



Society's Forest Values

Peter N Duinker

*Report #11 in the Series on “Drivers of Change in Canada’s Forests and Forest Sector”,
prepared for the Forest Futures Project of the SFM Network, University of Alberta*

January 2008

1. Introduction

People’s values associated with forests drive and direct their use and management (Cubbage et al., 2007). According to Lawrence (2004), “Amongst all the environmental [sectors], forestry is perhaps the one that has to recognize and work with the values of the widest range of social groups. Forests affect the interests of everyone . . .”. Indeed, Lawrence (2004) credits Jack Westoby as saying in the late 1960s: “Forestry is not about trees, it is about people”. During his speech at the 2007 International Congress on A Global Vision of Forestry in the 21st Century (University of Toronto), wellknown forest ecologist Jerry Franklin stated that “. . . forestry is a social science”!

In this paper, forest values are taken to mean the various ways in which forests are important to people. This covers the full range of values that people associate with forests. Economic, social, ecological, and cultural domains represent common categories of forest values. Comprehensive frameworks of forest values have recently been developed. The criteria and indicators of sustainable forest management (C&I-SFM) published by the Canadian Council of Forest Ministers (CCFM 2003; see Appendix I) is, despite its flaws, a well-established framework used across Canada. Based on the work of David Bengston in the north-central US, Moyer et al. (2007) constructed a forest-values framework (Figure 1) that accounts more thoroughly for non-material forest values, especially those associated with old-growth forests. These frameworks demonstrate the breadth of topics and themes that must be considered when one aspires to understand the forest values of Canadians.

The purpose of this paper is to explore how Canadians’ forest values could evolve over the next several decades, and to draw attention to the importance of those future changes in values for the forests and forest sector. The paper’s scope is laid out first. It continues with a brief look at how values link with various driving forces. Following a summary of forest-value developments in Canada in the past half century, it then explores the ways in which forest values could develop halfway into the 21st century. It concludes with encouragement to the forest-policy community, and indeed all forest stakeholders, to understand much more deeply what the various forest values are, how those values are consistent with or compete with each other, and how value systems can be more rigorously and thoughtfully considered in forest and forest-sector decision-making.

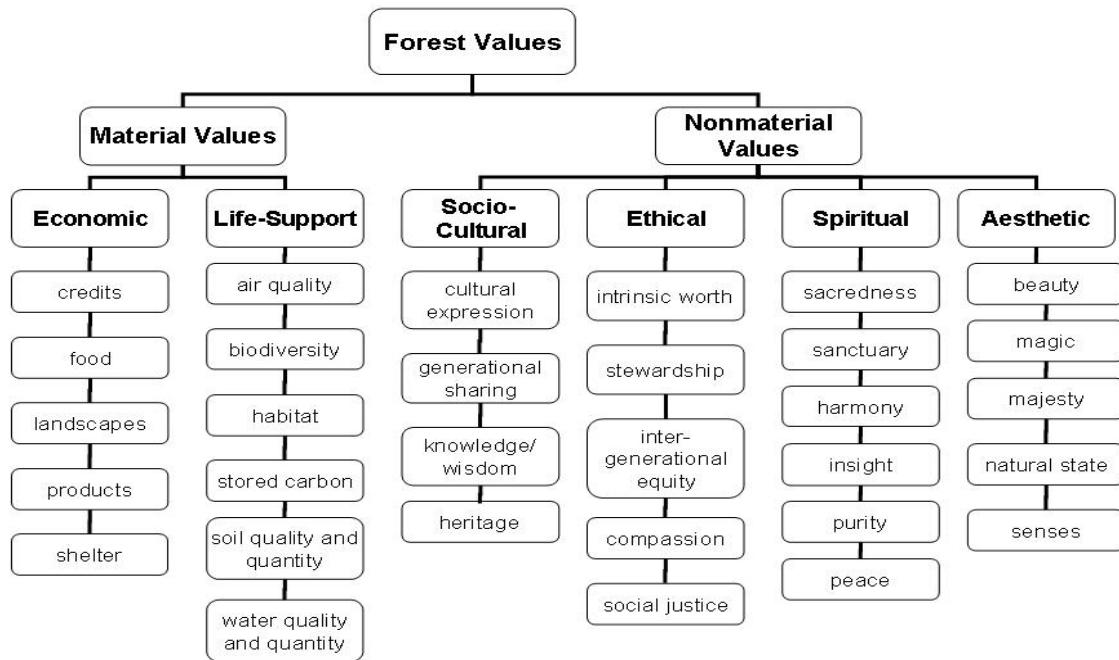


Figure 1. A forest-values framework (Moyer et al. 2007). While the framework was developed to capture more values associated with old-growth forests, it has utility for forests in general.

