

# Organized Complexity, Information, and State-of- Sustainability Reporting: A Case Study of the Tl`azt`en Nation

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*In the struggle for a sustainable future, First Nations communities throughout Canada are plagued by problems of organized complexity. Following Mason and Mitroff (1981), the authors argue that one effective tool for addressing such problems is the development of a tightly focused strategy for identifying, collecting, and analyzing data relevant to community planning and management. State-of-sustainability reporting (SSR) is one aspect of community planning and management where the development of such a strategy is vital. This paper describes a community-based process for developing a set of state-of-sustainability indicators for the Tl`azt`en Nation, whose traditional territory is located in the central interior of British Columbia. The paper also discusses the role of SSR as a strategic planning and management tool, the feasibility of employing the process described here in other First Nations communities, and suggestions for further research based on the case-study findings.*

## Introduction

First Nations communities across Canada are struggling with a variety of sustainability-related problems. Some of the most significant are the struggle to settle land claims and achieve self-government, family disintegration, the loss of traditional culture and knowledge, substance abuse, suicide, domestic violence, widespread unemployment, diabetes, HIV, housing shortages, and welfare dependency (Bone, 1984; Furniss, 1994; Kalt, 1993; O'Neil 1993; Royal Commission on Aboriginal Peoples, 1992, 1993, 1995). Collectively, these problems pose an enormous threat to the sustainability and quality of life of First Nations communities in Canada. Resolving them will take time, courage, financial and human resources, creativity, co-operation, and the right kind of information to make the difficult planning and management decisions that lie ahead.

This paper focuses on the information issue, particularly as it pertains to state-of-sustainability reporting (SSR), an indicator-based tool for assessing a community's sustainability prospects and an important component of community strategic planning and management (Walter and Wilkerson, 1994). While SSR is relevant to any community, it is particularly germane to First Nations communities, who are wrestling with some very difficult and complex sustainability issues.

As Elias (1991) notes, very few measuring tools have been developed specifically for monitoring change in Aboriginal communities. In 1988 a Task Force representing Indian, Metis, and Inuit organizations submitted a report to the Minister of State for Small Business and Tourism that identified the lack of well-grounded measures of change as a major impediment to development (Notzke, 1994). The report stressed that without such measures it was difficult to determine the effectiveness of development strategies and programs. While there have been some notable efforts in this regard—for example, the Beaufort Environmental Monitoring Program (Everitt, 1986), the Mackenzie Valley Environmental Monitoring Program (Everitt, 1986), and the DIAND Norman Wells Socio-economic Monitoring Program (Bone and Green, 1984)—there is still a good deal more that can be done to provide Aboriginal communities with measuring and monitoring tools that are practical and simple to use. SSR can go some distance in meeting that need.

Accordingly, the primary objective of the research discussed here was to develop a SSR indicator framework that would enable

the Tl'azt'en Nation, a First Nations community in central British Columbia, to monitor progress towards the achievement of its sustainability goals and objectives. It was also hoped that the indicator development process created for the study would provide a model for conducting similar initiatives in other First Nations communities.

### **Organized Complexity and the Importance of Information**

Information processing is, according to Herbert Simon (1973), the essence of decision making. While the lack of accurate and relevant information may not be the most serious barrier to sustainability confronting First Nations communities, it can be a major hindrance to making well-informed decisions, given the very stubborn issues with which First Nations communities are now wrestling—issues that can be characterized as problems of organized complexity, or as Mason and Mitroff (1981) graphically and aptly describe them, “wicked problems.” This informal terminology invokes images of the “wicked” serve of the tennis or squash player. Wicked problems have several characteristics: they are difficult to define; their causes often defy detection; they are almost always value-laden; and solutions, when they can be found, frequently lead to a new set of problems. Put succinctly, wicked problems are extraordinarily difficult to handle.

Although any effective assault on problems of organized complexity must usually be mounted on several fronts, a conceptually sound, practical, and well-executed information strategy will, as Mason and Mitroff (1981) point out, be at the heart of every successful attack. Appropriate, high quality, easily accessible information is, therefore, vital to the success of any planning and management process. However, First Nations leaders face two information-related problems that plague all community planners: too much information or not enough.

Aboriginal leaders engage in a daily struggle with information overload, yet ironically they are often forced to make decisions in the absence of adequate information. A clear perspective on what information is essential, what is useful but not vital, and what is extraneous is therefore highly desirable but difficult to achieve, given the complexity of contemporary First Nations problems. Properly executed, SSR can be an effective vehicle for developing such a perspective.

