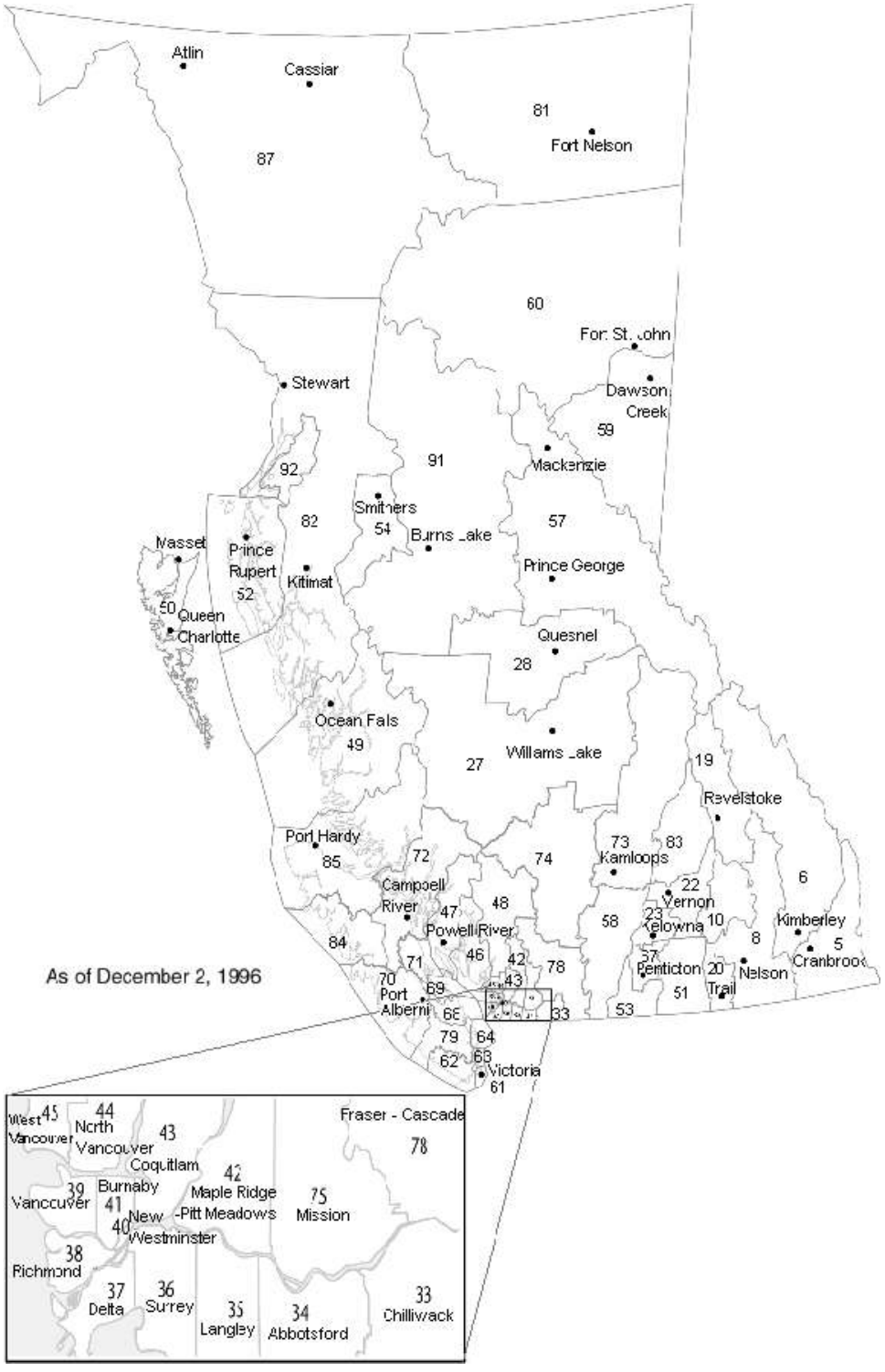
Source: BC Stats



23	Alberni-Clayoquot :	51	Bulkley-Nechako :
17	Capital :	49	Kitimat-Stikine :
41	Cariboo :	43	Mount Waddington (Island) :
45	Central Coast :	43	Mount Waddington (Mainland) :
3	Central Kootenay :	37	North Okanagan :
35	Central Okanagan :	21	Nanaimo :
39	Columbia-Shuswap :	59	Northern Rockies :
25	Comox-Strathcona (Island):	7	Okanagan-Similkameen :
25	Comox-Strathcona (Mainland):	55	Peace River :
19	Cowichan Valley :	27	Powell River :
1	East Kootenay :	47	Skeena-Queen Charlotte:
9	Fraser Valley :	31	Squamish-Lillooet :
53	Fraser-Fort George :	57	Stikine :
15	Greater Vancouver :	29	Sunshine Coast :
5	Kootenay Boundary :	33	Thompson-Nicola :