2. Scope of the Paper

In this paper, values related directly to forests are of central interest. However, we need to understand the forest values in the broader context of environmental values, and indeed in an even broader context of societal values in general (e.g., values associated with material consumption, governance, immigration/racism, health, education, and other important domains). Discussion below considers mainly the forest values of Canadians¹. Canadian forest values vary through time and across space. As the paper will show, forest values are dynamic and can evolve significantly (Bengston, 1994), perhaps not so evident year by year but certainly decade by decade. Value shifts may arise from a variety of stimuli (Lawrence, 2004) including economic conditions (e.g., whether we are relatively rich or poor, whether the forest industry is thriving or declining), environmental conditions (e.g., pollution situation, climatic anomalies), educational initiatives (e.g., curricula for school children), demographic shifts (e.g., our place of residence, the cultural backgrounds of immigrants), religious orientations (e.g., whether we are fundamentalist or liberal, or hold to any identifiable faith), media messaging (e.g., television coverage of environmental topics), technological advances (e.g., the Internet), and others. Given Canada's vast spatial extent and its wide diversity of types of forest ecosystems, plus the distinct patterns of rural/urban settlement across the country, forest values may well vary from region to region and province to province. Variation in the forest values of people living in this country may also be found in the distinctions between Aboriginal peoples and non-Aboriginals (e.g.,



Sherry et al., 2005), and among the latter between Canadians of long heritage and those born elsewhere.

A vexing problem in considering a society's forest values is whether the examination should look at individual or collective values. To say that Canadians collectively hold a specific and consistent set of forest values is clearly false. On the other hand, it is probably fair to say that Canadians collectively view land, and particularly forest land, as important. Nonetheless, each Canadian who thinks at all about forests has a unique personal set of forest values. These may align well with others of like mind, particularly as individuals associate into groups such as recreational or environmental groups, to name just two of many that are concerned about forests. In this short paper it is necessary to make generalizations, and these will frequently and implicitly hide huge variations and exceptions. The paper tries to capture at least the most obvious divisions among value sets held by various groups of Canadians.

3. Values in the Context of Other Drivers of Change

People's values, both individually and collectively, determine their attitudes and direct their decisions and actions. This influence extends beyond the forests and the sector themselves to most other drivers of change (see Appendix II). For example, how Canadians value wood products can affect forest-products demand in Canada, although to a modest degree given the present emphasis of the industry on export markets. Canadians' values will play a strong role in determining Canada's energy future - will we favour oil over nuclear energy, and how important are renewables? This depends partly on our values with respect to technology, especially those with high levels of perceived risk (e.g., nuclear energy).

Our values have a strong influence on how we choose to govern forest use and management. For example, do we want more government regulation, corporate power, or community control associated with forests? They are also strong determinants of the political relationships between Canadian governments (i.e., federal, provincial and territorial) and Aboriginal governments. Our values strongly determine how land and other resources are used and how we deal with and manage potential and actual conflicts. They influence population growth and the shape of the age-class profile, as well as our willingness to accept more immigrants to Canada.

Our values for forests do not exist in a vacuum. Among the many influences on forest values are indeed other drivers as considered in the companion papers (see Appendix II). For example, the more that climate change affects forests adversely, the greater the possible influence on the ways we value forests. Depending on circumstances, climate change might lead to increased importance of some values (e.g., if climate change worsens habitat conditions for forest species at risk, we might value such species even more highly, as demonstrated by allocating more resources to recovery) and decreased importance of others (e.g., if climate change leads to forest decline, we might value forest recreation less and focus recreational activities elsewhere, such as ocean shorelines).

If global wood supplies tighten or forest-products demands increase, then Canadians may value



their forests more highly over time for wood production. The converse may also be true. Global energy futures will affect how Canadians think about their own energy futures, and this will connect to forests if they are implicated in biomass energy production. Changes in human age-class structures (e.g., more older people, fewer younger people) may bring changes in the way forests are valued. The same can be said for people's choice of residence (e.g., more urban people, fewer rural people) and the evolving cultural heritage of people who make Canada home (e.g. more people born outside Canada, fewer people born here).