## State-of-Sustainability Reporting

For those readers not familiar with SSR or similar initiatives, we provide a very brief description of the SSR process. For a fuller discussion, see Walter and Wilkerson (1998), who examine a specific SSR procedure which they term “community sustainability auditing.” Maclaren (1996) also provides a valuable discussion and evaluation of various frameworks and approaches for assessing urban sustainability. A useful community indicator manual has been prepared by Tyler Norris Associates et al. (1997).

SSR is an indicator-based process for assessing a community’s sustainability prospects at a specific point in time. SSR’s potential is best realized when it is used in conjunction with community strategic planning and management. In this context, it can be employed in three ways: (1) to establish a baseline and identify crucial issues prior to developing a strategic plan, (2) to monitor the community’s progress in achieving strategic planning objectives, and (3) to assess the effectiveness of adaptive management strategies.

A cautionary note needs to be sounded here. Given the uncertainties associated with the very concept of sustainability and the difficulties of predicting the future, SSR cannot provide any assurances about the ultimate sustainability of a community. In this respect, it is comparable to the diagnostic tools employed in medicine. Physicians can often tell when patients have serious medical problems, but they can never, with absolute certainty, guarantee that patients without symptoms will be alive tomorrow. Likewise, SSR can identify serious economic, social, and ecological problems (which will frequently require further study), but it cannot, with any surety, predict the community’s future. SSR, then, can be used to diagnose community ills and monitor planning and management efforts, but its value, as a predictive tool is limited to extrapolating from past trends, which can be a very risky business.

Although there is no single, “one-size fits all” approach to SSR, any indicator-based approach for assessing community sustainability should include at least the following steps:

- selecting or creating an appropriate organizational structure to oversee and conduct the project;
- identifying, evaluating, and selecting a set of sustainability indicators;
- collecting data and interpreting the indicators; and
- preparing and distributing a state-of-sustainability report.

The first two of these steps will be discussed in more detail below (under the headings Indicator Selection Process and Discussion).

### **The Conceptual Foundations of State-of-Sustainability Reporting**

Over the past two decades, a good deal of thought and effort have been devoted to the conceptualization and assessment of sustainability. Although complete agreement on the meaning of sustainability has not been achieved, a number of common themes have emerged. A widely accepted definition of sustainability was articulated by the British Columbia Round Table on the Environment and the Economy (BCRTEE). Echoing the definition of sustainable development advanced by the World Commission on the Environment and Development (1987), the BCRTEE defined sustainability as the ability “to meet the needs of the present generation without compromising the ability of future generations to meet their needs” BCRTEE (1993:1). Elaborating on this definition, the BCRTEE (1994) outlined seven basic sustainability principles:

- Limit our impact on the living world to stay within its carrying capacity.
- Preserve and protect the environment (conserve life support systems, biological diversity, and renewable resources).
- Hold to a minimum the depletion of non-renewable resources.
- Promote long-term economic development that increases the benefits from a given stock of resources without drawing down our stocks of environmental assets (through diversifying and making resource use more efficient).
- Meet basic needs and aim for a fair distribution of the benefits and the costs of resource use and environmental protection.
- Provide a system of decision-making and governance that is designed to address sustainability (is more proactive, participatory, long term).
- Promote values that support sustainability (through information and education).

These, or very similar, principles have received broad support (see for example, Barbier, 1987; World Commission on Environment and Resources, 1987; Milbrath 1989; Jacobs and Sadler, 1990; IUCN, 1990) and have formed the foundation for numerous sus-

tainability assessment initiatives, employing a variety of frameworks and modes of analysis. Examples include state-of-the-environment reporting, environmental and social impact analysis, economic impact analysis, ecological footprint analysis, state-of-sustainability reporting, and community sustainability auditing (Carley, 1981; Environment Canada, 1991; Hammond et al, 1995; Wackernagel et al, 1993, Walter and Wilkerson, 1994, 1998).

One of the primary assumptions underlying much of this work is that, while sustainability has local, regional, national, and international dimensions, ultimately, it must be achieved at the local level where people live, work, and interact with each other and with nature. The importance of a community-based approach to sustainability is strongly supported by the Royal Commission on Aboriginal Peoples (1992, 1993, 1995). While land claims and sovereignty issues will have to be resolved at the federal and provincial levels, the Commission notes that many of the problems confronting First Nations peoples can and must be addressed at the local level by Aboriginal communities themselves—and with all deliberate speed.

### **The Benefits of State-of-Sustainability Reporting**

Community indicator initiatives, whether devoted to quality of life issues, sustainability, the state of the environment, economic development, or government performance can provide a number of benefits to a community (Zachary, 1995): (1) enabling a community to identify what it values and set priorities; (2) holding individuals and larger groups accountable for achieving the results their community wants; (3) building democracy through collaboration among people engaged in a community indicator process; and (4) allowing people to measure what is important and make decisions based on these results.

