

**Social indicator approaches to assessing  
and monitoring  
forest community sustainability**

# **Social indicator approaches to assessing and monitoring forest community sustainability<sup>1</sup>**

**Dr. Thomas M. Beckley  
and  
Tracy Burkosky  
Canadian Forest Service**

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<sup>1</sup> Direct correspondence to Tom Beckley, Northern Forestry Centre, 5320- 122 Street, Edmonton, AB T6H 3S5, email, [tbeckley@nofc.forestry.ca](mailto:tbeckley@nofc.forestry.ca)

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## **Introduction**

There have been ongoing efforts to define and monitor the health and well-being of societies, economies, communities and bio-physical environments for several decades. The Brundtland commission popularized the concept of sustainable development in 1983, and in the wake of its report, many efforts to assess the social, economic, and ecological health and well-being were done using the language of “sustainability”. The past decade has seen tremendous growth in interest in the concept of sustainability. Many efforts are underway to develop and monitor sustainability indicators. Social and political pressure to deliver hard evidence that progress toward sustainability is being achieved and is forcing various groups to first define, and then monitor measures of sustainability. Some of these efforts focus on different scales of socio-political jurisdictions, such as communities, provinces, and nations. Others focus on different ecological scales, such as watersheds, forests, and ecosystems. Failing to define and monitor sustainability through establishing benchmarks and subsequently tracking trends, will relegate the concept of sustainability to “buzzword” status. Some already feel that the term is vacuous, and will never contribute to meaningful analysis.

Sustainability monitoring of social and economic variables often takes place at the

community or municipal level, though household, regional, and national initiatives also exist. The Canadian Council of Forest Ministers has initiated the Criteria and Indicators Initiative (C&I) to monitor the environmental, social, and economic aspects of forestry management in Canada. One of the social themes included is “Sustainability of Forest Communities”. Indicators under this theme are intended to monitor variables relevant to the sustainability of human communities that depend upon their surrounding forest resources. Attempts to measure the sustainability of human forest communities are rare, but there is growing interest.

Other national and international initiatives exist that relate to sustainability of human forest communities. The Montreal Process for reporting sustainability indicators at an international level incorporates community oriented social indicators. Forest certification processes proposed by environmental non-governmental organizations (NGOs) such as that of Forest Stewardship Council (Forest Stewardship Council 1994), or governments and industry, such as the Canadian Standards Association, also entail social indicators related to community health and well-being (Canadian Standards Association 1996). Recently, Model Forests in Canada have been charged with defining and monitoring indicators appropriate and relevant to their specific locales.

Many of the policy actors developing these protocols for forest community sustainability monitoring are persons with forestry or physical science backgrounds. This paper is intended to provide such decision-makers with some background knowledge of current and historical attempts to develop indicators for measuring community sustainability<sup>2</sup> This review should also benefit academics working in this area, as resources related to community sustainability

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<sup>2</sup> It is important to note that there are significant areas of “social indicators” for forest sustainability that this review will not address, such as; public involvement in decision-making, and Aboriginal rights and opportunities.

monitoring are widely scattered in booklets, internet sites, articles, newsletters, and the like.

This review is not meant to be comprehensive, rather, it is intended to direct readers to some of the most recent and current initiatives. Despite the focus on contemporary efforts, some reference is made to the reasonably long history of social indicators research that takes the community as the unit of analysis.

The organization of this paper is as follows. We begin with by discussing dynamic tensions between qualitative/subjective indicator approaches and quantitative/objective indicator approaches. We then discuss the literature on community stability, a closely related precursor to today's concern with community sustainability. This is followed by a review of contemporary initiatives that attempt to define measures of community sustainability. Because so few examples exist specific to forest-dependent communities, other community indicator monitoring initiatives, as well as quality of life research (the forefather of the social aspect of sustainability reporting), are discussed later in the paper. We conclude with some recommendations for future research, and with some issues that need further attention.