Ways in which the forest values of Canadians drive forest use and management manifest themselves differently depending on circumstances. For example, there are several hundred thousand woodlot owners in Canada, most of whom are Canadian citizens. Each has a value set that, within the limits of the law and the vagaries of the economy, determines how that person's woodlot is used and managed. For larger parcels of privately owned wood-producing forest, the values of companies determine forest use and management. If the shareholders are Canadian, then clearly Canadian values are driving forest use and management to a large extent. If the shareholders live outside Canada, then Canadians' values are satisfied only through legal, economic and possibly advocacy channels.

The vast majority of Canada's rural forests are owned and managed by governments, primarily provincial ones. This ownership is encumbered by Aboriginal peoples' claims, either through historic treaties, contemporary land claims, or Aboriginal title where no agreements with governments have been negotiated. Our values can be injected into forest use and management through two approaches to democracy. In representative democracy, we put in place governments that reflect our collective higher-order values. In participatory democracy, we have access to a range of forest management and policy decision-making processes. Forest certification schemes represent yet an additional mechanism whereby Canadians' values can be injected into forest decision-making.

4. A Look-back: Evolution of Canadian Forest Values since 1970

Below are two approaches to examining Canadians' forest values over the past few decades: (a) a recounting of key issues and policy initiatives associated with forest use and management; and (b) a sampling of forest-values surveys conducted in the 1990s and 2000s. The decade of the 1960s witnessed profound changes in the way North Americans viewed the biophysical environment. Carson's (1962) book "Silent Spring" is often cited as an early signal that environmental quality needed to be looked after as rapid economic development proceeded and natural resources used. In Canada, in the few years before and after 1970, departments of environment were set up in governments, both provincial and federal, and environmental protection legislation and assessment processes put in place. Many environmental NGOs (non-government organizations) can trace their origins to this same period.

Forests in Canada were still, by and large, seen as a source of fibre for Canadian industry. Hinterlands were still being opened up with new roads (recall the "Roads to Resources" program of the Government of Canada in the early 1960s), and in parts of Canada new timber tenures still



being developed (e.g., Ontario's forest-management agreements in the late 1970s). Pockets of clear environmental consciousness associated with forest use and management were evident here and there, but in the main the country was driven by an industrial forest-management paradigm. Probably the greatest attention to any issues of resource stewardship came in the form of investments by both federal and provincial governments in artificial regeneration - i.e., planting up the so-called regeneration backlog. This demonstrates that Canadians were indeed concerned about forest sustainability well before that term was in popular use.

In the late 1980s and into the 1990s, Canadians signalled to their political and business leaders that environment mattered much more than ever, and so did participatory process. The Brundtland Commission's (WCED 1987) visit to Canada in 1986 can be seen as a watershed event. Subsequently, the federal and provincial governments set up sustainable development roundtables, the federal government established its green plan, and climate change started to capture the attention of the scientific community. Regarding forests, we witnessed, for example, the shift from a 1987 expert-developed Canadian Forest Sector Strategy to a 1992 stakeholder-developed Canadian Forest Strategy. Also in 1992, the Canadian Forest Service established the Canadian Model Forest Program, a network of some ten working landscapes dedicated to discovering and demonstrating socially, ecologically and economically sustainable practices. In 1995, Canada embraced a broad definition of sustainable forest management by establishing its first comprehensive set of C&I-SFM (see Appendix 1).

The national scene and the federal government were not alone in this process of sweeping change. Initiatives of provincial governments, industry and non-government organizations also embraced and reflected a growing interest in non-timber forest values (see Hoberg's paper on Governance). Protected areas also became a key theme for the 1990s. These are relevant in any discussion about Canadian forests because so much of the landbase of interest to protect is forested. World Wildlife Fund Canada launched the endangered spaces campaign, and attempts to expand the protected-areas systems in each province ensued. While there were significant gains, the agenda was by no means completed by the end of the 20th century, so we continue to see efforts on this front.