Community indicator projects can also help to broaden the local planning perspective. Many community indicator initiatives, including SSR, address a broad range of social, economic, and environmental questions, thereby providing a much needed corrective to the undue emphasis often given to economic issues in non-Aboriginal community planning, a bias that may not, however, characterize First Nations planning efforts to the same degree.

## Sustainability Issues in First Nations Communities

The sustainability issues confronting First Nations communities in Canada fall into five major categories: (1) control of governance or political development geared towards the settlement of land claims and self-determination; (2) control of education directed towards enhancing opportunities for Aboriginal people and encompassing cultural systems of knowledge; (3) greater control of lands and resources, with a focus on increasing employment and self-sufficiency in Aboriginal communities, incorporating traditional management practices, and exploring possibilities for co-management and joint venturing; (4) health and healing, with an emphasis on reducing disparities between Aboriginal communities and the general Canadian society, and developing culturally relevant, holistic practices to deal with the gamut of physical, mental, social, spiritual, economic and environmental factors that influence health; and (5) cultural development, with a focus on preserving and developing language skills as well as diverse cultural heritages (Bone, 1984; Boldt, 1993; Furniss, 1994; Kalt, 1993; O'Neil 1993; Royal Commission on Aboriginal Peoples, 1992, 1993, 1995).

Like most First Nations communities across Canada, the Tl'azt'en Nation has, in recent years, begun to direct even greater energies towards the resolution of these issues, and several promising initiatives are under way. Currently, the community is making significant progress in its efforts to achieve greater control over its economic, political, social, and environmental circumstances through a number of community-driven initiatives, including, for example, the negotiation of land claims; the establishment of a research forest, a joint venture with the University of Northern British Columbia; and programs launched by the Tl'azt'en Health Society to address health issues associated with diet, substance abuse, and sexually transmitted diseases. There has also been a renaissance of language and culture in the community and a general recognition among its members that the preservation of traditional Carrier culture may steer the community towards a more sustainable future. Traditional Carrier culture stresses a number of values and practices that promote sustainability: self-reliance, equity of governance, equity of access to resources, wise use of natural resources, strong family and community ties, and preservation of the natural environment. The sustainability of the Tl'azt'en Nation may depend in large part on the extent to which it is able to marshal these traditional strengths against some very formidable challenges.

## The Case-Study Community<sup>1</sup>

The Tl`azt`en Nation was chosen as the case-study community for several reasons: the community's willingness to be involved in the project; its proximity to the researchers; the fact that it shares with other First Nations groups a similar history, particularly in terms of European contact and colonization; and most importantly, contemporary similarities between the Tl`azt`en Nation and other First Nations communities in Canada.

The Tl`azt`en Nation, with its young and fast-growing population of approximately 1,300 people, 51 per cent of whom are below the age of 19, is located in a relatively pristine natural environment. It possesses very modest infrastructure by national standards, and it is geographically distant from large non-Aboriginal communities.

The Tl`azt`enne are one of the tribes that make up the Dakelh or the Carrier. Prior to colonization, the Carrier were primarily hunters, fishers, and gatherers who lived in extended family groups and occasionally traded surplus products with their Sekani and Cree neighbours. They were governed by a hierarchical form of government called the Balhats, or potlatch system, around which all economic, social, judicial, and spiritual activities revolved. The early nineteenth century marks the earliest documentation of European contact with the Carrier. Tl`azt`enne were placed on reserves in the early years of the twentieth century. The amalgamation of five bands in 1959 led to the creation of the Stuart-Trembleur Lake Band, which was renamed the Tl`azt`en Nation in 1988.

The on-reserve population occupies forty-nine registered Indian Reserve Lands, spread over approximately 6,650 square kilometres located in north-central British Columbia, approximately two hundred and fifty kilometres northwest of Prince George and fifty kilometres northwest of Fort St. James.

Most on-reserve band members reside on the Tache, Middle River, and Pinchi reserves, which are accessible by gravel road. A fourth reserve called Grand Rapids is occupied during the hunting season by members of the three permanent communities. The majority of the on-reserve population resides in Tache. In 1996, there were 1,281 Tl`azt`enne, of whom 641 live on-reserve and 640 live off-reserve. The population figures for Tache, Binche and Middle River were 501, 110 and 30 respectively. A total of 378 Tl`azt`enne are enrolled in educational institutions in British Columbia and other parts of Canada. Of these, 70 attend provincial

institutions, 26 are enrolled in private schools, and another 282 attend educational institutions on the reserve.

There are 150 dwellings on-reserve and approximately 50 new housing units are expected to be built over the next 5 years. Other on-reserve facilities include eight teacherages, a band office, community hall, and fire hall.

