

# Factors of resiliency for forest communities in transition in British Columbia

---

Chris Joseph<sup>1</sup> and Ajit Krishnaswamy<sup>2</sup>

## Abstract

Many forest-dependent communities in British Columbia continue to make the transition away from a heavy economic reliance on the forest sector to a more diversified economy. Although some communities are succeeding with this transition, many are not. To better understand why this is happening, we reviewed the literature on “community resiliency.” This concept has emerged as the focus of those concerned with the sustainability of communities dependent on natural resources. From the literature review, we identified 15 resiliency factors that contribute to successful transitions. Many of these are related to resources (e.g., financial and natural resources, human and social capital) and power (e.g., local control over enterprise and policy). Some factors may require development (e.g., attitude and high-quality planning), while others may require creative and innovative solutions (e.g., geography and availability of natural resources). For communities undergoing transition, we recommend that decision makers and community leaders assess their community’s resiliency by examining these 15 factors. We suggest that all resiliency factors contribute to successful transitions. Attention to some factors at the expense of others may be a poor strategy for successful transitions. We also present examples of indicators that could be used to assess community resiliency and provide guidance on selecting and constructing indicators. Most of the identified resiliency factors relate to adaptability. Sustaining forest-dependent communities is primarily about accepting change and addressing it through adaptation. We therefore suggest that rural communities in British Columbia focus more on enhancing their adaptive capacity.

**KEYWORDS:** *adaptability, community resiliency, factors of resiliency, forest-dependent communities, indicators of resiliency, transition.*

## Contact Information

- 1 PhD Candidate, School of Resource and Environmental Management, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6. Email: [cjoseph@sfu.ca](mailto:cjoseph@sfu.ca)
- 2 Socio-economics Extension Specialist, FORREX, c/o Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6. Email: [Ajit.Krishnaswamy@forrex.org](mailto:Ajit.Krishnaswamy@forrex.org)

## Introduction

Over the last decade, British Columbia has witnessed a growing number of communities struggling to survive economically. Communities that have depended for decades on the forest industry as a source of employment and as a driver of their local economy are facing mill closures, job losses, and declines in tax revenue. This often results in local service reductions and emigration of residents, especially younger people. While the forest industry and its associated forest-dependent communities have weathered many ups and downs in the past, the current downswing—continuing for several years—appears different. According to Natural Resources Canada (2009a), forest-dependent communities are undergoing a fundamental transition.

The key drivers of this transition are numerous and interlinked. A prime driver is the downturn in the United States market for British Columbia forest products because of constraints imposed by the softwood lumber agreement, the slump in the United States housing market, long periods with a strong Canadian dollar, and most recently, the global economic crisis (Markey et al. 2005; Natural Resources Canada 2009a). Compounding the shrinkage of the United States market is growing competition from wood and paper product industries in other countries, labour-saving technologies, environmental regulation, declining availability of easily accessible timber, and competition for use of forest lands from interests such as recreation, conservation, other commercial interests, and unresolved First Nations land claims (Reed 1999; Walter et al. 1999; Apedaile et al. 2004; Markey et al. 2005; Parfitt 2005; Pearce 2005; Young and Matthews 2005; Dumont and Wright 2006; Natural Resources Canada 2009a). The mountain pine beetle infestation and climate change adds to these pressures. The mountain pine beetle is rapidly killing off trees in the Interior of British Columbia and is expected to bring about a dramatic reduction in areas that could be logged for marketable timber (Parfitt 2005; Wright 2007). Climate change, which is often blamed for the infestation, is further expected to bring about increased occurrences of wildfire, extreme weather, water shortages, and other pest infestations such as the leader weevil (Pearce 2005; Walker and Sydneysmith 2008). The forest sector clearly faces challenges.

A “silver lining” does exist, however, even though it may not be particularly visible in many parts of the province. Despite all of the challenges described earlier,

---

*Some forest-based communities are finding new ways to economically sustain themselves, and in some cases, are even thriving . . . how could these communities make this transition, especially when so many other communities could not?*

---

some forest-based communities are finding new ways to economically sustain themselves, and in some cases, are even thriving (Natural Resources Canada 2009b). Valemount and Terrace, for example, have diversified their economies from a heavy reliance on forestry to economies reliant on a mix of tourism, services, and other sectors in addition to forestry (G. Halseth, University of Northern British Columbia, pers. comm., September 2008). How could these communities make this transition, especially when so many other communities could not? What do communities that have made such successful transitions possess that others do not? What have these communities done that others have not? And finally, what can policy-makers, planners, managers, and community leaders do to promote successful transitions in forest-dependent communities?

One interpretation of this phenomenon is that successful communities have developed and exhibited “resilience.” Accepting this conclusion, we explore the concept of community resiliency in the context of British Columbia’s forest-dependent communities to support those policy-makers, managers, and community leaders interested in fostering resiliency and propelling successful transitions. We are driven by the notion that resilience is not a static quality that either exists or does not exist in communities but is something dynamic that can be cultivated and constructed through conscious action (Centre for Community Enterprise 2000; Reed 2000). Communities can develop resilience by actively building and engaging the capacity to thrive in an environment of change (Magis 2010). We see “success” as a community’s ability to transform itself so that it provides for similar or better economic well-being than in the past and in addition establishes the conditions for further success.

In the next section, we examine the concept of community resiliency including its origins and its

evolution. Following that, we identify 15 factors that contribute to community resiliency through a review of a wide range of academic and professional literature. We identify factors relevant to both Aboriginal and non-Aboriginal communities. Next, we identify examples of indicators that might be used to measure and monitor the resiliency of communities. We then provide guidance on indicator development. In the final section, we discuss our findings and recommend strategies for furthering resiliency that are useful to those working in or on behalf of forest communities in British Columbia.

Decision makers at the local, provincial, and federal level and community leaders should find the guidance in this paper useful in assessing the resilience of communities and in crafting strategies to address weaknesses and fortify community strengths. The material that we present here is the result of a wide ranging literature search. We then synthesized the results into a concise list of key ideas relevant to the resiliency of the province's forest communities. Readers who want a more detailed discussion on community resiliency, as well as strategies to increase resiliency and case studies of communities in transition, should consult our reference section, which provides a sampling of the substantial literature on this topic.

### What is community resiliency?

As Norris et al. (2008) explained, when adverse change occurs, communities must either resist or adapt, or otherwise the community will falter. In the context of British Columbia's forest-dependent communities, resisting the many driving forces of the current transition is not possible, and therefore communities must adapt. As we discuss below, the concept of community resilience is about adaptation. This is the conclusion reached by researchers who spent many decades examining what sustains communities in the face of adversity.

Until fairly recently, the concern in forest-dependent communities was "community stability," which was believed to follow from a constant flow of economic benefits. From this perspective, what mattered was ensuring forest-dependent communities had jobs and a stable source of revenue (Beckley 1995; Nadeau et al. 1999; Markey et al. 2005). In British Columbia, many communities believed that stability would follow from an orientation towards the forest industry, with community members specializing in forestry-related tasks (Markey and Pierce 1999). However, researchers

soon came to realize that communities couldn't be sustained by economic wealth alone; other attributes, such as services, social cohesion, and equity among community members, are needed (Beckley 1995; Reed 1999; Beckley et al. 2002; Markey et al. 2005). As Beckley (1995) put it, the earlier focus on economic indicators related to well-being captured only the tip of the iceberg. Consequently, the term "community well-being" emerged to encompass all the attributes necessary to provide for a community's sustenance and health.

Over time, researchers also came to realize that more was involved in sustaining communities through the increasingly routine boom-and-bust cycles in the forest industry. As these cycles showed, communities that could withstand external pressures and change in a planned fashion tended to be better off. Those with greater abilities to face change were said to have greater "community capacity," defined in terms of the availability of financial resources within a community, the ability of people to work together, and the presence of leadership in the community (Nadeau et al. 1999).