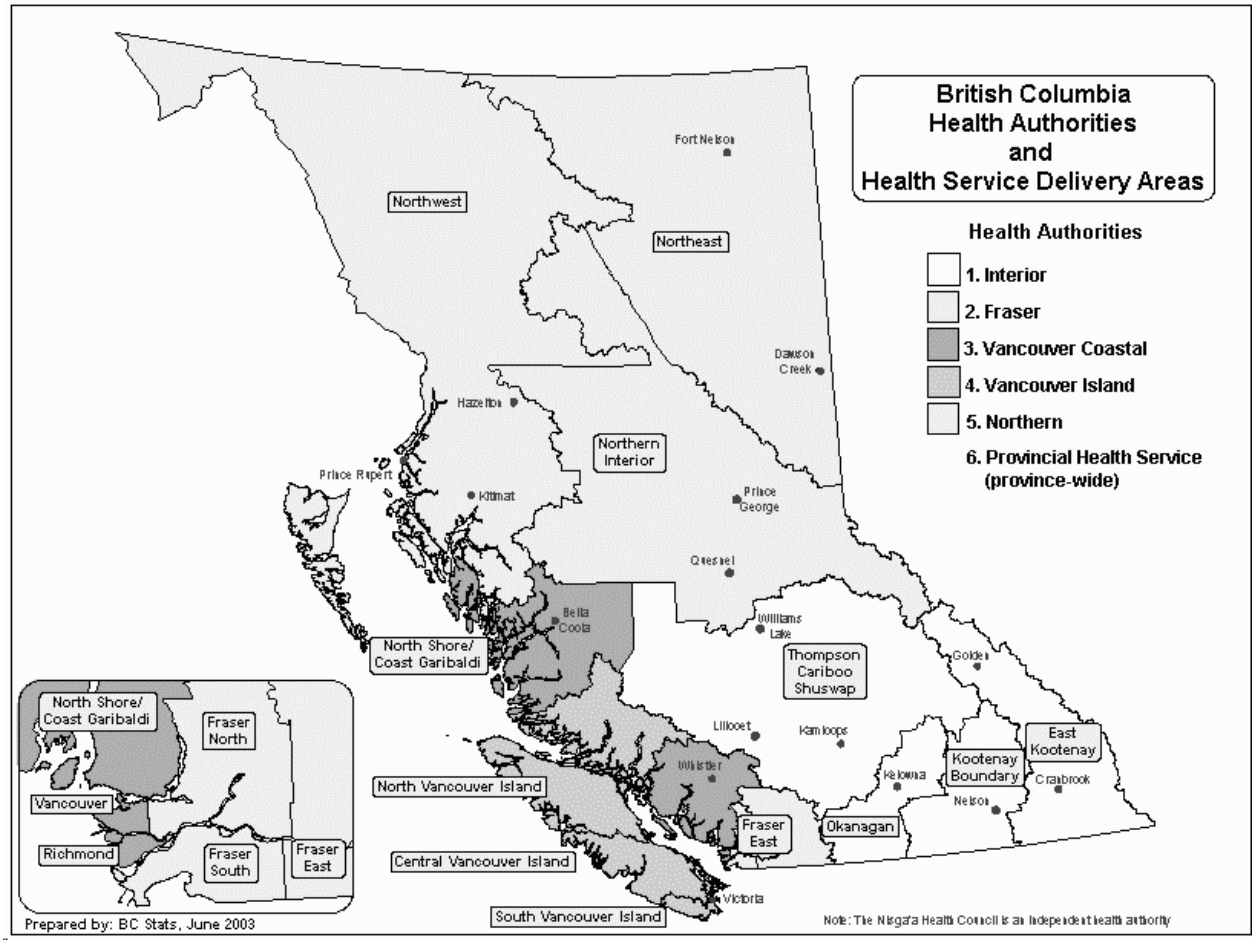
APPENDIX C: SCHOOL DISTRICT MAP

Source: BC Ministry of Education



APPENDIX D: HEALTH SERVICE DELIVERY AREA MAP

Source: BC Stats



APPENDIX E. INDICATOR FRAMEWORKS AND INDICES IN THE LITERATURE

The following list provides examples of the many types of social and economic, human well-being, and quality of life indices and indicator frameworks in the literature. Most include indicators that would not be appropriate for measurement on the North and Central Coast and thus are not recommended for adoption "as is."

1. BC Stats Socio-economic Index

The BC Stats Socio-Economic Index compiles a variety of indicators into a single composite index for each region within the province. The index is intended to show differences between geographic areas and is not be used as measure of differences over time within a region or community. The overall Regional Socio-Economic Index is a weighted average of each of the six sub-indices below. These include:

- Index of Human Economic Hardship
- Index of Crime
- Index of Health Problems
- Index of Education Concerns
- Children at Risk
- Youth at Risk

These indices are available for each of the 78 Local Health Areas, 26 Regional Districts, 15 College Regions, 57 School Districts, 16 Health Service Delivery Areas (which is an aggregation of an LHA) or five Health Authorities (aggregations of Health Service Delivery Areas) as well as Georgia and Fraser Basins because of their unique ecological factors. The major drawback of this index is that the methodology used to develop this index is not appropriate for temporal comparisons (comparisons over time), only to compare one geographic area with another.

According to the BC Stats Social and Economic Indicators Methodology document, *"The design of the various indices is intended to provide cross-sectional analysis at a point in time. The developed indices are not designed for temporal analysis. Hence, comparing index values from one "time slice" to the next could produce misleading results. For example, a drop in an index value for a particular region from 0.50 to 0.30 does not necessarily mean an improvement in conditions within the region. The change may be due to other areas becoming relatively worse off (BC Stats 1999).*