### **Dynamic tensions involved in defining and using indicators of community sustainability**

Selecting indicators of community sustainability involves a number of normative issues. Any given indicator list reflects the needs and interests of the group that chose them. Specific to our concerns with forest-dependent communities, some groups may have a significant vested interest in demonstrating that status quo forestry practices and procedures results in sustainable communities. Other groups or individuals may feel that current forestry practices do not result in sustainable communities. Persons with these differing opinions may agree on some indicators, unemployment or poverty, for example, but differ on what they consider acceptable thresholds. In other cases, defenders of the status quo and proponents of reform may propose

quite different sets of indicators altogether. It is important to acknowledge these underlying political dimensions when considering any given list of indicators.

The purpose behind generating lists of indicators may also influence the scope and nature of those reporting frameworks. Communities interested in developing their local natural, human, and institutional resources may come up with a very different list from a government department interested in tracking sustainability over time for the purpose of periodic reporting to provincial, national, or international constituencies. Again, consideration of the audience is important. Communities may only be interested in answering questions for themselves and developing appropriate community development programs based on results of such introspection. Government departments are likely concerned with provincial, national and international image. As a result, locally generated indicators may include such things as empowerment, the depth and breadth of community networks, access to decision-making, etc. (Bauen et al. 1996). Bureaucratically generated indicator lists may focus more on aspects of communities that are easier to quantify, generalize, and compare across jurisdictions. Examples of such indicators might include such things as poverty, or unemployment, as mentioned above, as well as education attainment, suicide, divorce or other measures of social dislocation, or per capita expenditures on education, health, or other social services.

A related source of dynamic tension in the selection of community sustainability indicators has to do with the objectivity or subjectivity of indicators. Subjective measures usually entail some form of community self-assessment, either by key informants, or through community surveys. Objective measures are drawn primarily from secondary data sets that document social structural variables, rather than psychological states. Kusel (1996) provides a detailed discussion of the limitations of both approaches. Among the disadvantages of

objective, sociodemographic measures, are the potential of aggregate data to mask important distributional issues within families, communities, or regions, and the fact that secondary indicators of wealth or income do not address how effectively individuals utilize these resources to increase their quality of life. A major disadvantage of subjective indicators is the lack of a uniform metric for “happiness” or “fulfilment” which may lead to non-comparable results from individual respondents. Individuals may lower or raise their expectations based on what they believe they may realistically achieve (Kusel 1996). Beckley (1995) also discusses limitations of traditional, objective approaches of community sustainability in a forestry context.

A few examples will better illustrate the difficulties associated with each of these general types of indicators. Hart (1995) provides a definition of a sustainable community as a group that

Seeks to maintain and improve, the economic, environmental, and social characteristics of an area so its members can continue to lead healthy, productive, enjoyable lives there... the primary goal of a sustainable local community is to meet its basic resource needs in ways that can be continued in the future (1995: 3-5).

Social sustainability, according to the British Columbia Round Table on the Environment and the Economy (BCRTEE), is achieved when all members of the community are practicing responsible citizenship and can:

- achieve and maintain personal health: physical, mental and psychological;
- feed themselves adequately;
- provide adequate and appropriate shelter for themselves;
- have opportunities for gainful and meaningful employment;
- improve their knowledge and understanding of the world around them;
- find opportunities to express creativity and enjoy recreation in ways that satisfy spiritual and psychosocial needs;
- express a sense of identity through heritage, art, and culture;
- enjoy a sense of belonging;
- be assured of mutual social support from their community;
- enjoy freedom from discrimination and, for those who are physically challenged, move about a barrier free community;

- enjoy freedom from fear, and security of person; and
- participate actively in civic affairs.

(BCRTEE, 1993:80-81)

The barriers to selecting indicators based on the above definitions are significant. Most of these are subjective, and many would require extensive psychological testing in fairly large samples to create baseline data. There would likely be major methodological issues in defining such things as, “a sense of belonging”, or “mutual support from their community”. Even if appropriate measures for such concepts can be constructed, the issue of thresholds or benchmarks remain. Assuming one could develop effective measures for “freedom from fear”, or “a sense of identity”, how much of such desired ends are enough to ensure sustainability? And who will make those determinations?