In recent years, the concept of "community resiliency" has become the focus of those concerned with the sustainability of forest-dependent communities. As seen in both the literature specific to forest-dependent communities and that focused on other types of communities, researchers have honed in on a community's ability to adapt as critical to its sustainability. Magis (2010) stated that community resilience is an important indicator of social sustainability. Writing in reference to forest-dependent communities in the United States, Quigley et al. (editors, 1996:35) defined community resiliency as adaptability, and adaptability as "the capacity for humans to change their behaviours, economic relationships, and social institutions such that economic vitality is maintained and social stresses are minimized." Varghese et al.

---

*Community resiliency can be defined as adaptability, and adaptability as "the capacity for humans to change their behaviours, economic relationships, and social institutions such that economic vitality is maintained and social stresses are minimized."*

---

(2006:508) defined resiliency as “a community’s ability to maintain, renew, or reorganize social system functions and ecological functions . . . the robustness and buffering capacity of a community in a changing system.” In examining Arctic communities and environmental change, Alessa et al. (2008) defined resiliency in terms of a system’s ability to respond to change and maintain functionality, depending on the availability of system components necessary for renewal and reorganization. They write that resiliency is the ability of a community to “cope, adapt, or reorganize without sacrificing provision of . . . services” (Alessa et al. 2008:524). In a review of concepts of resiliency across ecological, physical, social, urban, community, and individual contexts, Norris et al. (2008:129) observed that “most definitions emphasize capacity for successful adaptation in the face of disturbance, stress, or adversity.” Resiliency is now a common component of many sustainability assessment frameworks, including the Canadian Council of Forest Minister’s criteria and indicator framework (Canadian Council of Forest Ministers 2003).

If the key to successful transitions in forest-dependent communities depends on adaptive capacity, then what does this capacity look like? What are the factors contributing to a community’s ability to adapt? In the following section, we review factors of community resiliency that, according to our interpretation, should contribute to successful transitions in forest-dependent communities in British Columbia.

### Factors of resiliency

The topic of community resiliency has been discussed frequently in resource management, sustainable forest management, economic development, and the criteria and indicators literature. Community resiliency has also been discussed in the literature related to hazards and disasters, sociology, and psychology. We synthesized the literature on community resiliency in these different areas and identified the following 15 resiliency factors that contribute to successful community transitions.

1. Economic diversity
2. Financial resources
3. Natural resources
4. Local control over enterprise
5. Stakeholder-driven planning
6. Smart transition programming
7. Policy influence
8. Good governance
9. Human capital

10. Social capital
11. Attitude
12. Community attractiveness
13. Information
14. Geography
15. Health

Although we attempted to distinguish these factors from each other, significant overlap exists because many of these factors are inherently interrelated. In her literature review and study of 13 projects focusing on aspects of resilience (most of them in the United States), Magis (2010) identified the following eight dimensions of community resilience.

1. Community resources
2. Development of community resources
3. Engagement of community resources
4. Active agents
5. Collective action
6. Strategic action
7. Equity
8. Impact

These dimensions of resilience are similar or complement the 15 community resiliency factors we identified through our literature review.

### Economic diversity

Perhaps the most important factor for successful transitions is economic diversity. Economic diversity provides for adaptability to changing conditions through redundancy in income-generation potential. Clearly, low economic diversity caused by over-dependence on the forest sector has been instrumental in contributing to the current predicament of the province’s forest-dependent communities (Markey and Pierce 1999; Horne 2004; Markey et al. 2005; Natural Resources Canada 2009b).

Low levels of economic diversity create three problems that hinder successful transitions. The first problem is that a narrow economic base makes a

---

*Economic diversity provides for adaptability to changing conditions through redundancy in income-generation potential.*

---

community vulnerable to disruptions in the sectors that make up that base (Markey and Pierce 1999; Markey et al. 2005). Commodity markets, such as those for timber products, are notoriously susceptible to price fluctuations, and too much reliance on such markets can lead to boom-and-bust cycles. Rising competition and growing opportunities for substitution brought on by globalization only enhance the risk of such disruptions (O'Hagan and Cecil 2007). Similarly, natural disturbances such as the mountain pine beetle infestation and forest fires can cause disruptions in economies overly reliant on a narrow set of natural resources (Adger 2000). The second problem is known as "leakage." When communities have low economic diversity, they retain only limited amounts of local income, as local firms and consumers must go outside the community to buy goods and services (Beckley and Reimer 1999; Markey et al. 2005). The third problem is that low economic diversity tends to "trap" communities into retaining a focus on existing economic sectors (which stifles diversification and entrepreneurship) and ensuring that local government policy remains favourable to these sectors (Hayter and Barnes 1990; Markey and Pierce 1999; Markey et al. 2005).

Four aspects of economic diversity require elaboration to fully understand its relationship to community resiliency. First, the greatest economic security comes not just from diversity but also equitability in the contribution of different sectors to the local economy. All else being equal, the most stable local economy is a diverse economy with each sector contributing roughly the same amount. Consider two hypothetical communities: Community A with an economic base dominated by forestry but also including relatively minor contributions from fishing, tourism, government services, and construction; and Community B with an economic base equally divided between forestry, fishing, and government services. Although Community A has a more diverse economic base than Community B, only a third of Community B's economy is exposed to a downturn in forestry.

Second, of great importance is diversity in the sources of "basic" income because this is the underlying source of wealth in a community. Basic income stems from the export of goods and services, sales to tourists, and from jobs in the provincial and federal governments as these bring income in from outside the area (Horne 2004). Basic sectors include forestry, mining, fishing, trapping, agriculture, food and beverage manufacturing, tourism, high technology, the

public sector, construction, film production and sound recording, and several other miscellaneous activities (Horne 2004). Non-basic sectors are those depending on basic sectors; that is, the goods and service sectors supported through re-spending within a community. Diversity in non-basic sectors is less important in addressing vulnerabilities associated with export markets, but remains important in preventing leakage.

Third, economic diversity applies equally to markets and to sectors. In today's globalized world, exported products from a community in most cases compete with products from around the world. Therefore, forest-dependent communities with a diversity of markets for products beyond the traditional United States market would be more resilient. Larger global markets are more stable than specialty niche markets (Bruce and Halseth 2004).

Finally, the pursuit of economic diversity should be balanced with the income gains that follow from comparative advantages (i.e., when communities can produce a product relatively less expensively than competitors). Communities hosting industries that enjoy a comparative advantage should promote these industries, although economic diversity should continue as a priority to protect against the problems associated with over-reliance on a few industries. The community economic development literature, particularly *Second Growth: Community Economic Development in Rural British Columbia* (Markey et al. 2005), provides invaluable guidance on economic development and diversification.

### **Financial resources**

A second success factor is the availability of financial resources as these provide the capacity to resist economic downturns and fuel adaptive action (Cornell and Kalt 1992; Centre for Community Enterprise 2000; Halseth et al. 2006; Ratner and Moser 2009). When a solid stock of financial resources exists in a community, citizens are capable of sustaining themselves for a longer time between jobs, companies are more willing to invest in capital that would allow them to diversify, and local governments can maintain services and fund planning efforts. However, when minimal financial resources are available, individuals are more likely to withdraw from the community and move, companies are less likely to take risks, and local governments are more likely to reduce services the community needs to retain its attractiveness. Financial resources include the savings of citizens; budget surpluses and good

---

*Financial resources provide the capacity to resist economic downturns and fuel adaptive action.*

---

credit ratings of local governments and organizations; and profitability of local businesses. Local financial resources can be buttressed with external resources, such as grants, loans, and other financing mechanisms from senior governments. Nevertheless, communities should not be overly dependent on such external resources (Markey et al. 2005).

### **Natural resources**

Accessibility to natural resources is a key to community resiliency for communities who depend on those resources (Cornell and Kalt 1992; Beckley et al. 2002; Markey et al. 2005; Ratner and Moser 2009). Forests and other natural resources are the expected source of existing and emerging economic activities. Currently, markets exist for timber products, non-timber forest products, bio-energy, and minerals. Markets for forest carbon sequestration are also emerging in British Columbia. Communities should identify the accessible natural resources in their vicinity, and consider these as a basis for economic transitioning (Markey et al. 2005).