The services available to the community include fire protection provided by a volunteer fire department, which protects only the Tache reserve; police protection by an RCMP detachment in Fort St. James; postal services; medical services by the health and nursing station in Fort St. James; social services administered by the Band; and education provided through the Eugene Joseph School and the Tache Education Centre. The community is served by BC Hydro and Telus (the local telephone service provider).

Major economic activities of the Tl'azt'en Nation include the operation of Tanizul Timber (a logging company), Teeslee Forest Products Company, and a cabinet shop. These three enterprises, which are owned and operated entirely by the Band, provide the majority of employment on the reserve. The community supports a number of other commercial enterprises: a grocery store, laundromat, cottage lots, cement plant, 45 lakeshore lease lots, and arts and crafts businesses. Cash incomes are earned through the sale of labour, commodities and enterprise, but needs are also met through traditional activities like hunting, fishing and trapping. A large number of the band members continue to carry out traditional economic activities such as trapping, hunting, and fishing for a major part of their livelihood. Tl'azt'enne families hold keyohs, or traplines, which have been passed down from one generation to the next. Enterprise and the sale of commodities are minor sources of income in Aboriginal communities (Elias, 1991), including the Tl'azt'en Nation. Wage labour is more important, although employment opportunities usually cannot keep up with the growth in the labour force. Average incomes, education levels, and unemployment rates are comparable to other northern Aboriginal communities (Hudson, 1983; Elias and Weinstein, 1992; Tl'azt'en Nation, 1998). Currently, the Tl'azt'en Nation contributes approximately twenty million dollars annually to British Columbia's economy.

### **The Indicator Selection Process**

The research reported here was structured around the first two steps of a SSR process outlined above: selecting a suitable organizational structure; and selecting a set of indicators. The assessment

and reporting steps were to be undertaken by the community itself. At the time of writing, these latter steps had not yet been completed.

### Organizational Structure

The research team and community leaders agreed on the following organizational arrangements to develop the indicator framework. A community advisory committee was formed to provide direction and feedback to the researchers. Committee members were selected on the basis of their involvement in, or knowledge of, the community's administrative, political, social, and environmental problems. Care was taken to include individuals who could provide information about the most prominent issues in the community such as treaty negotiations, housing, drug and alcohol abuse, child welfare, health, natural resource management, and education. This advisory committee also played a major role in assessing the suitability of potential indicators suggested by participants in the community consultation process (described below).

On the recommendation of the Tl'azt'en Nation's Research and Development Officer, a community resource person, a resident of the Tache reserve, was hired by the research team to assist in arranging and conducting focus groups and interviews, informing the community of major developments and research progress, and acting as a liaison between the community and the researchers.

### Indicator Selection

The indicator selection process involved three phases. In the initial phase, public information sessions were held to disseminate information about the research and to enlist co-operation from the community. (Several information exchange sessions were also organized during the course of the research to keep community members posted on the progress of the project and to give them an opportunity to provide feedback to the research team).

The second phase was designed to satisfy three objectives: (1) to identify community goals; (2) to understand the nature and magnitude of the threats and opportunities confronting the Tl'azt'en Nation; and (3) to identify a set of potential sustainability indicators. To accomplish these objectives, five focus groups and ten semi-structured interviews were conducted in the community. Participants for the focus groups and interviews were selected in consultation with the community resource person. Focus group composition was designed to provide an adequate representation of

people who fulfil a wide range of leadership, social, cultural, and economic functions in the community.

The semi-structured interviews were conducted for individuals who were unable to attend focus groups (because of distance or infirmity) or who were more amenable to personal interviews. Some of the interviewees, for example, hold sensitive leadership positions and felt that they could be more candid in a one-on-one interview. Several of the interviewees occupy major decision-making positions in the community in areas such as research and development, education, Band administration, natural resource management, and sawmill management. With the exception of three interviews, all of the focus groups and interviews were held in the main village of Tache. Three individuals from Middle River who were unable to travel to Tache were interviewed in their homes. Two of these interviewees were elders who had spent their entire lives in the Middle River area. The participation of these two interviewees helped to provide a perspective on the sustainability issues facing the smaller, more remote villages in the broader Tl'azt'en Nation community.

Focus group participants and interviewees were asked to respond to a common set of questions. When applicable, interviewees were also asked to comment on issues related to the fulfilment of their professional duties in the community. The standard set of questions is as follows:

1. What are the things you like most about the community you live in?
2. What are the things you like least about the community you live in?
3. What are the things that you would most like to see happen in your community in the next ten years?
4. What can the community do to achieve these goals? Or (as a clarifying question) What opportunities exist in the community for the fulfilment of its goals?
5. What are the major barriers that the community faces or could face in the fulfilment of these goals?
6. What indicators can the group identify that would best measure progress toward the achievement of identified community goals? Or (as a clarifying question) What kinds of information would enable the community to monitor success or failure in the achievement of these goals?
7. Is this information already available to the community?