Conversely, objective measures such as poverty, unemployment, education attainment, and the like may have little relation to individual or aggregate (community level) assessments of well-being. Communities with high levels of negative indicators may come to accept such conditions as Normal (Duncan and Lamborghini 1994, Gaventa 1980), while communities with low levels of negative indicators may feel they have room for improvement. There remains a poor correlation between objective indicators and self-assessments of individual or community health and well-being. The debate over the utility of subjective versus objective indicators will continue in decades to come. Those considering adopting an indicator approach to community sustainability must balance the issues of audience, data availability, validity, reliability and comparability as they relate to subjective and objective indicators.

### **From stability to sustainability in forest-dependent communities**

There is a long tradition of studying well-being in forest-dependent communities, usually in the context of community sustainability (Kusel, 1996:363). Community stability has



historically been closely linked to a steady flow of timber products to ensure stable employment in the timber industry. Policy makers assumed that steady flows of timber would lead to stable levels of employment, which in turn, would lead to community stability. These turned out to be spurious assumptions. LeMaster and Beuter (1989) and Richardson (1996) provide extensive background and citations on the community stability debate. We wish to highlight just a few early approaches that either embodied, or implied an indicator approach to community stability. Following these, we will move in to a discussion of contemporary efforts to define community sustainability in forestry-dependent places.

Kaufman and Kaufman (1990) undertook one of the first studies that examined the relationship between natural resource use and community well-being in 1946 in the forest communities of Libby and Troy, Montana. The Kaufman's defined a stable community as "one in which there was orderly change toward given goals; those goals embracing "the good life" in whatever way that may be defined" (Kaufman and Kaufman, 1990:32). Even in this early work, the Kaufman's discussed dimensions of stability that were amenable to an indicator/monitoring approach. They wrote that forest community decline was characterized by "...an exhausted resource, ...unemployment, ...declining population, ...and empty and decaying buildings" (1990:32). The Kaufman's proposed ten strategic areas of physical, economic, and social life which promote forest community stability:

1. Developing a stable timber industry with the greatest possible remanufacturing.
2. Practising sustained yield forestry on timber lands and wise use of other natural resources.
3. Promoting greater public participation in determining forest policy.
4. Creating a more diversified and balanced economy.
5. Securing adequate leadership in community affairs.
6. Providing greater assistance to youth, especially with reference to vocation guidance and training in citizenship.
7. Strengthening the rural home.
8. Creating a more community-centered religious emphasis.

9. Developing a forest-centered tradition.
10. Organizing for united action of the greater Libby-Troy community.  
(Kaufman and Kaufman, 1990:34)

As we shall demonstrate, many of the indicators scholars consider relevant today are derivative of these fifty year old “stability indicators”.

The Kaufman’s approach centered around identifying factors in community life that lead to stability. In contrast, Marchak (1983), in a study of forest-dependent towns in British Columbia, focuses on causes of community instability. The most prominent source of instability, according to Marchak, is the uncertainty of employment in the forest industry. Both loggers and sawmill workers experience frequent layoffs, leading to high turnover rates and transience. Sawmill workers can be quickly trained, so the loss of experienced workers is not particularly problematic for employers. Loggers tend to be more skilled, but are also readily available so there is little need for companies to invest in the labour force or its stability (Marchak, 1990:97-98). Transience brought about by unstable labour markets, in turn, leads to community instability, as forest sector workers move from place to place in search of more permanent employment (Marchak, 1990:97).