The most useful natural resources possess several characteristics. First, the economic value and quality of the resources should be high. As every forest worker knows, the value of trees logged in different regions of the province varies greatly. Second, the natural resource should be available in sufficient quantities. For example, small-scale forest tenures, such as community forest operations, are usually economically viable when a certain minimum quantity of timber is available to the operation (Treseder and Krogman 1999; Kunkel 2008). Third, diversity in resources is useful as this can support diverse economic activities (Norris et al. 2008). Fourth, resources are of highest value when located in favourable proximity to employees' homes, existing roadways, processing facilities, and markets.

### **Local control over enterprise**

The degree of local control over local natural resource-based enterprise is another factor that contributes to community resiliency. The argument for local control hinges on the notion that community interests tend to differ from those outside the community (Centre for

Community Enterprise 2000; Natural Resources Canada 2009b). In most cases, forest-dependent communities in British Columbia rely on companies not based in the community, but in larger cities in the province, elsewhere in Canada, or even other countries. In these cases, people from outside the community make decisions that affect the community. On the other hand, through community forests, local entrepreneurship, or employee ownership of manufacturing facilities, locals have the opportunity to make decisions that more closely match the interests of the community, as well to capture a greater share of the wealth for community development (Wall and Fuller 2004; Markey et al. 2005; Young and Matthews 2005).

Nevertheless, local control over enterprise has its limitations. In a study of local ownership of forestry operations, Varghese et al. (2006) concluded that community resiliency can be positively influenced through local ownership but that the degree of influence depends on factors such as who has control over various components of the operation, how ownership is legally arranged, and the extent of ownership. For example, when high levels of capital are required, external resources are often vital, which typically reduce local control. Similarly, Luckert (1999) cautioned that community forests do not necessarily provide the level of benefits that advocates suggest. Community forests have to compete with the forest industry alongside other producers and are under the same cost, technology, and market pressures. Consequently, smaller operations such as community forests may generate less revenue per unit of production than larger operations, leading to fewer economic benefits. Thus, although local control may prove a successful ingredient to economic sustainability, care must be taken in interpreting local control and designing strategies based on local control.

### **Stakeholder-driven planning**

According to the Centre for Community Enterprise, "a resilient community is one that takes intentional action to enhance the personal and collective capacity of its citizens and institutions to respond to and influence the course of social and economic change" (Centre for Community Enterprise 2000, Section 1:5). Planning

---

*Accessibility to natural resources is a key to community resiliency for communities who depend on those resources.*

---

---

*Planning provides the means by which communities can foresee opportunities and constraints and proactively address them.*

---

is an important factor of resiliency because it is the means by which communities can foresee opportunities and constraints and proactively address them (Centre for Community Enterprise 2000; Markey et al. 2005; Natural Resources Canada 2009b). Planning also entails determining community strengths and weaknesses, identifying ways to capitalize on strengths and address weaknesses, and monitoring progress towards goals. Markey et al. (2005), writing from a community economic development perspective, stressed that planning must be community-driven and that local government should play a complementary, not dominant, role in the process.

A good planning process has numerous ingredients. Effective planning processes set realistic objectives, identify priorities, assign clear roles and responsibilities, develop contingency plans, select clear measures of success, establish means for reducing uncertainty, and build in buffers for mistakes (Schooling and Cumming 2005; Joseph et al. 2008; Norris et al. 2008). Furthermore, good planning processes involve stakeholders throughout the process from goal setting, developing ideas, and evaluating alternatives, to monitoring success (Frame et al. 2004; Markey et al. 2005). Planning should involve all types of stakeholders (e.g., industry groups, First Nations, environmental groups, etc., as well as subgroups within these major stakeholder groups, and in particular women) and facilitate their participation. Ideally, the stakeholders themselves design the planning process (Halseth and Lo 1999; Natcher and Hickey 2002; Frame et al. 2004). Stakeholder involvement can be supported through favourable scheduling, funding for volunteer groups, and training (Gunton and Day 2003; Frame et al. 2004).

Genuine stakeholder involvement provides several benefits (Centre for Community Enterprise 2000; Frame et al. 2004). First, it ensures that plans are reflective of stakeholder interests and concerns as stakeholders are the best judges of their own interests. Second, stakeholders possess a unique body of knowledge and experience that can be tapped while developing plans. Third, involvement can reduce conflict amongst stakeholders. Fourth, genuine involvement maximizes the probability of successful implementation, which is discussed in detail below (see “Policy influence”).

### **Smart transition programming**

Designing a smart community transition program complements and follows along from good planning. Successful communities do a number of “smart” things when they construct transition programs. First, these communities assess whether they have sufficient financial, human, natural, and other resources during the planning process (Cornell and Kalt 1992). Second, transition programs are well timed to take advantage of situations. For example, successful communities ensure that their transition programs take advantage of market patterns and political cycles. Third, transition programs are designed to mesh with the unique attributes of the community, including both its constraints and opportunities (Schooling and Cumming 2005). The design of transition programs for First Nations communities should be appropriate to First Nations’ cultural context and objectives (Cornell and Kalt 1992; Treseder and Krogman 1999; First Nations Leadership Council and BC Ministry of Economic Development 2007; Kunkel 2008). The appropriateness of the program can be gauged by the degree of support for it within the community, the level of community participation and citizen engagement, and adoption and ownership of the program by the community. Fourth, programs should be designed to address all aspects of the problem, or as many aspects as possible. For example, transition programs for forest workers should reach out beyond the traditional male-dominated forestry workforce to women, First Nations, and people working in secondary spin-off sectors, each of which are often neglected (Reed 1999; Kunkel 2008).

### **Policy influence**

Communities with influence over the policies that affect them tend to be more successful in achieving resilience because of the greater ability to shape their destiny (Natural Resources Canada 2009a; Ratner and Moser 2009). Ultimately, senior governments set the majority of the policy affecting communities, but skilled community leaders and the manner in which communities develop

---

*Communities with influence over the policies that affect them tend to be more successful in achieving resilience because of the greater ability to shape their destiny.*

---

their own policy are important means through which communities can take control of policy.

Much of the policy related to community economic development in the province's forest-dependent communities is developed by the provincial and federal governments. In some cases, communities participate in such "high level" policy development as stakeholders and have some influence, but not always. Although opportunities to change this balance of power are limited, First Nations communities deserve greater discussion because of the unique challenges they face and the greater opportunities they have to shape policy.

In many cases, First Nations have relatively little influence over the policy that affects them—in particular, federal policy oriented to First Nations is more prescriptive compared to how provincial policy shapes municipal government, despite recent court decisions in favour of First Nations' rights. First Nations increasingly identify this lack of control as standing in the way of their economic development. Greater influence over policy can provide First Nations enterprises with access, tenure, and resource control arrangements that can result in useful mechanisms for economic development, such as co-management or community forest agreements (Treseder and Krogman 1999). Influence over policy development also enables First Nations to design and adopt policies and institutional affiliations to fit their cultural context (Cornell and Kalt 1992; Treseder and Krogman 1999). In a study of Indian tribes' experiences with economic development in the United States, Cornell and Kalt (1992) found that one of the key success factors is control over designing systems of self-governance. In Canada, First Nations have historically had little control over their own economic and political matters, and the current governance institutions have been in large part imposed on them (Lewis 1998). For successful transitions, First Nations in British Columbia should therefore continue to pursue greater control over policy that affects them, whether through the treaty process or otherwise.

An important tool for facilitating influence over policy is effective leadership. Leadership is based on skills in negotiation, visioning, networking, and building relationships. Given the need for communities in transition to adapt, leadership is also about motivating other community members to be creative, try new things, and be active in implementing plans (Quigley et al. [editors] 1996; Beckley et al. 2002; Markey et al. 2005; Ratner and Moser 2009). Leaders are the spokespersons of communities, the champions of new ideas and strategies, and the negotiators with outside investors

and senior governments. Skilled community leaders, for example, may be able to convince the provincial or federal government to help market their products or to extend support programs to further benefit the community. Leadership positions can be filled by political leaders, citizens, organizations, or companies (Beckley et al. 2002; Markey et al. 2005; Ratner and Moser 2009). Leadership, beyond that traditionally provided by forest companies in the province, is now needed all the more as these companies have increasingly withdrawn from positions of community leadership (Beckley 1995; Beckley and Reimer 1999).