Turning now to the results of values-oriented surveys, it is clear that North Americans (and, indeed, people in many other countries) strongly valued environmental quality in the last decades of the 20th century (Dunlap et al. 1993). Canadian adults spend large amounts of time and money on nature-related activities (DuWors et al. 1999). The valuation of Canadian forests for environmental conservation is striking - a 1991 public-opinion poll (Forestry Canada 1992) was firmly corroborated by a 1996 survey (Robinson et al. 1997) in that respondents overwhelmingly prized forests for their ecological roles ahead of their economic contributions. The USDA Forest Service found similar trends in respect of national forests in the US (Shields et al. 2002). These results generally apply across all types and ages of citizens, and are even mirrored by woodlot owners, at least in the Maritimes. In workshop settings, more woodlot owners in central Nova Scotia expressed the importance of their woodlots for ecosystem protection than for financial gain (Duinker and Colborne 1999).



What explains the apparent shift of Canadian forest values during the last decades of the 20th century from forests as materials producers and recreational venues to forests as ecosystems for conservation and protection? Above I alluded to several stimuli that push our values in various directions. Some combination of demographic developments, improved economic conditions for most Canadians, technological advances, and media-based messaging (and perhaps other drivers) has led us to a point where we at least claim to value forests strongly for environmental protection rather than for forest-based goods. I do not believe this to be a reflection of a truly post-materialistic society - never in recent history have we devoured consumer goods at the rate we do today. Such post-materialism may one day arrive, but it is not here yet. Environmental conservation is significantly honoured in our words but yet significantly flaunted in our deeds.

5. A Look-ahead: Future Scenarios for Societal Forest Values to 2050

It is anybody's guess as to how Canadian's forest values could evolve over the next several decades. Values are totally enveloped in the mind, and the mind can change the value set in fully unexpected ways. I proceed by positing several possible tensions along spectrums of values associated with several key value-related themes.

5.1 Theme-related Value Possibilities

Value Intensification vs. Dissipation - Vital to future forest policy in Canada is how intensely citizens care about the nation's forests. One hypothesis is that Canadians will value trees and forests more and more with time as they come to understand better how important trees and forests are to their economic, ecological and socio-cultural well-being. Thus, the strength of people's values for forests will rise in relation to values for other important things in life, and the array of values will remain broad and perhaps even broaden.

In some respects, forests are to people like oceans - they are ecosystems that provide innumerable benefits. However, they are unlike oceans in the sense that we can actually live IN them (we can only live ON the surface of oceans for any length of time). Because trees are the largest above-ground plants, where they exist they have profound influences on our material and psycho-social well-being. It is clear that, at least as revealed in expression if not action, Canadians - both those living in/near dense rural forests and those living in cities, prairies and other places - care deeply about and for forests. Thus, the hypothesis paints a future where Canadians will continue to hold and express strong feelings about forests, and that they will ever more greatly appreciate the potential of forests to satisfy a broad array of values.

The alternative hypothesis is that Canadians will value forests less strongly over time. Educational and awareness-building programs notwithstanding, this could occur through the ongoing processes of urbanization and immigration of peoples from countries where forests are relatively less important. Urbanization puts long-time residents of Canada further from the rural forests, and here presumes that the effect is more one of "out of sight, out of mind" rather than "absence makes the heart grow fonder". Immigration admits new Canadians whose value sets may or may not include strong feelings about or for forests.



Ecocentrism vs. Anthropocentrism - In an ecocentric or nature-oriented point of view, people value forests for what they are, independent of what they can provide for people or how they affect people. Some have described this as intrinsic value, i.e., forests are valued in and of themselves. This is a “for the forest” view, because it does not depend on what people gain for themselves in valuing the forest except, of course, the potential satisfaction of valuing forests this way. In the anthropocentric or people-oriented point of view, people value forests for what forests can provide for them in terms of material and non-material benefits. This view puts the human condition first. Forests themselves only matter to the extent that they can support human health and welfare. In the future, compared to today, will Canadians become more ecocentric or more anthropocentric in their forest values? To what degree can these values become complementary? This had profound implications for how, and how intensively, we will use and manage the forests.

Material vs. Non-Material Values - In terms of the language used in Figure 1, material values relate to physical goods (e.g., timber, mushrooms) and services (water purification, carbon storage), whereas non-material values associate with influences on our feelings (e.g., anxiety, peacefulness, optimism, happiness) (Moyer et al., 2007). Compared to today, do we expect Canadians to become more materialistic in their outlook on forests, whereby material goods and ecological services become most important, or will a non-material outlook prevail? Will Canadians tend toward non-use preservation of forest ecosystems, or toward sustainable use? Can these value sets be simultaneously satisfied in the same forest?