Another reason for community instability in many British Columbia forest communities is geographical isolation and the lack of employment for women. Says Marchak:

Women co-resident with loggers, in particular, are likely to live in trailers with their children while their husbands are at logging camps. Few can find work in these resource-extractive towns; very few employers in resource industries employ women in production lines or logging camps. These women have no social network of kinfolk as they would in a rural community. ---Women are profoundly isolated... (1990:98)

A third source of instability, according to Marchak, is the uncertainty parents feel toward their children’s future in what they know is an impermanent, unstable community. Because of such concerns, many residents work to “buy themselves out” of the community. If

they cannot, they know that their children may be destined to repeat their own patterns of transience (Marchak 1990:98).

More recently, Kusel (1996:369) has expanded the concept of well-being in forest-dependent communities to include the concept of community capacity. Community capacity is “the collective ability of residents to respond (the communal response) to external and internal stresses; to create and take advantage of opportunities; and to meet the needs of residents, diversely defined”. Kusel combines subjective assessments with objective measures to determine community capacity. Elements that require consideration in the evaluation of community capacity include: 1) Physical Capital, or the physical elements and resources in a community and financial capital; 2) Human Capital, or the skills, education, experiences, and general abilities of the residents; and 3) Social Capital, or the ability and willingness of residents to work together for community goals (Kusel, 1996:369). Some of these elements rely on objective measures, others on subjective assessments. The resulting aggregate measure of community capacity is not intended to measure the well-being of individuals, but that of the community as a whole and the potential for creating additional opportunities and improving well-being (Kusel, 1996:370). In this regard, assessing community capacity represents a promising step toward multidimensional sustainability monitoring that avoids the pitfalls associated with committing to exclusively objective or subjective approaches.

The process Kusel outlines for measuring community capacity is complex. Researchers conduct workshops with local experts knowledgeable about diverse community issues. The experts assess the three components and identify those which are most determinate to overall community capacity (Kusel 1996:370). The selection of the experts is a critical aspect of an assessment. The individuals chosen must be knowledgeable about local issues, resources and

institutions without being “community boosters or overly partisan about issues” (Kusel, 1996:370).

Beckley and Murray are currently conducting a multi-year research project on forest community sustainability across Canada. This research is similar to Kusel’s work in its attempt to combine subjective and objective assessments of variables thought to be related to community sustainability. Objective indicators under investigation include poverty rate, unemployment rate, demographic stability, education attainment, proportion of local income from social assistance, and real estate values. Some of these variables will be compared in a national database of timber-dependent communities.<sup>3</sup> All the listed indicators will be examined in greater detail in eight case studies. The case studies will also entail qualitative interviews of residents on their perceptions of poverty, unemployment, education, etc. Furthermore, the case studies will use subjective assessment of residents to examine opportunity structures for men, women, seniors, youth and racial minorities. The attempt to understand the chosen indicators through qualitative methods will address, in part, shortcomings of objective indicators. Paying close attention to sub-groups within the population of any given community will help address distributional issues that may be masked when using only aggregate, secondary data. These concerns are reflected in the title of the project, “Sustainability for Whom?: Social Indicators for Forest Dependent Communities in Canada”.

Another explicit attempt to define and measure community sustainability indicators in a forestry context is the effort by the Institute for Research on Environment and Economy under the direction of Dr. Phillipe Crabbé, titled “Developing Indicators of Community Sustainability in Relation to Forestry.” This research is similar to Kusel’s effort in that the researchers include

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<sup>3</sup> Timber-dependent communities are the subset of forest-dependent communities that rely upon the industrial forest sector (harvesting and processing) for a significant portion of their economic base.

the concepts of physical, human, and social, along with natural capital, and community capacity. Also similar to Kusel, they attempt to strike a balance between objective and subjective approaches to defining community sustainability.

According to Crabbé et al., there are three stages in determining community sustainability. The first is establishing community goals and defining community conceptions of sustainability through interviews with stakeholders, analysis of local council meetings, news reports, and public debate. This is an important step because of the various meanings different communities may give sustainability:

In a rural community the main objective might be generation of income, stable local employment opportunities, meaningful work for all or a forest environment that can provide a sustained yield of all resources, while a First Nations community might emphasize sustenance of long term hunting, trapping and fishing levels as a prime objective (Crabbé et al., 1994:17).