The third phase in the indicator selection process involved the tabulation and evaluation of community consultation results. Data from the focus groups and interviews were summarized and tabulated under two broad categories: long-term community goals; and potential indicators. Where sustainability goals or issues had been identified in the focus groups or interviews but no corresponding indicators had been suggested, the researchers recommended indicators based on the relevant literature. In total, 64 potential indicators were identified.

The community advisory committee then evaluated these potential indicators against a set of criteria culled from the literature (for a discussion, see Zachary, 1995; Dilks, 1996; Maclaren, 1996). Seven indicator characteristics were considered desirable, although not all were considered essential:

- **Validity.** Does the indicator actually measure an aspect/dimension of community sustainability?
- **Measurability.** Can the factor or variable be measured? (Indicators should be capable of being expressed in terms of nominal, ordinal, interval, or ratio data.)
- **Reliability.** Can the data be reliably obtained: i.e., are the scope and quality of the data consistent from one time period to another?
- **Responsiveness (sensitivity):** Does the indicator respond quickly and reliably to social, economic, or ecological changes that may significantly influence a community's sustainability?
- **Data Availability:** Can relevant data be obtained for a sufficient length of time that trends can be determined?
- **Understandability:** Will potential users find the indicator easy to understand?
- **Attractiveness to the media:** Will the indicator appeal to the media, thereby promoting a wider dissemination of the results?

Any indicator that did not, in the judgment of the advisory committee, have at least the first four characteristics—validity, measurability, reliability, and responsiveness—was eliminated from the list. (The indicator evaluation process resulted in a list of 45 indicators. Table 1 displays the community goals together with a sample of selected indicators.) Meeting the other three criteria—data availability, understandability, and attractiveness to the media—was considered desirable but not essential because the limitations thus imposed can, in principle, be overcome or may be

**Table 1** Community Goals & Sample Indicators

<i>Long-Term Goals</i>	<i>Recommended Indicators</i>
To reduce alcohol and substance abuse in the community.	<ul style="list-style-type: none"> <li>• Percentage of deaths in the community that are alcohol or drug-related</li> </ul>
To raise levels of education in the community.	<ul style="list-style-type: none"> <li>• Number of Tl'azt'enne college graduates as a percentage of high school graduates</li> <li>• Number of Tl'azt'enne university graduates as a percentage of high school graduates</li> <li>• Percentage of people who begin Adult Basic Education courses who complete the program</li> <li>• Percentage of households on the waiting list for housing</li> </ul>
To ensure adequate housing for all Tl'azt'enne.	<ul style="list-style-type: none"> <li>• Number of housing units built per year</li> </ul>
To promote good health and healthier lifestyles in the community.	<ul style="list-style-type: none"> <li>• Average life expectancy at birth</li> <li>• Percentage of community population that are HIV positive</li> <li>• Infant mortality rate</li> <li>• Percentage of community population suffering from diabetes</li> </ul>
To ensure adequate employment for all Tl'azt'enne.	<ul style="list-style-type: none"> <li>• Community unemployment rate</li> <li>• Unemployment insurance dependency rate</li> </ul>
To promote community economic development and diversification.	<ul style="list-style-type: none"> <li>• Percentage of community population that are self-employed</li> <li>• Number of Band-owned businesses in the community</li> </ul>
To enhance community capacity for participation and decision making	<ul style="list-style-type: none"> <li>• Percentage of adults in the community attending the Annual General Assembly</li> </ul>
To preserve the natural environment and historical heritage of the community	<ul style="list-style-type: none"> <li>• Size and number of protected areas</li> <li>• Number of endangered species in the area</li> <li>• Concentration of contaminants in water</li> <li>• Concentration of contaminants in the tissues of birds, fish, wildlife, and humans</li> </ul>