2. The Canadian Index of Well-being

In a publication released in March 2007, the Atkinson Foundation announced the development of a new well-being indicator framework (http://www.ciw.ca) recently established by a national

(Canadian) network of academics and practitioners that is based on current science on community and individual well-being. The framework includes seven areas that are under development by a national network of indicator experts who expect to develop a composite index for the variables, including the Institute for Social Research and Evaluation at the University of Northern British Columbia and 18 other institutions across Canada. The variables include: **living standards, time allocation, healthy populations, ecosystem health, educated populace, community vitality, and civic engagement.** A composite index has not yet been developed and work is being done to make this index operational.

3. Genuine Progress Index

Developed by three California researchers in 1995, the Genuine Progress Index (GPI) is an index that was developed in light of the limitations of Gross Domestic Product in accurately measuring aspects of societal progress and well-being. The GPI assigns a value to environmental quality, population health, livelihood security, equity, free time, and educational attainment and consists of indicators and measures of progress and assessments of the economic value of non-market social and environmental assets not typically accounted for in economic assessments. The framework accounts for depreciation and economic costs as liabilities.

The GPI Index has been criticized for what is seen as a subjective selection of indicators and judgment of whether certain market and non-market activities are good or bad, as well as difficulties regionalizing the statistics. At the same time, proponents say that the GPI can be used as a supplement to other indicators because it provides additional information about the trends in society that have an effect on overall well-being.

The GPI index is used in several parts of Canada, including by the Pembina Institute for Alberta (http://www.pembina.org). There is an organization called GPI Atlantic that promotes and educates about the index in the Atlantic provinces (http://www.gpiatlantic.org).