Another element of policy influence stems from how communities develop policy to address social and economic changes. Stakeholder involvement in policy design has emerged across the policy and planning disciplines as a key element to policy success. By extension, stakeholder involvement in community planning and transition programming is important. Success requires that policy is implemented successfully—good ideas go nowhere unless successfully implemented—and stakeholders are often crucial links in the implementation chain. For example, if a community develops a plan for downtown revitalization to improve the aesthetic and cultural atmosphere of the community, businesses can either propel or frustrate the process by supporting the plan and participating, or by refusing to participate. The lesson for policy-makers, managers, and community leaders is to provide stakeholders with genuine opportunities for involvement in policy making; this will enhance the likelihood that these stakeholders are supportive of plans and transition programs. Successful transitions are not a top-down process but a mix of efforts from the top and the bottom.

### **Good governance**

A factor in successful community transitions is good governance. Although this factor applies to all types of communities, research on economic development in Aboriginal communities shows that governance plays a crucial role in shaping the success of economic activities in such communities.

The first characteristic of a good governance system is that it ensures minimal or no political interference of the local government in business. Too often political leaders interfere in the day-to-day operations of local enterprise—which in Aboriginal communities is often a community-run enterprise—to the detriment of enterprise (First Nations Leadership Council and BC Ministry of Economic Development 2007; Kunkel 2008).



---

*Although the good governance factor applies to all types of communities, research on economic development in Aboriginal communities shows that governance plays a crucial role in shaping the success of economic activities in such communities.*

---

Businesses are best run, and outside investors are most confident, when minimal political interference occurs in local enterprise. The second characteristic of good governance is ensuring a stable business environment. Private investors, who often are a critical source of financial resources, are most confident when the business environment is stable. Frequent elections or other major political changes in a community can disrupt the business environment and the resulting uncertainty can scare investors away (Cornell and Kalt 1992; First Nations Leadership Council and BC Ministry of Economic Development 2007). The third characteristic is that good systems of governance attract community support for economic transition projects. This is done by involving stakeholders in policy development, building and maintaining stakeholder support for transition programs, and by being transparent and accountable (Cornell and Kalt 1992; Markey et al. 2005).

### **Human capital**

Human capital is a crucial factor contributing to community resiliency. Human capital is the stock of skills, creativity, and productive capacities among community members. Communities with greater levels of human capital are more able to solve problems, compete for new opportunities, participate in emerging markets, and embark on entrepreneurial activities (Cornell and Kalt 1992; Walter and Wilkerson 1998; Beckley et al. 2002; Markey et al. 2005). To be successful, the resiliency factors we identify here all require adequate human capital in a community.

The literature highlights various skills as key to resiliency. In a review of forest-dependent communities in British Columbia that attempted to diversify their economies, Schooling and Cumming (2005) argued that success requires business “savviness,” and skills in

business planning, marketing, day-to-day operational planning, financial tracking, and reporting. They concluded that proponents “must be prepared to compete in the real world” (Schooling and Cumming 2005:79). O’Hagan and Cecil (2007) highlighted the need for people with skills to participate in the growing “knowledge economy.” Communities are thus more resilient when they have people with expertise in computers, the Internet, data analysis, communication, and media. Other skills that should serve communities well during economic transition are those related to leadership (see above), networking, entrepreneurship, management, innovation, and governance (Lewis 1998; Beckley and Reimer 1999; Parkins et al. 2004; First Nations Leadership Council and BC Ministry of Economic Development 2007; Alessa et al. 2008; Ratner and Moser 2009). Communities can address human capital shortages through hiring, staff retention, and training. A recent example of a human capital strategy to address the mountain pine beetle infestation in British Columbia is provided in Sarah L. Cunningham Consulting and DPRA (2008).

### **Social capital**

The literature clearly identifies social capital as a resiliency factor. Definitions of social capital vary. In the context of British Columbia’s forest-dependent communities, it is defined as the combination of social cohesion within the community, the degree to which values are shared, the willingness of community members to co-operate and mobilize resources, and the strength of relationships among community members and with outside parties (Quigley et al. [editors] 1996; Reed 2000; Beckley et al. 2002; Ledogar and Flemming 2008; Ratner and Moser 2009). In the words of Parkins et al. (2004), social capital is the network of relations between individuals that provides for trust and fosters a community’s social and economic productivity. Expressions of social capital include volunteerism, involvement in clubs and social groups, constructive relationships with outside entities, partnerships

---

*Social capital is the network of relations between individuals that provides for trust and fosters a community’s social and economic productivity.*

---

in business, and a fast flow of information among community members (Beckley et al. 2002; Schooling and Cumming 2005; Alessa et al. 2008). Researchers repeatedly conclude that the more social capital a community has, the greater is the community's resilience (Walter and Wilkerson 1998; Centre for Community Enterprise 2000; Sullivan and Halseth 2004; Wall and Fuller 2004; Markey et al. 2005; Natural Resources Canada 2009b).

It is not too difficult to see why social capital is associated with resiliency. The more involved community members are with one another, the more likely they are to understand each other, to learn about and from one another, and to develop relationships. In turn, the greater the number and depth of relationships among community members, the more likely members support one another, resolve conflicts, pass on useful information, and see opportunities for collaboration.

It is also not difficult to see why social capital is critical in forest-dependent communities today. The drivers of the current transition in these communities are often at a scale larger than individuals or small communities can solve by themselves. In many cases, communities need to join forces with other communities, senior levels of government, and/or private investors to construct joint strategies for transition. In today's increasingly "hands-off" relationship between communities and the provincial and federal governments, communities need to rely more on co-operation among citizens, companies, non-governmental organizations, and other communities (Centre for Community Enterprise 2000; Young 2008). In First Nations communities, social capital held with other governments is also critical to not only resolve land claims but also to establish more appropriate resource management and development arrangements (Treseder and Krogman 1999).

### **Attitude**

It is often said that attitude is everything. In the case of community transitions, it is important for citizens, industry members, and government representatives to have and demonstrate the right attitudes when confronting change. Two types of attitudes in particular arise in the literature as keys to successful transitions.

Given the nature of transition, an attitude of flexibility is obviously important (Halseth et al. 2002; Alessa et al. 2008). Willingness to try new things and mould oneself to current conditions exemplifies a flexible attitude.

For employees, an uncompromising attitude towards changing jobs is not helpful. According to Barnes et al. (1999), forestry workers seem particularly prone to an uncompromising attitude towards shifting jobs. They explained that the industrial forestry model of the past was quite generous to employees, and the history of relatively high salaries acts as an obstacle to workers faced with lower paying employment options. Research on Arctic communities suggests that flexibility is positively correlated with cultural diversity. Alessa et al. (2008) explained that communities with higher cultural diversity tend to be more open to diversity in ideas which, in turn, provides for flexibility. Ratner and Moser (2009) highlighted attitudes of openness and tolerance of differences as keys to success.

Another attitude that is associated with resiliency is confidence (Ratner and Moser 2009). Even in uncertain economic times, confidence in the health and outlook of a community's economy is associated with an overall "can-do" attitude. Conversely, with low confidence, people are more conservative in their decisions and are more likely to focus on coping than on being proactive. In research on the resiliency of fishing communities, Marshall et al. (2007) found that constructive behaviour in fishermen exists when they perceive their financial situation is good, and when they are confident in their ability to secure other work, to remain competitive in the industry, and to adapt. In contrast to this behaviour, Marshall et al. (2007) found that a lack of confidence often leads to counterproductive behaviours such as spending time fixing fishing gear instead of developing new skills. They found that proactive attitudes tend to be associated with younger fishers, those with fewer family commitments, and those with less attachment to their current occupation.

### **Community attractiveness**

Attractiveness of communities to business, families, and individuals is another factor of community resilience because it affects one's willingness to remain in the community and overcome the community's challenges. Community attractiveness is also key to attracting migrants, investors, and new businesses. As Norris et al. (2008) pointed out, attractiveness is based on real attributes but, more importantly, it is what people perceive that matters.