There is also a potentially important sub-divide within material values related to timber vs. non-timber values. Canadians could value forests mainly for their supply of timber and the many uses to which we can put timber in both subsistence and market economies. Alternative, Canadians could value forests more for things like water conservation, carbon storage, production of fish, wildlife and plant materials (e.g., mushrooms, berries, medicines) for human consumption, and other physical deliverables.

Individualism vs. Communitarianism - In an individualistic point of view, each person considers him or her self to be the most important social unit to satisfy. Satisfaction of forest-related values is assessed in relation only to the self. In a community-oriented view, individuals are willing to sacrifice satisfaction of their own values for the good of all members of the community. Community here could extend to as small a unit as the nuclear family, through the village or parish, right up to the region, province or even the whole country. The question then arises whether, compared to today, will Canadians become more individualistic and seek to satisfy the self when it comes to forests, or more communitarian and seek to satisfy the broader needs and wishes of the group?

Cooperation vs. Competition - In cooperative behaviour, individuals and groups work together to satisfy their needs and wants, preferring the principles of negotiation and accommodation to achieve desired outcomes. All participants are expected to become winners. In competitive behaviour, individuals and groups work against each other, seeking to maximize their own



benefits even at the expense of others. Some in this game are expected to become winners, and others losers. Conflict is routine. In reality, it often happens that cooperative and competitive behaviours overlap. For example, the players on a hockey team must cooperate so that the team can be competitive and possibly win. The employees of a firm need to cooperate so that their products or services can be competitive and dominate the marketplace. In the future, compared to today, will Canadians take cooperative approaches to forest use and management, or will they favour competitive processes?

Short-term vs. Long-term Thinking - Some people take the view that future generations can solve their own problems, and the problems we must tackle today are the ones people are experiencing today. A most poignant expression of such thinking arises when forestry professionals reveal that they are trying to keep their systems functioning at least until they retire, after which the problems become someone else's. Another view is that our grandchildren, and even the unborn, should inherit forests that are in better condition than those we inherited from our own parents. In the future, will Canadians shift more toward a mentality of instant gratification that leads to forests facing ever-increasing challenges, or will they increasingly agree to tread more lightly today so that future generations inherit improved forest ecosystems full of opportunity?

5.3 Bundling the Outcomes of Several Values-related Themes

The Forest Futures Project is using forest values and environmental change as the key drivers to define a concept space in which to develop four scenarios. Given the theme-oriented discussion above, is it necessary to combine the theme-based outcomes in a logical way at the ends of a values spectrum. Thus, in aggregate, I posit the following two possible futures for Canadians' forest values over the next 40 years:

- (a) a future in which Canadians are by and large anthropocentric, individualistic, materialistic, and competitive (with timber as a dominant forest product); and
- (b) a future in which Canadians are by and large ecocentric, communitarian, non-materialistic, and cooperative (with timber at best a sub-dominant forest product).

Admittedly these are extreme caricatures of a broad situation that, when translated in reality, will surely not resemble either extreme. Rather, reality will serve up a broad and complex mix of values and attendant attitudes and behaviours, with some individuals at the extremes and many in the middle. Nevertheless, the key in scenario analysis is to explore possible futures that are substantially different from each other, and at least not impossible even if undesirable. The alternative futures sketched above are indeed that.

6. Conclusions

Our values condition our attitudes, behaviours and actions which in turn influence the forests - the way they are used or indeed not used - and thus the way they will respond to our actions. No



part of how we deal with forests is devoid of strong values influences - not even the scientific pursuit of research to reduce uncertainties in the biophysical relationships. This argues for continually strengthened understandings among all stakeholders of the values they bring to any table or any set of actions in the woods - understandings of both their own values and those of others. Particularly important is the need for forest managers to understand better the values of forest owners and stakeholders (Bengston, 1994). Much more research - and more-incisive research - is needed to reduce the many profound lingering uncertainties about forest values, and environmental values more generally (Dietz et al., 2005).