4. Social Determinants of Health

In 2002, 400 social and health policy experts, community representatives, and health researchers convened a conference entitled “Social Determinants of Health Across the Life-Span” to consider the state of key social determinants of health across Canada, Research papers and presentations presented at the conference were synthesized into nine social determinants of health.

- income inequality
- social inclusion and exclusion
- employment and job security
- working conditions
- contribution of the social economy
- early childhood care
- education
- food security

- housing

According to editor Peggy Edwards (2002), evidence from Canada and other countries supports the notion that the socioeconomic circumstances of individuals and groups are equally or more important to health status than medical care and personal health behaviors (Evans et al., 1994; Frank, 1995; Federal/Provincial/Territorial Advisory Committee on Population Health, 1999). The weight of the evidence suggests that the social determinants of health have a direct impact on the health of individuals and populations, are the best predictors of individual and population health, structure lifestyle choices, and interact with each other to produce health (Raphael, 2003).

5. Human Development Index

In the area of international development, the United Nations' Human Development Index (UNDP HDI) has become one of the most widely accepted indicators. The HDI is based on a definition of human development that is characterized by the UNDP as "an expansion of choices" (UNDP 2006). Three aspects of well-being comprise the HDI: health, knowledge, and access to material goods. These three dimensions are identified by the UNDP as necessary for the making of meaningful choices by individuals, which requires reasonable levels of health and longevity, literacy, some level of education, and a minimal level of material well-being. While it is widely used internationally, the Human Development Index has been used primarily as a tool for comparing jurisdictions rather than for tracking changes over time.

6. First Nations Indices

Based on the UNDP HDI discussed above, the Registered Indian Human Development Index (HDI) was developed by Indian and Northern Affairs Canada (INAC) to measure the well-being of Registered Indians using Statistics Canada census data to measure three indicators (a long and healthy life, knowledge, and a decent standard of living). A life expectancy index, an education index, and a per capita income index are combined to create a consolidated human development index. The HDI measures average levels of well-being among Registered Indians at the national and regional levels. Like other indices, the HDI is primarily a tool for comparing jurisdictions rather than for tracking changes over time.

The First Nations Community Well-being Index (CWB) was developed in 2005 as a complement to the Registered Indian Human Development Index and measures the well-being of individual First Nations communities. The CWB was calculated using data derived from national census data. Four indicators (education, labour force activity, income, and housing) were combined to give each community a well-being score. (See http://dsp-psd.pwgsc.gc.ca/Collection/R2-400-2005E.pdf). In a review of the First Nations Community Well-being Index, Cooke (2005) states that the indicators in the CWB index are well chosen, but concedes that Census under-coverage of Aboriginal people has been long identified as a problem, leading to possible reliability problems. Nonetheless, Cook says, this index offers a way to compare Aboriginal and Non-Aboriginal communities over a long time period.

7. Statistics Canada Health Indicator Framework

Statistics Canada compiles data at the Health Region level on 17 categories of indicators, such as health behaviors, acceptability of the health system performance, and personal resources and 80 indicators such as infant mortality, frequency of heavy drinking, and crime rate. These indicators are described at www.statscan.ca/english/freepub/82-221-XIE/2006001/tables.htm.

8. The Economist Intelligence Unit's Quality of Life Index

This index was developed by the Economist's research arm (the journal, The Economist) based on methodology that links the results of subjective life-satisfaction surveys to the objective determinants of quality of life across countries to make international comparisons between countries. These determinants of quality of life include these factors and are measured through the Economist Intelligence Unit and others as indicated. Many of these indicators, such as political instability, would not be applicable or appropriate for measurement on the North and Central Coast:

1. Material well being (GDP per person)
2. Health (Life expectancy at birth in years, source: US Census Bureau)
3. Political stability and security (political and security ratings, source: United Nations)
4. Family life (divorce rate, source: UN Euromonitor)
5. Community life (church attendance or trade union membership, source: World Values Survey)
6. Climate and geography (latitude – cold or warm climates, CIA World Factbook)
7. Job security (unemployment rate)
8. Political freedom (average of indices of political and civil liberties, source: Freedom House)
9. Gender equality (ratio of average male and female earnings- source: UNDP Human Development Report)

APPENDIX F: SOCIO-ECONOMICS INDICATORS FROM BC STATS

The following social and economics statistics are available from BC Stats at the Local Health Area level.