The second step, an assessment of where a community stands relative to where it wants to be, involves a number of factors including examining sources of instability. The third step involves assessing the resiliency and adaptive capacity of a community to change. Ideally, the community sustainability indicators chosen provide information in both of these areas.

Crabbé et al. developed eleven categories of indicators: construction of the community, recruitment of citizens, organization of work and occupation, material and wealth stratification, interpersonal relationships and associations, recreation activities, goods and services, healing, school and training programs, social conflict and control, and cultural/spiritual. The indicators were then grouped under the four factors of production: human capital, physical capital, natural capital, and social capital. This framework was then applied to two forestry dependent communities.

The Willapa Alliance has put together a document that reports a wide range of indicators relevant to one rural community in Washington State. Their report, *Willapa Indicators for a Sustainable Community*, is an impressive collection of secondary data related to the productivity, diversity and resilience of their community. The indicators chosen by the Willapa Alliance WISC Committee cover environmental, economic, and community topics. The effort of this group is also a significant demonstration of community capacity to address community sustainability from a local perspective (Schoonmaker and von Hagen 1995). Other communities interested in taking an indicator approach to identifying issues of prime concern in achieving sustainability should consult this document as a possible model. The report also includes an appendix of additional potential indicators for community sustainability monitoring.

The Sustainable Communities Initiative (University of Victoria) has developed an ambitious framework for State of Sustainability (SOS) reporting. The framework attempts to treat biological, social and economic indicators in an integrated fashion. Walter calls this the Ethics-Conservation-Competition Framework (ECCF). According to Walter, “these aspects or dimensions are fundamental because they govern the central relationships of community: of humans to each other, of humans to non-human populations (plant and animal) and of humans to their ecosystem, including the natural resource base” (1994:68). Each dimension is measured using four classes of indicators: resources, capacities, processes, and interventions. The framework is intended to provide:

...a classification of indicators that allow various parts of the sustainability system to be examined in a multi-dimensional way. A particular indicator may appear in various places in the system, and in each case would have a different interpretation according to the aspect of the system being examined (Walter, 1996a).

A modified version of the ECCF has been applied to a pilot study of British Columbia's Southern Interior Ecoprovince. While not specifically related to communities, this region contains many forest-dependent communities. The major dimensions of indicators used were Conserving Basic Resources, Living in the Ecosystem, and Socioeconomic Sustainability (which involved competition, cooperation, and adaptation) (Walter, 1996a).

The Sustainable Communities Initiative will also be using this framework to conduct a Forestry-Based Community Sustainability Audit Project (CSAP). This project has been designed to work closely with three forestry-based communities in order to lay the foundation for understanding the threats and opportunities influencing their sustainability, develop a method for identifying these in practice, and provide periodic audits to support assessments of policy and policy revision (Walter, 1996b).

Attempts to develop indicators for community sustainability are not limited to North America. Naturally, lists of indicators will be different across cultural contexts. A project initiated by the Centre for International Forestry Research (CIFOR) focuses on socio-economic sustainability in a general sense, not necessarily specific to communities. The CIFOR project considers social sustainability to be comprised of three distinct social elements: 1) the maintenance of people's well-being with a focus on forest dwellers, 2) the actions of people that affect the sustainability of the forest, and 3) the intergenerational distribution of benefits (Wollenberg and Colfer, 1996:9). Although this project is meant to assess sustainable forest management more generally, it does include a number of indicators of the well-being of forest dwellers, as well as indicators for the other two social elements. Wollenberg and Colfer discuss the following measures of well-being of those living in forest areas:

- security and sufficiency of access to resources, now and in the future;
- economic opportunity;

- decision-making opportunity;
  - justice, fair resolution of conflict and distribution of benefits, rights, responsibilities, and incentives;
  - heritage and identity;
  - safety and health.
- (1996:9)

### **Other Sustainability Monitoring Examples**

Unlike the state of sustainability monitoring for forest communities, there is currently a great deal of work being done to address the sustainability of cities, regions, provinces, and even countries. The following examples represent just a few of the projects underway to assess the sustainability of cities and regions.