Canadians are not all the same in respect of the value sets they hold for forests. There are indeed dramatic differences in the forest value sets across the entire range of this country's citizens. While such diversity is to be respected, we must find ways of harmonizing at least some major forest values across Canada's diverse citizenry so that appropriate management and policy directions become clearer.

Notes:

1. A focus on Canadian values allows one to avoid the quagmire of trying to understand the forest values of influential societies and groups elsewhere in the world. "Influential" is the operative word - how might the values of non-Canadians affect how Canadian forests are used and managed? Such influence might be wielded in a number of ways - through international governance mechanisms such as the United Nations, through market-based mechanisms such as forest certification, or through other measures such as bilateral trade actions. Three examples demonstrate clearly the importance of accounting for how people in other countries and continents value Canadian forests. All are relevant in the context of Canada's forest sector being so strongly export-driven. First, the strong calls by European branches of the environmental advocacy group Greenpeace for a cessation of commercial timber harvests in Canada's boreal forests cannot be ignored. Second, third-party certification of forest products, driven in large part by values of people outside Canada, have arguably contributed to the greening of Canadian forest practices over the past decade or two. Third, the fortunes of at least parts of Canada's lumber industry have been compromised due to trade protectionism actions taken in the USA. Despite such possibilities for non-Canadians' values to drive forest use and management in this country, I proceed on the premise that Canadians are by and large in charge of their own destiny and that of the forests.



7. Literature Cited

- Bengston, D.N. 1994. Changing forest values and ecosystem management. *Society and Natural Resources* 7:515-533.
- Carson, R.L. 1962. *Silent Spring*. Houghton Mifflin, Boston, MA.
- CCFM. 2003. *Defining Sustainable Forest Management in Canada: Criteria and Indicators 2003*. Canadian Council of Forest Ministers, Ottawa, ON.
- Cubbage, F., P. Harou and E. Sills. 2007. Policy instruments to enhance multi-functional forest management. *Forest Policy and Economics* 9:833-851.
- Dietz, T., A. Fitzgerald and R. Shwom. 2005. Environmental values. *Annual Review of Environment and Resources* 30:335-372.
- Duinker, P.N. and R. Colborne. 1999. *Opinions and Attitudes of Woodland Owners in Central Nova Scotia: Results of Six Workshops for the Nova Forest Alliance*. Report prepared for the Nova Forest Alliance, Stewiacke, NS. 18 pp.
- Dunlap, R.E., G.H. Gallup, Jr., and A.M. Gallup. 1993. *Health of the Planet: A George H. Gallup Memorial Survey*. Gallup International Institute, Princeton, NJ. 155 pp.
- DuWors, E., M. Villeneuve, F.L. Filion, R. Reid, P. Bouchard, D. Legg, P. Boxall, T. Williamson, A. Bath and S. Meis. 1999. *The Importance of Nature to Canadians: Survey Highlights*. Environment Canada, Ottawa, ON.
- Forestry Canada. 1992. *The State of Canada's Forests 1991*. Forestry Canada, Ottawa, ON.
- Lawrence, A. 2004. Social values of forests. In: *Encyclopaedia of Forest Sciences* (J. Burley, J. Evans and J. Youngquist, editors), pp. 1126-1131. Elsevier, Oxford, UK.
- Moyer, J.M., R.J. Owen and P.N. Duinker. 2007. *A forest-values framework for old growth*. Submitted to *The Open Forest Science Journal*.
- Robinson, D., A. Hawley, and M. Robson. 1997. *Social Valuation of the McGregor Model Forest: Assessing Canadian Public Opinion on Forest Values & Forest Management: Results of the 1996 Canadian Forest Survey*. McGregor Model Forest Association, Prince George, BC.
- 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): doi:10.1093/forestry/cpi048.
- Shields, D.J., I.M. Martin, W.E. Martin and M.A. Haefele. 2002. *Survey Results of the*



American Public's Values, Objectives, Beliefs, and Attitudes Regarding Forests and Grasslands.
General Technical Report RMRS-GTR-95, Rocky Mountain Research Station, USDA Forest
Service, Fort Collins, CO. 111 pp.



Appendix I. Criteria and elements from the CCFM's C&I-SFM (CCFM 2003).

Note: in practical local application (e.g., the CSA's Z809 Sustainable Forest Management Standard), when users identify a specific forest value not represented among the criteria or elements, they are encouraged to add criteria or elements as necessary. For example, the framework below has been criticized for ignoring non-economic social benefits that should have been better represented among the elements associated with criterion #5 on economic and social benefits.