***Blue** indicates variables included in the calculation of the Socio-Economics index.*

Index of Human Economic Hardship

Per cent of population age 0-64 on income assistance - Total
*Per cent of population age 0-64 on income assistance >1 year
*Per cent of population age 0-64 on income assistance <1 year
*Per cent of seniors receiving maximum Guaranteed Income Supplement (GIS)
Per cent of 19-64 year olds receiving Employment Insurance (4 quarter average)
Average household income, 2000 (Local Health Areas)
Per capita Income (Regional Districts)
Income inequality (2000)
Per capita net taxes paid (Regional Districts)

Index of Crime

*Serious violent crime rates
*Serious property crime rates
Total serious crime rate
*Number of serious crimes per police officer
Per cent change in serious violent crime rate
Per cent change in serious property crime rate
Per cent change in total serious crime rate
Motor vehicle theft crime rate
Spousal assault crime rate
Non-cannabis drug offences per 100,000 population
Illicit drug deaths per 100,000 pop 19-64
Juvenile serious violent crime rate
Juvenile serious property crime rate
Juvenile non-cannabis drug charges per 100,000 population

Index of Health Problems

Life expectancy at birth
*Potential years of life lost due to natural causes
*Potential years of life lost due to accidental causes
*Potential years of life Lost due to suicide/homicide
Teen pregnancy rate (age 15-17)
Infant mortality rate
Prevalence of smokers, 1997 (Regional Districts)

Index of Education Concerns

Per cent of population age 25-54 without high school completion, 2001
*Per cent of population age 25-54 without completed post-secondary education, 2001
*Per cent of 18 year olds who did not graduate
*Grade 12 provincial Math exam non-completion rate
Grade 12 provincial Chemistry exam non-completion rate

*Grade 12 provincial English exam non-completion rate
*Per cent of students below standard in Grade 4 Reading, Writing and Math
Per cent of students below standard in Reading – Grade 4
Per cent of students below standard in Reading – Grade 7
2
Per cent of students below standard in Writing – Grade 4
Per cent of students below standard in Writing – Grade 7
Per cent of students below standard in Math – Grade 4
Per cent of students below standard in Math – Grade 7
Grade 10 provincial English exam non-completion rate
Grade 10 provincial Math exam non-completion rate
Grade 10 provincial Science exam non-completion rate

Children at Risk

*Per cent of population age 0-18 on Income Assistance >1 year
*Per cent of population age 0-18 on Income Assistance <1 year
*Children in care per 1,000 population 0-18
*Infant mortality rate
*Per cent of students below standard in Reading – Grades 4 and 7
*Serious juvenile crime rates
Juvenile serious violent crime rate
Juvenile serious property crime rate
Juvenile non-cannabis drug charges per 100,000 population
Hospitalization rates of population 0-14 - respiratory diseases
Hospitalization rates of population 0-14 - injury and poisoning
Teen pregnancy rate (age 15-17)
Child abuse per 1,000 population 0-18

Youth at Risk

Per cent of population Age 19-24 on Income Assistance - Total
*Per cent of population Age 19-24 on Income Assistance >1 year
*Per cent of population Age 19-24 on Income Assistance <1 year
*Per cent of 18 year olds who did not Graduate
*Total Serious Crime Rate
Smoking rate (age 19-24) (Regional Districts)
Motor Vehicle Accident Hospitalizations (pop 15-24)
Non-Cannabis Drug Offences (per 100,000 pop)
Per cent of population age 19-24 receiving Employment Insurance
Net migration of population 18-24 (Regional Districts)

Demographics and Background Information

Population
1 year population growth rate
5 year average annual population growth rate
Per cent of population that are Aboriginal, 2001
Per cent of population that are visible minorities, 2001
Per cent of families with children that are in lone parent families, 2001
Per cent of population that are seniors
Income dependency on forestry, fishing and mining, 2000