**Table 1** Community Goals & Sample Indicators continued

<i>Long-Term Goals</i>	<i>Recommended Indicators</i>
To increase Tl`azt`enne representation in local employment	<ul style="list-style-type: none"> <li>• Number of Tl`azt`enne employed by the school, research and development, educational centre, health, finance, administration, Tanizul, Teeslee, and the cabinet shop as a percentage of total number of employees.</li> </ul>
To reduce the incidence of crime and violence in the community	<ul style="list-style-type: none"> <li>• Percentage of community population serving prison sentences</li> <li>• Charges laid per year for violent crimes in the community (murder, domestic violence, child abuse, sexual abuse)</li> </ul>
To promote preservation of culture and language	<ul style="list-style-type: none"> <li>• Percentage of the community population involved in traditional activities (e.g. trapping, hunting, fishing, berry picking)</li> <li>• Percentage of the community who speak, read, and write Carrier</li> <li>• Percentage of children in Carrier language classes</li> </ul>
To improve basic community infrastructure and access to public services and facilities	<ul style="list-style-type: none"> <li>• Frequency of snow removal in winter</li> <li>• Frequency of road plowing during the year</li> <li>• Availability of car pool services to Fort St. James</li> </ul>
To generate a higher sense of community pride, empowerment, and motivation	<ul style="list-style-type: none"> <li>• Percentage of community volunteering time for community activities</li> </ul>
To improve community access to recreational and leisure services	<ul style="list-style-type: none"> <li>• Number and types of recreational facilities available in the community</li> <li>• Percentage of community making use of recreational facilities</li> <li>• Percentage of community attending community events</li> </ul>

very minor, as in the case of attractiveness to the media. A lack of media attractiveness is not serious enough to eliminate an otherwise useful indicator. Data availability may not be a long-term constraint since ways of generating information may be developed over time, or sources of data previously unknown to a community may be discovered. As for understandability, in a limited number of cases, there is a role for indicators that may be technical in nature (e.g., a biodiversity index) and therefore not immediately understood by laypeople, a difficulty that can usually be overcome by explaining the indicator in clear and simple language.

## **Discussion**

The preceding outline of the indicator selection process and the results of the community consultation process raise a number of issues that merit further comment. These issues will be addressed under four major headings: Community Consultation; Indicator Selection and the Meaning of Sustainability; Case-Study Findings; and Recommendations for Further Research.

### **Community Consultation**

Community consultation is, in our view, a very important component of SSR. While it would be possible for an indicator specialist (a consultant, for example) to select a set of sustainability indicators and present them to a community for approval, involving community members in every step of the process will, for three important reasons, result in a much stronger SSR initiative.

First, broadly-based, meaningful consultation will enhance the legitimacy of SSR. Because it is the community that will have to live with the consequences of achieving or not achieving goals, it seems reasonable (from both a practical and ethical perspective) that its members should play a central role in defining the goals and selecting the indicators that will be used to assess the community's sustainability. This is particularly true in an Aboriginal setting, where there is often a very profound distrust of initiatives that have not been defined, implemented, and directed by First Nations people themselves. Aboriginal communities are especially reluctant to submit to assessment criteria established by outsiders.

Second, developing a framework of community goals and devising measures to monitor progress require an intimate knowledge of local social, cultural, and environmental conditions. Although there may be an important advisory role for outside spe-

cialists in SSR—we are certainly not denigrating the value of scientific expertise—community members are in a much better position to identify community issues and goals and to select indicators. Local knowledge, especially when it has been validated by many years of experience, is a valuable resource that ought to be fully utilized in the SSR process.

Third, the consultation process can be an important vehicle for social learning and social mobilization. A community-based indicator selection process necessarily involves “learning by doing,” face-to-face interaction with other community members, and the sharing of information and ideas, all of which are essential elements in the social learning process (Friedman, 1987). Many of the participants involved in the case study indicated that the process itself may have been as valuable as the outcome. The process helped them to understand their community better, it re-energized their commitment to the community, and it instilled or renewed a desire to take concrete action to deal with the community’s problems.

### Indicator Selection and the Meaning of Sustainability

There are two basic approaches for developing a set of indicators. The first addresses the question What is sustainability? directly; the second, indirectly. Numerous variations on these two basic approaches are possible. Since the matter has been dealt with in detail elsewhere (Maclaren, 1996; Walter and Wilkerson, 1998), our discussion here will be brief.

Frequently, an indicator development team will first attempt to reach a consensus on what sustainability means in operational terms. For example, what does it mean in terms of environmental protection and stewardship or in terms of job creation and economic development? The next step often involves the identification of local sustainability issues and the establishment of specific objectives to address them. These deliberations, in turn, provide a foundation for selecting an indicator framework, essentially a set of categories for classifying indicators. The indicator team may then select a framework from the existing literature (see, for example, Maclaren 1996; Walter and Wilkerson, 1994), very often modifying it to suit local needs. The indicator framework and a list of sustainability issues and objectives identified by the community collectively form the foundation for selecting a set of indicators. In most cases, the indicator framework also provides the basic structure or outline for the final SSR report.