In 1994, the British Columbia Round Table on the Environment and the Economy produced a report based on their effort to monitor urban sustainability in the province using five cities (The Greater Vancouver Regional District, Greater Victoria, Prince George, Kelowna, and Cranbrook) which were chosen to represent the broad regions, and the variety of environmental, economic and social conditions in British Columbia (BCRTEE, 1994:33). Indicators were chosen to represent five major urban themes: Human Settlements and Population Growth, The Urban Environment, The Urban Economy, Social Well-Being, and Governance and Responsible Citizenship (BCRTEE, 1994:33). The criteria used in the selection of indicators included comprehensiveness, data availability, understandability and accessibility, sensitivity to changes over time, capability for being used at different levels of aggregation, validity, and reliability (BCRTEE, 1994:33).

A group called Sustainable Seattle has also initiated a sustainability monitoring process for Seattle, WA. Forty indicators were chosen based on the following characteristics: reflective of something basic and fundamental to long-term economic, social, or environmental health of a community over generations; accepted by the community; attractive to local media; statistically



measurable; and logically or scientifically defensible. Their categories for indicators in the 1995 report are Environment, Population and Resources, Economy, Youth and Education, and Health and Community (Sustainable Seattle, 1995).

In the publication *Ontario Beyond Tomorrow: Ideas for Building a Sustainable Society* (1995), the Premier's Council and the Ontario Round Table on Environment and Economy stress the importance of choosing a small number of key indicators for assessing the province's progress towards sustainability. The six core indicators they chose to report on as examples were:

- Unemployment Rate
  - State of Children (child poverty)
  - Adult Literacy
  - Family Income and Income Equality
  - Crime Rate
  - Air Quality
- (1995:46-47)

Hodge's (1995) framework for assessing sustainability is made up of four interrelated "strategic elements": Ecosystem, Interaction, People, and Synthesis. The people element was designed to assess the well-being of people at the individual, family, community, and institutional levels. Hodge has applied aspects of this framework to the Great Lakes Basin, and the National Round Table on the Environment and Economy (NRTEE) has used it to develop a list of "rudimentary" sustainability indicators for Canada (NRTEE, 1995).

The United Nations Department for Policy Coordination and Sustainable Development (DPCSD) is currently working on developing a list of national sustainable development indicators slated for completions by the year 2000. So far, they have generated 130 indicators based on a Driving Force-State-Response Framework. The driving force indicators represent human activity, state indicators the "state" of sustainable development, and response indicators, policy options and other responses to change. Categories of indicators are social, economic, environmental, and institutional (DPCSD, 1997).

## **Healthy Communities**

The healthy communities movement is closely related to, but predates, efforts to monitor and measure community sustainability. Many of the goals and indicators are similar, so it is easy to confuse the two. Patterson describes the healthy communities movement as an attempt to integrate indicator research on quality of life with policy concerns related to sustainable development. His conception of the synthesis is a framework that addresses both the well-being of community residents and the health of the surrounding physical environment (Patterson 1995).

Hancock and Duhl define a healthy city as "...one that is continually creating and improving those physical and social environments and expanding those community resources which enable people to support each other in performing all the functions of life and in developing themselves to their maximum potential" (in Lane, 1989:4). Based on this definition, the Canadian Healthy Communities Project was promoted from 1988 to 1991. Although funding no longer exists (the project was designed for completion in 1992), more than 200 Canadian communities continue to promote the concept (Lane, 1989; National Round Table Review, 1994). A number of healthy community project participants use indicators in order to evaluate their progress towards becoming a healthy city. The goal in developing and implementing measures of community health is to illustrate how factors such as socio-economic status, education, social support and clean and safe physical environments effect individual and community health. The importance of the healthy communities movement for sustainability monitoring has been the community level, local efforts to recognize the linkages between human behaviour and ecosystem and human system well-being (Burch 1994).