Criterion	Element
1. Biological Diversity	1.1 Ecosystem diversity
	1.2 Species diversity
	1.3 Genetic diversity
2. Ecosystem Condition and Productivity	
3. Soil and Water	
4. Role in Global Ecological Cycles	4.1 Carbon cycle
5. Economic and Social Benefits	5.1 Economic benefits
	5.2 Distribution of benefits
	5.3 Sustainability of benefits
6. Society's Responsibility	6.1 Aboriginal and treaty rights
	6.2 Aboriginal traditional land use and forest-based ecological knowledge
	6.3 Forest community well-being and resilience
	6.4 Fair and effective decision-making
	6.5 Informed decision-making



Appendix II - Interactions of Society's Forest Values with Other Forest Drivers

Table A1. Influences of Canadians' values on other drivers.

Driver	How Canadians' Values Affect the Driver
Forest Products Demand	How Canadians value wood products can affect forest-products demand in Canada, but will have little direct influence elsewhere, given the export nature of our forest-products industry.
Geopolitics	Our broadest values will determine Canada's willingness to accept environmental refugees to relocate to Canada, our willingness to engage in wars, our stance on terrorism, etc.
Global Energy	Canada is a minor player in global energy supplies and demands. However, Canadians' values can play a strong role in determining what Canada's energy future is (e.g., oil vs. nuclear vs. renewables)
Technology	Canadians' values have little direct influence on what technologies are invented and developed, but can have strong influence on the degree of adoption of some technologies, especially those with high levels of perceived risk (e.g., chemical pesticides, nuclear energy)
Governance	Our values have a strong influence on how we choose to govern use and management of forests.
Aboriginal Empowerment	Our broader societal values will be strong determinants of the political relationships between Canadian governments (i.e., federal, provincial and territorial) and Aboriginal governments. These governments may be influenced by global values through forums such as the UN Permanent Forum on Indigenous Issues and instruments such as the Declaration on the Rights of Indigenous Peoples. Aboriginal peoples' values will be strong determinants of their sense and reality of empowerment.
Ecosystem Health	To the extent that ecosystem health is determined by pollutants produced in Canada, and domestic ecosystem management practices, our broader values can indeed have significant influence on the health of forest ecosystems.
Competition for Resources	Our values strongly determine how land and other resources are used and how we deal with and manage potential and actual conflicts.
Demographics	Our broader values (e.g., smaller families) influence population growth and the shape of the age-class profile. As noted above, they also shape our willingness to accept more immigrants to Canada.
Industry Structure	The structure of Canada's forest-products industry - traditional or otherwise - will be driven largely by our demands for forest products and by our tolerances for aspects of industrial structure such as corporate concentration and foreign ownership.



Table A2. Influences of other drivers on Canadians' forest values.

Driver	How the Driver May Affect Canadians' Forest Values
Global Climate Change	The more that climate change affects forests adversely, the greater the possible influence on the ways we value forests. Depending on circumstances, climate change might lead to increased importance of some values (e.g., if climate change exacerbates the habitat adversities of forest species at risk, we might value such species even more highly, as demonstrated by allocating more resources to recovery) and decreased importance of others (e.g., if climate change leads to forest decline, we might value forest recreation less and focus recreational activities elsewhere, such as ocean shorelines).
Global Wood Supply	If global wood supplies tighten, then Canadians may value their forests more highly for wood production. The converse may also be true.
Forest Products Demand	Increases in global wood-fibre demand may lead us to value wood production more highly. The converse may also be true.
Geopolitics	How international peace or strife plays out, including war, terrorism, environmental crises, etc., may well affect how Canadians view their society and their forests.
Global Energy	Global energy futures will affect how Canadians think about their own energy futures. This will connect to forests if they are implicated in energy production through biomass.
Technology	Various forms of technology - e.g., information technology - affect our behaviours, and probably, over time, our basic values.
Ecosystem Health	See Global Climate Change.
Competition for Resources	If competition for resources such as land is intense and leads to conflict, Canadians may change their forest values.
Demographics	Changes in age-class structures may bring changes in the way forests are valued (e.g., more older people, fewer younger people - differences in forest values with age; more urban people, fewer rural people; more people born outside Canada, fewer people born here).