Maclaren (1996) identifies five general types of frameworks that are in common use: domain-based frameworks (based on key dimensions of sustainability, for example, environment, economy, society); sectoral frameworks (based on sectoral responsibilities of local governments such as housing, recreation, transportation, economic development); causal frameworks (emphasizing causal relationships among system components such as human health, air quality, and pollution abatement); issue-based frameworks (based on important community issues such as crime and public safety, employment, pollution); and goal-based frameworks (based on sustainability goals such as meeting basic human needs, social well-being, economic prosperity, participation in governance). A sixth approach combines one or more of the above frameworks. Although each of these frameworks has its advantages and disadvantages (which are determined to some degree by local circumstances), a goal-based SSR framework has much to recommend it: it is simple, easy to understand, and links indicators directly to community sustainability goals. For these reasons, it works well with a strategic planning approach to community sustainability.

Another method for selecting indicators, the one employed in this case-study, builds on Lindblom's (1959) insight that, while planning groups often find it difficult to agree on basic issues—for example, the values and principles that will guide their deliberations—they are often able to agree on specific outcomes. In accordance with this line of thought, the indicator team focuses directly on identifying local sustainability issues, establishing specific community planning objectives, and selecting indicators based on these deliberations, without attempting to develop a consensus on the meaning of sustainability. Nonetheless, some sense of the community's collective understanding of sustainability will emerge during the process, even when participants disagree to some extent about basic principles and values. When indicators have been selected, it is then relatively easy to slot them into different categories for reporting purposes.

This approach is useful in a number of situations: when it seems clear that the community will be unable to reach agreement on the meaning of sustainability; when it is unlikely that the community can agree on an indicator framework; or when there is a need to expedite the process due to a lack of time, lack of resources, or fear of participant burn-out, which frequently happens if participants have already expended considerable energy in other community initiatives. Participant burn-out is generally a more serious

problem in smaller communities where the pool of volunteers tends to be smaller than in larger communities.

Whether a community chooses to employ the latter, foreshortened approach or a more lengthy procedure, the community-based nature of the general SSR procedure outlined should be both practical and acceptable in First Nations community's in Canada, respecting, as it does, many of the values that define Aboriginal culture. The procedure is flexible enough to be adapted to local circumstances and can incorporate quantitative data published by standard sources such as Statistics Canada, as well as traditional ecological knowledge (a topic discussed in more detail below).

### Case-Study Findings

The study identified several urgent issues in the community and explored strategies for addressing them. Two issues were given top priority by case-study participants: problems of alcohol and substance abuse and the community's poor ability to establish long-term plans and a long-term vision for itself. Some of the other problem areas identified include education, health, culture and language, employment, and economic development. In these respects, the participants' views about the challenges confronting the community were remarkably similar in nature to those identified by the Royal Commission on Aboriginal Peoples (1992; 1993; 1995).

There were, however, some noteworthy differences, particularly with respect to self-government and the emphasis placed on natural resource management, culture, and education. The dominant view presented to the Commission was that policy change and organizational restructuring—including institutional arrangements for Aboriginal self-government—must be achieved before other pressing issues such as health, unemployment, resource development, education, and cultural preservation could be adequately addressed (O'Neil, 1993). This perspective, however, was not shared by the case-study participants who tended to stress the importance of addressing some deep-seated, urgent problems before turning their energies to self-government. Some participants doubted that self-government would significantly improve the lives of Aboriginal people. Indeed, self-government was rarely mentioned in the case-study interviews or focus groups and then only incidentally in the context of discussing what participants perceived to be more important questions.

Similarly, although issues related to natural resource management, education, and cultural preservation were perceived to be

important, they were not given the high priority they were assigned in the Royal Commission hearings and they clearly were not viewed as the most pressing issues facing the community. Many participants contended that the settlement of land claims and the corresponding control over natural resources would not, in fact, lead to true self-determination and community sustainability until more fundamental questions—health, family stability, and the capacity (as opposed to the constitutional or legal right) of the community to govern itself—were adequately addressed.

One possible conclusion to be drawn from these findings is that views expressed in the hearings before the Royal Commission on Aboriginal peoples tended to represent the perspectives of Aboriginal leaders rather than grass roots opinion. Alternatively, the Tl'azt'en Nation may be an isolated anomaly, not representative of views of the broader Aboriginal community in Canada. Or perhaps the case-study community is indicative only of Aboriginal communities in certain geographic regions, for example, central and northern British Columbia. These questions raise the need for additional research directed not only at discovering grass roots Aboriginal sentiment concerning the fundamental development approach that ought to be taken but also at exploring other sustainability-related issues.