The level of a community's attractiveness is shaped by many factors. To businesses, community attractiveness is boosted by favourable policy (e.g., favourable tax rates),

the availability of adequate infrastructure (e.g., for communications and transportation), stability in the business environment, liveability for its employees, and reputation (Beckley et al. 2002; Wall and Fuller 2004; Maleki 2008). Beyond the availability of satisfactory employment, communities are attractive to families and individuals if they have sufficient services (e.g., health services, recreation programs, support groups, information technology, shopping), environmental quality (e.g., air quality), a pleasant climate, aesthetic value, and if families perceive a sense of place and community (e.g., cohesion, spirit, volunteerism, culture and arts, etc.) (Beckley 1995; Quigley et al. [editors] 1996; Centre for Community Enterprise 2000; Beckley et al. 2002; Halseth et al. 2002; Parkins et al. 2004; Pearce 2005; External Advisory Committee on Cities and Communities 2006; Halseth and Ryser 2006a, 2006b; Maleki 2008; Natural Resources Canada 2009b). The availability of services is particularly important during times of transition. Services make communities liveable by providing for the support necessary to weather difficult times (Reed 1999; Halseth et al. 2002; Halseth and Ryser 2006a, 2006b). For example, without employment helplines and community economic development offices, a community is a bleak place to contemplate one's next move after being laid off. Furthermore, community services provide opportunities to build social cohesion by bringing people together and improving communication (Halseth and Ryser 2006a, 2006b).

### Information

Another success factor is access to quality information (Beckley 1995; Pearce 2005; Alessa et al. 2008; Ratner and Moser 2009). Relevant and accurate information is the foundation for understanding a community's current situation and the basis for planning and adaptation. Information is a source of new ideas, but it is also experience or the body of learning from past challenges. Quigley et al. (editors, 1996), in a review of ecological and social sustainability of the Interior Columbia Basin in Oregon State, found that resiliency tends to be greater in communities that have already confronted change. Similarly, Alessa et al. (2008), in their review of the resiliency of communities facing environmental change in the Arctic, noted that long-time community residents possess knowledge and perspective that can prove useful in resolving problems. A community's capacity to take advantage of information technology is also important. Valemount's shift from a forest-based economy to one more centred on tourism was propelled by its taking advantage of the Internet (G. Halseth, University of Northern British Columbia, pers.

---

*Relevant and accurate information is the foundation for understanding a community's current situation and the basis for planning and adaptation.*

---

comm., September 2008). Ratner and Moser (2009) suggested forest communities encourage "peer exchanges" to expose locals to other ways of doing things and to bring in experience from elsewhere.

### Geography

Successful transitions in British Columbia's forest-dependent communities are also related to geography. Geography can either assist communities in their transition or impede them (Cornell and Kalt 1992; Natural Resources Canada 2009b). Generally, communities close to large urban centres and on major transportation routes have much better access to markets than communities in remote and inaccessible locations. Proximity to large urban centres also provides benefits to forest-dependent communities by offering access to employment, training, and shopping when local opportunities are few (Apedaile 2004; O'Hagan and Cecil 2007; Kunkel 2008). Geography is also a factor when considering the location of resources. For example, the location of timber stands relative to mills can be a significant factor affecting the economics of timber production. Obviously, little can be done to change the location of communities and resources, but recognition of geographical factors and policies to address them (e.g., improving transportation and communication infrastructure) can be used to tackle some of the obstacles.

### Health

A final factor in successful transitions is community health, both physical and mental. Health is one of the fundamental drivers of human well-being and is intimately related to a person's ability and willingness to act in the face of challenge. High rates of teen pregnancy and substance abuse, for example, diminish a community's ability to cultivate human capital (Beckley and Reimer 1999). Without a healthy populace and a healthy environment, communities are hard pressed to be proactive in the face of an economic downturn. As discussed above (see "Community attractiveness"), health services are

---

*Health is one of the fundamental drivers of human well-being and is intimately related to a person's ability and willingness to act in the face of challenge.*

---

crucial to community resilience. Key ingredients of a healthy community include sufficient access to health services and medical professionals, health education, and the ability of a community to retain its medical professionals. If the necessary health services are not available in the community, then strategies should be in place to provide these services to residents.

## Indicators

The criteria and indicator (C&I) approach in forestry has evolved as a means to define and measure progress towards sustainability. In the context of forestry in the province, criteria are broadly defined as the sets of values that represent the elements of forest ecosystems and the related social and economic systems that British Columbians believe should be maintained or enhanced; indicators measure aspects of criteria and are used to evaluate progress over time to inform future decision making (Hickey and Innes 2005). Community resiliency indicators can be used to identify a community's state of resilience (e.g., its strengths and weaknesses with respect to resilience), to assess a community's progress towards resiliency, to draw attention to particular issues or characteristics, to support accountability, and to prioritize action (Walter and Wilkerson 1998; Reed 2000).

Several existing C&I frameworks are relevant to forest communities in British Columbia (Hickey and Innes 2005).<sup>1</sup> To measure resilience and identify a community's strengths and weaknesses, decision makers and community leaders may want to take advantage of the C&I systems already in place or develop their own. In this section, we discuss attributes of high-quality indicators and then identify some indicators that might be useful in assessing community resilience.

High-quality indicators possess several of the following characteristics (Walter and Wilkerson 1998; Parkins 1999; Reed 2000; Hickey and Innes 2005; Pearce 2005; Harshaw et al. 2007):

- Informative
- Easily understood
- Relevant across a range of situations
- Comparable across location, time, and scale
- Easy to measure
- Methodologically sound
- Developed collaboratively

For one, indicators should be informative but also stimulating enough to engage people. Importantly, indicators that assess a person's subjective perceptions (i.e., their feelings) are often more important than actual conditions (Beckley 1995; Beckley et al. 2002; Harshaw et al. 2007). Second, indicators should be easily understood so that they effectively communicate the state of the community to users. Third, indicators should be relevant over a range of policy scenarios and contexts. Indicators are most useful when their relevance spans specific situations. Similarly, indicators should be comparable and usable across location, time, and scale. Comparability and usability allow for communities to compare themselves to each other and over time. Fifth, indicators should be easily measured. Indicators are most useful when data is easily available and inexpensive to get. Sixth, indicators should be methodologically sound in that results are reliable, accurate, and reproducible, and the means by which results are arrived at are logical and transparent. Finally, indicators should be developed collaboratively with community stakeholders. Indicators are most useful when designed with community members. In this way, they are relevant to the unique context of the community, especially its cultural context (Reed 2000; Beckley et al. 2002; Parkins et al. 2004; Pearce 2005; Sherry et al. 2005; Harshaw et al. 2007). For example, Sherry et al. (2005) found that indicators developed by First Nations in British Columbia in some cases differed substantially from existing frameworks in how sustainability was defined and assessed.

In Table 1, we list the potential indicators to assess community resiliency and monitor progress in resiliency.

---

<sup>1</sup> More information on the different C&I systems in British Columbia can be obtained from Common Ground for Criteria and Indicators of Sustainable Forests for British Columbia ([www.forrex.org/bccci/](http://www.forrex.org/bccci/)) and the Sustainable Forest Management Research Group at the University of British Columbia (<http://bc2007.sfmindicators.org/>). Also, a number of values similar to criteria and indicators in sustainable forest management are examined through the provincial government's Forest and Range Evaluation Program ([www.for.gov.bc.ca/hfp/jfrep/](http://www.for.gov.bc.ca/hfp/jfrep/)).