## Quality of Life Studies

Sustainability monitoring has borrowed from past research on quality of life for some of its theoretical and methodological background. Quality of life studies emerged with the social indicators movement of the late 1960s largely in response to dissatisfaction with traditional economic methods of measuring well-being and the recognition that “economic progress” is often accompanied by degradation of natural resources, increased poverty and other social problems among some population segments (Schatan, 1990:69). Although this line of scholarly enquiry spans 30 years, the literature has not developed in a linear fashion, with recent findings being built upon early advances in understanding the subject. Rather, the quality of life literature is often cryptic and fraught with different opinions as to what constitutes quality of life or well-being, and how to measure these concepts.<sup>4</sup> Despite the mixed legacy of this literature, it has provided important models for the measurement of the human and social dimensions of sustainability. Anyone considering taking an indicator approach to measuring community sustainability should familiarize themselves with some of this literature.

There are three general types of quality of life studies: 1) those that are done on a national or cross-national level to measure and compare the social progress (or development) of nations; 2) those that focus on the quality of life in local communities; and 3) those that focus on the more subjective, individual aspects of well-being. Although they stem from the same intellectual background, social development approaches tend to take an international development aid perspective, while community approaches focus on comparing quality of life across communities (Holtz, 1995:108-109). Subjective quality of life research has been more rare and is often undertaken in the context of health and illness. Quality of life research has been

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<sup>4</sup> The terms quality of life, well-being, and social indicators are often used interchangeably.

used for a number of purposes including descriptive reporting of the state of society; analytic studies of social change; forecasting the future; evaluationg social programs; setting goals and priorities; and developing a system of social accounts (Eyles, 1994:17-19).

Most quality of life studies take an objective, sectoral approach to defining and measuring well-being. According to Hay and Rutman:

Sectoral approaches to well-being take defined sectors of well-being (such as health, education, housing, employment, etc.), outline measures and indicators for each sector (mortality rates, number of students completing high school, housing starts, unemployment rates, etc.) and then examine levels of achievement on the measures and indicators for each sector (Hay and Rutman, 1993:70).

An example of such an approach is The United Nations Development Project's (UNDP) human development index (HDI). Since 1990, the UNDP has been reporting on the development and progress of the world's nations by combining indicators of life expectancy, educational attainment and income. They conceive of human development as a process of widening all people's choices and level of well-being. Hence, on of the key features of the index is the use of disaggregation to highlight disparities and gaps among regions, urban and rural areas, and between sexes and ethnic groups. The Human Development Reports also measure gender inequality using the Gender-related Development Index, which measures women's achievement in the same areas as the HDI, and the Gender Empowerment Measure, which examines progress in advancing women politically and economically (UNDP, 1997).

Estes' influential framework for measuring national and international social development also take a sectoral approach to measuring quality of life. The "Index of Social Progress", examines the domains of education, women's status, demography, political participation, cultural diversity, and welfare effort (Estes, 1988:2-3).

One of the earliest urban quality of life studies in Canada was conducted by the Ministry of State for Urban Affairs in 1975. The objective of the work was to explicitly compare certain aspects of the quality of life across several Canadian cities. Furthermore, the hope was to discuss, develop and implement indicators for identifying urban problems (Shulman and Bond, 1978:12). Ultimately, 36 indicators in three categories (Social Development, Economic Development, and Physical Development) were selected based on five criteria: comprehensiveness, availability of data, reliability and accuracy, validity, and topicality (Shulman and Bond, 1978:16).

The dynamics involved in defining and using quality of life indicators have been much the same as those involved with indicators of community sustainability. The primary concern has been the traditional, almost exclusive reliance on objective indicators. Recent debate on this issue has led to a growing recognition that quality of life research should work to incorporate both objective and subjective indicators (Beesley and Russwurm, 1989).