### Recommendations for Future Research

One crucial research need is to determine which of several approaches to long-term community health will be most effective. There appear to be three possible answers to this question. (1) sustainability is best driven and supported by broad structural change (i.e., the achievement of self-government and the establishment of a comprehensive policy framework); (2) grass roots initiatives aimed at specific fundamental problems (e.g., health, substance abuse, the ability to govern) must first prepare the community for exercising greater autonomy and carving out a more sustainable future; or (3) structural change and grass roots initiatives can proceed in a parallel, mutually reinforcing manner to effect a more efficient and legitimate transition to sustainability. While the third option has considerable intuitive appeal, it may turn out that there is no single answer to the question since there may well be a number of contextual factors that will determine that one approach works best in one community and different approach in another community. The answer probably cannot be determined until First Nations commu-

nities have had more experience in self-government and this experience has been subjected to extensive analysis.

In the meantime, there is a need to determine if, and to what degree, the opinions of Aboriginal leaders and the grass roots differ on a range of significant sustainability issues, since the answer could have a direct bearing on the legitimacy of whatever approach is taken or supported by community leaders. Sustainability is very unlikely to be achieved if initiatives geared towards that end do not receive broad community support. Because results may vary regionally, this research should be conducted on a community-by-community basis.

The results from the case study also draw attention to the need to identify or develop governance systems that will promote Aboriginal participation in the mainstream Canadian economy without attenuating the traditional political, economic, cultural and social relationships among and within First Nations communities that have been so vital to their stability and well being in the past. This is especially important at this juncture in history when Aboriginal communities are contemplating and struggling for greater autonomy and self-determination. Because of a long history of dependence on Federal funding, First Nations communities have tended to focus narrowly on maintaining or increasing that flow of money, rather than on how, in the longer term, Aboriginal governance may be re-configured to address the challenges of self-government and how, in the shorter term, First Nations communities can make the transition from relative dependency to greater autonomy. This will require some very creative thinking and, undoubtedly, a good deal of learning by doing.

What will be equally demanding is creating effective programs to address the debilitating problems associated with substance abuse and high school-dropout rates. Developing a better understanding of these problems is an important step in developing more effective intervention strategies. Studies that illuminate the individual, social, and economic forces underlying the initiation and perpetuation of substance abuse and show how social institutions influence the problem, either positively or negatively, would be very helpful in this regard. Gruenwald et al. (1997) encourage researchers involved in community-based studies of alcohol and drug abuse to examine individual and social behaviours that characterize consumption of these substances and to locate these behaviours within community contexts. As an example, a study of illegal drug use might explore a number of closely related issues: the social dynamics underlying the motivation to use drugs; peer

group, school, work, or family influences; the roles of the illegal drug market and the criminal justice system; the social dynamics of obtaining drugs; factors that influence treatment-seeking behaviour; and the effectiveness of the treatment service system.

There is also an urgent need to understand why school dropout rates are high and how completion rates can be improved. Case-study participants involved in the Tl'azt'en Nation's educational system identified four major research needs in this area: documenting the schooling experience of Tl'azt'enne children; tracking school drop-out rates; understanding the psychological dynamics associated with dropping out of school; and identifying the reasons some Tl'azt'enne return to the educational system after initially dropping out. The resulting knowledge would provide a foundation for developing an educational system that was more responsive to the particular needs and circumstances of the Tl'azt'enne community. There is also broad endorsement in First Nations communities of the need to investigate more-effective ways to integrate traditional Aboriginal knowledge into the education curriculum.

There also appears to be an important role for traditional knowledge, particularly traditional ecological knowledge (TEK), in SSR. Although a good deal of research has examined the validity, integrity and use of TEK in a number of contexts (see for example, Freeman, 1979; Inglis, 1993), apparently no one has yet investigated how it might be employed in SSR. But given the similarities between SSR and other monitoring initiatives where TEK has been successfully employed, it would appear to have considerable value for establishing an information baseline as well as for the ongoing monitoring of numerous environmental resources including, for example, air and water quality, soils, biodiversity, fish and wildlife abundance, ecosystem integrity, and forest health.

## Conclusion

Organized complexity, particularly as it pertains to community sustainability, will always challenge the mettle of planners and managers, Aboriginal or otherwise. The way forward is often unclear. Although SSR is only one of a number of useful instruments for increasing the clarity of the planning and management process, it is a very useful mechanism for encouraging and facilitating the development of an effective, efficient information strategy. It can play an important role in social learning and social mobilization; it is flexible enough to be adapted to any number of different local needs and circumstances, and, perhaps most importantly, it is

a simple and effective diagnostic tool for assessing a community's general health. For all of these reasons, SSR deserves to be more widely used in Aboriginal and non-Aboriginal communities throughout Canada.

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### Notes

<sup>1</sup>Unless otherwise indicated this section is based on two sources: Tl'azt'en Nation (1997; 1998)

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