**FACTORS OF RESILIENCY FOR FOREST COMMUNITIES IN TRANSITION IN BRITISH COLUMBIA**

**TABLE 1.** Indicators of community resiliency.

<b>Resiliency factor</b>	<b>Example indicators</b>
Economic diversity	<ul style="list-style-type: none"> <li>• Diversity index (Horne 2004)</li> <li>• Forest vulnerability index (Horne 2004)</li> <li>• Social capital infrastructure (Hickey and Innes 2005; Sustainable Forest Management Research Group n.d.)</li> <li>• Number of people working by industry (Natural Resources Canada 2009a)</li> </ul>
Financial resources	<ul style="list-style-type: none"> <li>• Employment rate (Canadian Council of Forest Ministers 2003)</li> <li>• Median household income (Walter et al. 1999)</li> <li>• Percentage of population by age group receiving income assistance (Walter et al. 1999)</li> <li>• Sponsorship of local events, scholarships, etc., by local businesses (Sustainable Forest Management Research Group n.d.)</li> </ul>
Natural resources	<ul style="list-style-type: none"> <li>• Perceived quality of natural environment (Walter et al. 1999; Parkins et al. 2004)</li> <li>• Proportion of timber harvest area successfully regenerated (Canadian Council of Forest Ministers 2003)</li> </ul>
Local control over enterprise	<ul style="list-style-type: none"> <li>• Presence of community forests (Young and Matthews 2005)</li> <li>• Rates of entrepreneurship (Sustainable Forest Management Research Group n.d.)</li> <li>• Number of new business licences</li> </ul>
Planning	<ul style="list-style-type: none"> <li>• Completion of community economic development plan (Centre for Community Enterprise 2000)</li> <li>• Stakeholder satisfaction with level of involvement (Walter et al. 1999)</li> <li>• Existence of genuine stakeholder involvement in planning</li> </ul>
Smart design	<ul style="list-style-type: none"> <li>• Stakeholder satisfaction with economic transition plans</li> </ul>
Policy control	<ul style="list-style-type: none"> <li>• Local representative in provincial or federal government (Sustainable Forest Management Research Group n.d.)</li> <li>• Community perception of leadership quality</li> <li>• Existence of genuine stakeholder involvement in planning</li> <li>• Stakeholder satisfaction with economic transition plans</li> </ul>
Good governance	<ul style="list-style-type: none"> <li>• Perception among business community of ample separation of political leadership from enterprise</li> <li>• Level of stakeholder support for transition programs</li> </ul>
Human capital	<ul style="list-style-type: none"> <li>• Qualified professional labour force as a percentage of total labour force (Walter et al. 1999)</li> <li>• Percentage of people achieving minimum grade 12 education (Hickey and Innes 2005)</li> <li>• Education enrolment rate (Parkins et al. 2004)</li> </ul>
Social capital	<ul style="list-style-type: none"> <li>• Perceived level of racism (Sustainable Forest Management Research Group n.d.)</li> <li>• Distribution of individual total returns by income class (Walter et al. 1999)</li> <li>• Membership in organizations (Sustainable Forest Management Research Group n.d.)</li> </ul>
Attitude	<ul style="list-style-type: none"> <li>• Perceptions of ability to adapt, confidence, etc.</li> </ul>
Community attractiveness	<ul style="list-style-type: none"> <li>• Crime rates (Sustainable Forest Management Research Group n.d.)</li> <li>• General practitioners per 1000 population (Walter et al. 1999)</li> <li>• Perceived satisfaction with services (Walter et al. 1999; Parkins et al. 2004)</li> <li>• Municipal business taxes compared to provincial average (Walter et al. 1999)</li> </ul>
Information	<ul style="list-style-type: none"> <li>• Demographics of citizenry</li> <li>• Number of computers connected to Internet per capita</li> </ul>
Geography	<ul style="list-style-type: none"> <li>• Proximity to large urban centre</li> </ul>
Health	<ul style="list-style-type: none"> <li>• Cancer rate (Hickey and Innes 2005; Sustainable Forest Management Research Group n.d.)</li> <li>• Low infant birth weight rate per 1000 live births in last year (Walter et al. 1999)</li> <li>• Teenage birth rate (Walter et al. 1999)</li> <li>• Hospital beds per 1000 people (Walter et al. 1999)</li> </ul>

Indicators are indexed by resiliency factor. To arrive at these examples, we initially vetted indicators from a much larger list obtained from the existing literature using the earlier discussed characteristics of high-quality criteria as a filter; however, we recommend that those communities interested in using indicators select or develop their own set so that it is useful, applicable, and appropriate to their unique situation.

## Conclusions

The topic of community resiliency remains an evolving field (Ratner and Moser 2009). The main purpose of this paper is to help decision makers and community leaders move British Columbia's forest communities towards successful community transitions by presenting relevant and useful information synthesized from the literature on community resiliency. We identified 15 resiliency factors that we interpret as factors in successful community transitions. These factors were identified not only from the resiliency literature related to forest-dependent communities but also from other related bodies of literature on resiliency. Much of what we cover here is not new; however, we have drawn on this somewhat vast and dispersed literature to provide a synthesis focused on British Columbia's forest communities. In so doing, we have been able to identify not just the key factors identified in the literature but also to tailor them to the opportunities and constraints of these forest communities.

Many of the 15 resiliency factors relate to resources (e.g., financial and natural resources, human and social capital) and power (e.g., local control over enterprise and policy influence). Some factors may require cultivation (e.g., attitude and high-quality planning), and others may require creative and innovative solutions (e.g., geography and availability of natural resources). Although economic well-being is at the heart of our view of a successful transition, these factors clearly indicate that success is broader than "money." Many of the factors are "process" criteria, or ingredients for success, but some are also "outcome" criteria, or results of success. For example, financial resources and social capital are critical ingredients of resiliency, but these factors are also indicators of success.

We recommend that decision makers and community leaders initiate assessments of their communities with respect to the 15 factors using indicators such as those we present in this paper. This assessment and monitoring should be conducted with stakeholder involvement. We also recommend that all

---

*In light of predictions that rural British Columbia will continue to be affected by serious disturbances, we advise that rural communities in this province focus broadly on enhancing their adaptive capacity.*

---

of the identified resiliency factors should be addressed as part of this process. As similarly concluded by Ratner and Moser (2009), we see little basis in focusing on one or some factors at the expense of others; all of the resiliency factors have a role to play in bringing about successful transitions. Magis (2010) introduced a Community Resilience Self-Assessment tool by identifying metrics in eight dimensions of community resilience. She suggested that communities test and utilize this tool to guide policies and practices to develop community resilience.

This research can be further expanded by testing the factors and indicators that we identify against the perspectives of community members and stakeholders in British Columbia. This would help fortify the science of community resiliency in general, as well as provide guidance to communities in the province. It would be appropriate to involve community members and stakeholders in validating and refining the resiliency factors through a case study approach or a broader survey of stakeholders across the province. Community members and stakeholders could be involved in developing an indicator list and conducting a collaborative evaluation of their communities' resiliency.

Forest-dependent communities in British Columbia have historically enjoyed relatively comfortable levels of wealth; however, these communities can no longer rely on the forest industry to sustain their economies. If economic well-being is to be maintained, then these communities will have to adapt. A key lesson is that resiliency and successful transitions are tied to a community's ability to adapt. Therefore, most of the identified resiliency factors relate to adaptability. Sustaining forest-dependent communities is primarily about accepting change and addressing it by adapting and reconfiguring (Beckley et al. 2002). Thus, the focus of natural resource policy-makers, managers, community leaders, and others interested in sustaining the province's forest-dependent communities should be on enhancing this ability to adapt. In light of predictions that rural

British Columbia will continue to be affected by serious disturbances, we advise that rural communities in this province focus broadly on enhancing their adaptive capacity. We also advise decision makers and leaders to prepare for the long term as developing resiliency will require a lot of time and commitment.

## Acknowledgements

This article benefitted from the comments, ideas, and suggestions of Dan Orcherton, Greg Halseth, Natasha Caverley, Tom Gunton, and three anonymous reviewers. We would also like to thank those who initially agreed to participate in an “expert survey.” Unfortunately, funding limitations prevented us from conducting this survey.