## **Discussion**

One fact that should be clear from this review – there is great diversity in approaches to defining and measuring the concept of community sustainability. The dynamic tensions outlined at the beginning of this paper – between objective and subjective approaches and between community-based versus academic and bureaucratic sponsored initiatives – are partly responsible for this diversity. In the most recent work, scholars, bureaucrats and communities are trying to overcome these tensions by taking an inclusive approach. Kusel (1996), Beckley and Murray (1997), Crabbe et al. (1996) all advocate combining subjective and objective approaches. The work of the Willapa Alliance WISC Committee is an interesting case of a community advocating an objective approach. Some other community oriented initiatives such

as Bauen et al. (1996) and Hart focus on subjective measures, or non-traditional objective measures that may be less well supported by existing data sources.

The appendix to this review includes the actual indicators put forward by some eighteen different initiatives. These studies range from community based initiatives to ones sponsored by the United Nations. Efforts by governments, academics, independent researchers, and NGOs are also included. The appendix includes some seventy different community indicators. Often times different language is used to convey similar concepts. Some indicators are widely agreed upon. Unemployment and poverty measures are referenced by more than two thirds of the reports and studies. Others are unique to single studies. Most of the indicators included are objective measures, though some, such as exposure to arts, or reliance on local resources, are either subjective, or very difficult to measure in quantitative terms.

Many of the initiatives reviewed discuss selection criteria for indicators. In taking an indicator approach to community sustainability reporting a number of factors must be weighed against one another. These include data availability, cost, reliability, validity, and resonance with the intended audience (especially study communities themselves). The goals, interests, and ideological leanings of authors do influence the types of indicators that they put forward. These are not value-free, non-political exercises so any indicator list should be scrutinized for ideological biases. On the other hand, indicators that are advocated by industry, environmental or community NGOs, government agencies and academics are probably good indicators. They will have greater legitimacy with both expert and lay readers, and since they are used in many case studies, they may provide a more solid basis for future comparisons across communities.

## **Conclusion**

Governments, academics, NGOs, natural resource based industries, and most

importantly, local communities themselves, are increasingly recognizing the utility in measuring, or otherwise assessing, indicators of community sustainability. The goal of much of the community indicator research is to establish baselines upon which future comparisons might be made. There may be widespread disagreement among the above mentioned parties as to what ought to be measured, or how indicators ought to be measured. However, there is growing consensus that indicator approaches are useful, at least for a first cut, or to provide a snapshot of community well-being at a given point in time.

This report is intended to familiarize groups interested in taking a social indicator approach to community sustainability with some of the current efforts underway. We also review and discuss some of the past research that have shaped the way we understand and attempt to measure community sustainability. Overall there is a great deal of diversity in indicators advocated, though some indicators emerge as “consensus picks” across a wide variety of authors. These should be given special consideration by newcomers to this field.

Recent work in this field is attempting to combine the strengths of both subjective and objective approaches. Indicators from existing secondary sources are certainly useful. However, new databases also need to be created. Particularly at the local level, if policy decisions are to be made from indicator work, more subjective community self-assessments need to be built in to sustainability monitoring efforts.

There is certainly room for future research and development in the area of community sustainability indicators. Causal relationships between community well-being and environmental variables need to be strengthened. Many assumptions are made about the connections between healthy ecosystems and healthy communities, and many monitoring efforts still deal with environmental health and community health separately. Many of the

indicators most commonly cited for community sustainability monitoring, such as poverty, unemployment, and income are likely to be negatively related to environmental health over the short term. Rapid exploitation of timber resources, for example, may reduce poverty, unemployment, and increase incomes. Time frames for monitoring become critical in the interactions between ecological and socio-economic indicators. Overcoming these shortcomings in current approaches will likely require interdisciplinary research that involves both social scientists and ecologists.

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