## References

- Adger, W.N. 2000. Social and ecological resilience: Are they related? *Progress in Human Geography* 24(3):347–364.
- Alessa, L., A. Kliskey, R. Lammers, C. Arp, D. White, L. Hinzman, and R. Busey. 2008. The Arctic water resource vulnerability index: An integrated assessment tool for community resilience and vulnerability with respect to freshwater. *Environmental Management* 42(3):523–541.
- Apedaile, L.P. 2004. The new rural economy. *In Building for success: Explorations of rural community and rural development*. Brandon University, Rural Development Institute, Brandon MB and Mount Allison University, Canadian Rural Revitalization Foundation, Sackville, NB. pp. 111–134.
- Apedaile, L.P., M. Nakagawa, and R. Bollman. 2004. Sensitivity of rural enterprises to globalization and trade liberalization: A Japan/Canada comparison. *In Building for success: Explorations of rural community and rural development*. Brandon University, Rural Development Institute, Brandon MB and Mount Allison University, Canadian Rural Revitalization Foundation, Sackville, NB. pp. 137–170.
- Barnes, T.J., R. Hayter, and E. Hay. 1999. “Too young to retire, too bloody old to work”: Forest industry restructuring and community response in Port Alberni, British Columbia. *Forestry Chronicle* 75(5):781–787.
- Beckley, T., J. Parkins, and R. Stedman. 2002. Indicators of forest-dependent community sustainability: The evolution of research. *Forestry Chronicle* 78(5):626–636.
- Beckley, T.M. 1995. Community stability and the relationship between economic and social well-being in forest-dependent communities. *Society and Natural Resources* 8(3):261–266.
- Beckley, T.M. and W. Reimer. 1999. Helping communities help themselves: Industry-community relations for sustainable timber-dependent communities. *Forestry Chronicle* 75(5):805–810.
- Bruce, D. and G. Halseth. 2004. The role of small business in community economic development. *In Building for success: Explorations of rural community and rural development*. Brandon University, Rural Development Institute, Brandon MB and Mount Allison University, Canadian Rural Revitalization Foundation, Sackville, NB. pp. 195–221.
- Canadian Council of Forest Ministers. 2003. Defining sustainable forest management in Canada: Criteria and indicators 2003. Ottawa, ON.
- Centre for Community Enterprise. 2000. The community resilience manual: Guide and workbook. CCE Publications, Port Alberni, BC.
- Cornell, S. and J.P. Kalt. 1992. Reloading the dice: Improving the chances for economic development on American Indian reservations. *In What can tribes do? Strategies and institutions in American Indian economic development*. University of California, American Indian Studies Center, Los Angeles, CA. p. 51.
- Dumont, B. and D. Wright. 2006. Generating more wealth from British Columbia’s timber: A review of British Columbia’s log export policies. Report to the BC Minister of Forests and Range, Victoria, BC.
- External Advisory Committee on Cities and Communities. 2006. From restless communities to resilient places: Building a stronger future for all Canadians. Infrastructure Canada, Ottawa, ON.
- First Nations Leadership Council and BC Ministry of Economic Development. 2007. Journey to economic independence: B.C. First Nations’ perspectives. [www.tted.gov.bc.ca/Publications/Documents/FNReportPrintMeg.pdf](http://www.tted.gov.bc.ca/Publications/Documents/FNReportPrintMeg.pdf) (Accessed June 2010).
- Frame, T.M., T.I. Gunton, and J.C. Day. 2004. The role of collaboration in environmental management: An evaluation of land and resource planning in British Columbia. *Journal of Environmental Planning and Management* 47(1):59–82.
- Gunton, T.I. and J.C. Day. 2003. The theory and practice of collaborative planning in resource and environmental Management. *Environments* 31(2):5–19.

- Halseth, G. and J. Lo. 1999. New voices in the debate: The Quesnel Women's Resource Centre and sustainable community development. *Forestry Chronicle* 75(5):799–804.
- Halseth, G., D. Manson, S. Markey, L. Lax, and O. Buttar. 2006. The connected north: Findings from the Northern BC Economic Vision and Strategy Project. *Journal of Rural and Community Development* 2(1):1–27.
- Halseth, G. and L. Ryser. 2006a. Service provision in rural and small town places: A report for Mackenzie, British Columbia. Project of the Canadian Rural Revitalization Foundation, Concordia University. Initiative on the New Economy, Montreal, QC.
- \_\_\_\_\_. 2006b. Service provision in rural and small town places: A report for Tumbler Ridge, British Columbia. Project of the Canadian Rural Revitalization Foundation, Concordia University. Initiative on the New Economy, Montreal, QC.
- Halseth, G., L. Sullivan, and L. Ryser. 2002. Service provision as part of resource town transition planning: A case from northern BC. Paper prepared for the New Rural Economy/Canadian Rural Revitalization Foundation conference, Mirimichi, NB. October 2002.
- Harshaw, H.W., S.R.J. Sheppard, and J.L. Lewis. 2007. A review and synthesis of social indicators for sustainable forest management. *BC Journal of Ecosystems and Management* 8(2):17–36. [www.forrex.org/publications/jem/ISS41/vol8\\_no2\\_art2.pdf](http://www.forrex.org/publications/jem/ISS41/vol8_no2_art2.pdf) (Accessed June 2010).
- Hayter, R. and T. Barnes. 1990. Innis' staple theory, exports, and recession: British Columbia, 1981–86. *Economic Geography* 66(2):156–173.
- Hickey, G.M. and J.L. Innes. 2005. Scientific review and gap analysis of sustainable forest management criteria and indicators initiatives. FORREX Forest Research Extension Partnership, Kamloops, BC. FORREX Series Report No. 17. [www.forrex.org/publications/forrexseries/fs17.pdf](http://www.forrex.org/publications/forrexseries/fs17.pdf) (Accessed June 2010).
- Horne, G. 2004. British Columbia's heartland at the dawn of the 21st century: 2001 economic dependencies and impact ratios for 63 local areas. BC Ministry of Labour and Citizens' Services, BC Stats, Victoria, BC.
- Joseph, C., T.I. Gunton, and J.C. Day. 2008. Implementation of resource management plans: Identifying keys to success. *Journal of Environmental Management* 88:594–606.
- Kunkel, T.I. 2008. Creating sustainable economic development within two B.C. First Nations communities: A rights-based approach. MA thesis, University of Northern British Columbia, Natural Resources and Environmental Studies, Prince George, BC.
- Ledogar, R.J. and J. Flemming. 2008. Social capital and resilience: A review of concepts and selected literature relevant to aboriginal youth resilience research. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health* 6(2):25–46.
- Lewis, M. 1998. Facing facts: The recovery of First Nation self-reliance requires building local organizational capacity. In *Community-based resource development and stewardship*. D. Weir (editor). Centre for Community Enterprise, Port Alberni, BC. pp. 2–8.
- Luckert, M.K. 1999. Are community forests the key to sustainable forest management? Some economic considerations. *Forestry Chronicle* 75(5):789–792.
- Magis, K. 2010. Community resilience: An indicator of social sustainability. *Society and Natural Resources* 23(5):401–416.
- Maleki, S. 2008. Understanding the social and economic transitions of forest communities. US Department of Agriculture Forest Service, Pacific Northwest Research Station, Portland, OR. Science Update No. 18.
- Markey, S., J.T. Pierce, K. Vodden, and M. Roseland. 2005. Second growth: Community economic development in rural British Columbia. University of British Columbia Press, Vancouver, BC.
- Markey, S.P. and J.T. Pierce. 1999. Forest-based communities and community stability in British Columbia. Simon Fraser University, CED Centre, Burnaby, B.C. Unpublished working paper.
- Marshall, N.A., D.M. Fenton, P.A. Marshall, and S.G. Suffon. 2007. How resource dependency can influence social resilience within a primary resource industry. *Rural Sociology* 72(3):359–390.
- Nadeau, S., B. Shindler, and C. Kakoyannis. 1999. Forest communities: New frameworks for assessing sustainability. *Forestry Chronicle* 75(5):747–754.
- Natcher, D.C. and C.G. Hickey. 2002. A criteria and indicators approach to community development.



- University of Alberta, Sustainable Forest Management Network, Edmonton, AB.
- Natural Resources Canada. 2009a. Canada's forests: Communities [website]. Ottawa, ON. <http://canadaforests.nrcan.gc.ca/article/communities> (Accessed June 2010).
- \_\_\_\_\_. 2009b. Forest communities: Weathering economic change [website]. <http://canadaforests.nrcan.gc.ca/article/economicreliance> (Accessed June 2010).
- Norris, F.H., S.P. Stevens, B. Pfefferbaum, K.F. Wyche, and R.L. Pfefferbaum. 2008. Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology* 41(1-2):127-150.
- O'Hagan, S. and B. Cecil. 2007. A macro-level approach to examining Canada's primary industry towns in a knowledge economy. *Journal of Rural and Community Development* 2(2):18-43.
- Parfitt, B. 2005. Getting more from our forests: Ten proposals for building stability in BC's forestry communities. Canadian Centre for Policy Alternatives, Vancouver, BC.
- Parkins, J. 1999. Enhancing social indicators research in a forest-dependent community. *Forestry Chronicle* 75(5):771-780.
- Parkins, J.R., J. Varghese, and R.C. Stedman. 2004. Identifying indicators of community sustainability in the Robson Valley, British Columbia. *BC Journal of Ecosystems and Management* 4(2):126-144. [www.forrex.org/publications/jem/ISS24/vol4\\_no2\\_art3.pdf](http://www.forrex.org/publications/jem/ISS24/vol4_no2_art3.pdf) (Accessed June 2010).
- Pearce, B. 2005. The use and abuse of indicators for evaluating land use and environmental planning: Experience from the UK. *In* Beyond benefit cost analysis: Accounting for non-market values in planning evaluation. D. Miller and D. Patassini (editors). Ashgate Publishing Company, Burlington, VT. pp. 127-150.
- Pearce, C. 2005. Natural resources and community vitality: A rural perspective. *BC Journal of Ecosystems and Management* 6(2):63-69. [www.forrex.org/publications/jem/ISS31/vol6\\_no2\\_art6.pdf](http://www.forrex.org/publications/jem/ISS31/vol6_no2_art6.pdf) (Accessed June 2010).
- Quigley, T.M., R.W. Haynes, and R.T. Graham (editors). 1996. Integrated scientific assessment for ecosystem management in the interior Columbia Basin and portions of the Klamath and Great Basins. US Department of Agriculture Forest Service, Pacific Northwest Research Station, Portland, OR. PNW-GTR-382.
- Ratner, S. and S. Moser. 2009. Community resilience and wealth: The challenges and opportunities for rural communities in a rapidly changing world. US Endowment for Forestry and Communities, Greenville, SC.
- Reed, M.G. 1999. "Jobs talk": Retreating from the social sustainability of forestry communities. *Forestry Chronicle* 75(5):755-763.
- Reed, P. 2000. Developing civic indicators and community accounting in Canada. Statistics Canada and Carleton University, Ottawa, ON.
- Sarah L. Cunningham Consulting and DPRA. 2008. Attraction and retention strategy. Omineca Beetle Action Coalition, Prince George, BC. [www.ominecoalition.ca/Strategies/RetentionAndAttraction/pdf/OBAC-Attraction\\_Retention\\_Strategy.pdf](http://www.ominecoalition.ca/Strategies/RetentionAndAttraction/pdf/OBAC-Attraction_Retention_Strategy.pdf) (Accessed June 2010).
- Schooling, J.T. and V. Cumming. 2005. Adding value, innovating, and collaborating: Lessons learned through economic diversification in forest-dependent communities. *BC Journal of Ecosystems and Management* 6(2):70-80. [www.forrex.org/publications/jem/ISS31/vol6\\_no2\\_art7.pdf](http://www.forrex.org/publications/jem/ISS31/vol6_no2_art7.pdf) (Accessed June 2010).
- Sherry, E., R. Halseth, G. Fondahl, M. Karjala, and B. Leon. 2005. Local-level criteria and indicators: An Aboriginal perspective on sustainable forest management. *Forestry* 78(5):513-539.
- Sullivan, L.M. and G. Halseth. 2004. Responses of volunteer groups in rural Canada to changing funding and services needs: Mackenzie and Tumbler Ridge, British Columbia. *In* Building for success: Explorations of rural community and rural development. Brandon University, Rural Development Institute, Brandon MB and Mount Allison University, Canadian Rural Revitalization Foundation, Sackville, NB. pp. 337-362.
- Sustainable Forest Management Research Group. n.d. Common ground project: Sustainable forest management indicator knowledge base British Columbia 2007. [http://bc2007.sfmindicators.org/?q=common\\_ground\\_project](http://bc2007.sfmindicators.org/?q=common_ground_project) (Accessed June 2010).
- Treseder, L. and N.T. Krogman. 1999. Features of First Nation forest management institutions and

implications for sustainability. *Forestry Chronicle* 75(5):793–798.

Varghese, J., N.T. Krogman, T.M. Beckley, and S. Nadeau. 2006. Critical analysis of the relationship between local ownership and community resiliency. *Rural Sociology* 71(3):505–527.

Walker, I.J. and R. Sydneysmith. 2008. British Columbia. *In* From impacts to adaption: Canada in a changing climate 2007. Ottawa, ON. pp. 329–386.

Wall, E. and T. Fuller. 2004. Profitable associations: The role of social capital in rural economic development. *In* Building for success: Explorations of rural community and rural development. Brandon University, Rural Development Institute, Brandon MB and Mount Allison University, Canadian Rural Revitalization Foundation, Sackville, NB. pp. 281–308.

Walter, G.R. and O. Wilkerson. 1998. Community sustainability auditing. *Journal of Environmental Planning and Management* 41(6):673–691.

Walter, G.R., O. Wilkerson, L. Cornwell, E. Shabaneh, K. Shinohara, and E. Storzer. 1999. Economic audit report: Vanderhoof. Sustainable Communities Initiative. Unpublished report.

Wright, D. 2007. Responding to the challenge of the mountain pine beetle. Business Council of British Columbia and Council of Forest Industries, Vancouver, BC.

Young, N. 2008. Radical neoliberalism in British Columbia: Remaking rural geographies. *Canadian Journal of Sociology* 33(1):36.

Young, N. and R. Matthews. 2005. Spatial strategies for rural development in British Columbia. Unpublished draft.

---

ARTICLE RECEIVED: September 11, 2009

ARTICLE ACCEPTED: May 7, 2010



Production of this article was funded, in part, by the British Columbia Ministry of Forests and Range through the Forest Investment Account–Forest Science Program.

© 2010. Copyright in this article is the property of FORREX Forum for Research and Extension in Natural Resources Society.

ISSN 1488-4674. Articles or contributions in this publication may be reproduced in electronic or print form for use free of charge to the recipient in educational, training, and not-for-profit activities provided that their source and authorship are fully acknowledged. However, reproduction, adaptation, translation, application to other forms or media, or any other use of these works, in whole or in part, for commercial use, resale, or redistribution, requires the written consent of FORREX Forum for Research and Extension in Natural Resources Society and of all contributing copyright owners. This publication and the articles and contributions herein may not be made accessible to the public over the Internet without the written consent of FORREX. For consents, contact: Managing Editor, FORREX, Suite 400, 235 1st Avenue, Kamloops, BC V2C 3J4, or email [jem@forrex.org](mailto:jem@forrex.org)

The information and opinions expressed in this publication are those of the respective authors and FORREX does not warrant their accuracy or reliability, and expressly disclaims any liability in relation thereto.

## Test Your Knowledge . . .

### *Factors of resiliency for forest communities in transition in British Columbia*

How well can you recall some of the main messages in the preceding Discussion Paper?

Test your knowledge by answering the following questions. Answers are at the bottom of the page.

1. Which of the following best defines community resiliency?
  - A) Availability of jobs in the community
  - B) Ability to adapt to face change and transition
  - C) A constant and stable flow of economic benefits to a community
  - D) Presence of leadership in the community
  
2. Economic diversity is identified as one of the 15 factors of community resiliency. According to the authors, which is the most important asset or characteristic that contributes to diversity in the local economy?
  - A) Availability of ample natural resources
  - B) Accessibility to diverse markets
  - C) Equal contribution of diverse sectors to the local economy
  - D) Ability to compete with products from other parts of the world
  
3. The authors also identify social capital as one of the 15 factors of community resiliency. Which phrase least defines social capital?
  - A) Social cohesion within the community, and the degree to which values are shared
  - B) Willingness of community members to co-operate and mobilize resources
  - C) Strength of relationships amongst community members and with outside parties
  - D) Community members having similar ethnicity and background

---

### **ANSWERS**

1. B 2. C 3. D