



Nova Forest Alliance
Nova Scotia's Model Forest Project
Criteria and Indicators - Status Report
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BACKGROUND

The notion of Criteria and Indicators of Sustainable Forest Management recently came into prominence in 1993 when the Canadian Council of Forest Ministers stated the need for a system to measure performance of Sustainable Forest Management. In 1997 a framework for Criteria and Indicators (C & I) was released by the Canadian Council of Forest Ministers (CCFM), and each province was challenged to adopt the framework and apply it provincially. In 1996 each of the Model Forests were encouraged to adopt the C & I framework at the local level and develop local level indicators. The Nova Forest Alliance (NFA) in its proposal to the Model Forest Network has committed to develop a sustainable forest management process. The development of a set of criteria and indicators for the conservation and sustainable development of the Nova Forest Alliance forest area is needed. To accomplish this, a Criteria and Indicators Committee was established to focus on the development of criteria and local level indicators for the Nova Forest Alliance.

The premise adopted by the NFA Partnership is that by working together we can develop a better sustainable forest management indicator process more quickly and less expensively than any of the partners doing it alone. The process began, in October of 1998, with an adoption of the approach developed by the Canadian Council of Forest Ministers. This decision recognized the extensive amount of work done by the CCFM on the values and objectives, and the significant public involvement in the process. While the adoption of a national approach to the general criteria created an excellent starting point for the Model Forest, the development, application and monitoring of the indicators must be done at a local level. This is necessary because only at the local level can there be a true account of local level achievement regarding forest management. What was agreed upon nationally and adopted locally was that the indicators selected should allow us to analyze the forest in terms of environmental, social and economic issues. The criteria that are identified by the CCFM are:

1. Conservation of biological diversity;
2. Maintenance and enhancement of forest ecosystem condition and productivity;
3. Conservation of soil and water resources;
4. Forest ecosystem contributions to global ecological cycles;
5. Multiple benefits to society; and
6. Accepting society's responsibility for sustainable development.

The six criteria are broken out into a total of 22 elements with 83 indicators. Together they provide a description for the status of the forest and a measure of progress in achieving sustainable forest management.

By building on the national process and ensuring that the full range of partners are involved at the local level, the work being conducted by the NFA should have application beyond the NFA boundaries. This would include industrial processes and even provincial reporting schemes. Furthermore, those partners interested in certification can use the results from the NFA process and adopt those indicators that make sense for the certification or registration process they are pursuing. The NFA process is participatory and inclusive of all partners and includes local values and goals. All these elements factor into the certification process. The ground work conducted by the NFA on indicators, including the measurement and reporting approaches developed, can be used directly by other processes, if the data is appropriate and at the right scale. Local data sets can be substituted into the approach to make the indicator sensitive to the local condition.

INDICATORS TO BE TESTED BY THE NFA

The Nova Forest Alliance is testing 37 local level indicators. These indicators have been renumbered from the original CCFM set. This was done so that there would be less confusion and greater ease of identifying the indicators chosen by the Nova Forest Alliance. The addition of a secondary priority indicator has been introduced since the last status report and three indicators have changed their wording to make it easier to collect information or present to the public.

Indicators

A list of the indicators that the Nova Forest Alliance is working on can be found below.

Local Level Indicators for the Nova Forest Alliance

Biological Diversity

Indicator 1.A: Total forest area by percent and extent in all the combinations of forest cover types and maturity classes.

Indicator 1.B: Area of forest permanently converted to non-forest land use.

Indicator 1.C: Known forest-dependant species that are at risk.

Indicator 1.D: Area of habitat suitable and available for selected species and/or species guilds.

Indicator 1.E: Amount of area with natural cover type suited to the Acadian Forest Region and Site.

Indicator 1.F: Level of Fragmentation and connectiveness of forest ecosystem components.

Ecosystem Condition

Indicator 2.A: Climate indices: (pH and amount of precipitation).

Indicator 2.B: Area and type of human disturbances specific to forest harvesting.

Indicator 2.C: Percent and extent of forest cover types and maturity classes.

Indicator 2.D: Percent of area meeting expected growth targets for site type.

Indicator 2.E: Growing stock by forest cover type.

Soil and Water Resources

Indicator 3.A: Extent of harvest area with significant soil disturbance.

Indicator 3.B: Percentage of watershed area in a recent cut condition.

Indicator 3.C: Percentage of forest managed under BMP's and other guidelines.

Indicator 3.D: Percentage of riparian zones meeting specifications.

Indicator 3.E: Percentage of stream crossings constructed and maintained to standard.

Multiple Benefits to Society

Indicator 5.A: Annual removal of forest products.

Indicator 5.B: Landbase available for production of forest products.

Indicator 5.C: Volume of merchantable wood left on site after harvest.

Indicator 5.D: Annual volume of forest by-products and waste.

Indicator 5.E: Contributions to Gross Provincial Product by specific timber and non-timber sectors.

Indicator 5.F: Employment in specific timber and non-timber sectors.

Indicator 5.G: Use of forests for non-market goods and services.

Indicator 5.H: Area and # of special forest places.

Indicator 5.I: Visual characteristics of the landscape.

Indicator 5.J: Density/Quality/Diversity of interpretative trails.

Indicator 5.K: Quantity of garbage deposited.

Indicator 5.L: Satisfaction levels of users with forest recreation opportunities.

Society's Responsibility

Indicator 6.A: Degree of involvement of Mi'kmaq and/or Aboriginal people in SFM process.

Indicator 6.B: Level of understanding of all parties involved in SFM of Mi'kmaq issues.

Indicator 6.C: Percent of households with forest based employment full or part time.

Indicator 6.D: Number of communities (households) with a significant forestry component to their economic base.

Indicator 6.E: "Index of diversity" of local industrial base with significant forest economic base.

Indicator 6.F: Degree of public participation in SFM process.

Indicator 6.G: Investments in forest-related research and technology transfer.

Indicator 6.H: Percentage of forest area under SFM plans.

Indicator 6.I: Degree of public knowledge of SFM.

PROGRESS TO DATE

The progression of the local level indicators for the Nova Forest Alliance since March has followed carefully planned meetings, each one building on the previous and helping those involved reach agreement on the methods for testing the local level indicators selected by the partnership. Meetings have incorporated representatives from each of the NFA sectors. The task of developing a C & I process has been huge and presented challenges for partners. It is easy to lose sight of the objective as one delves into the technical aspects of indicator definitions, measurements and reporting. The process focused on developing valid, affordable and timely measures that all parties are comfortable with.

The NFA's approach, since the spring of 2000, was towards a focused discussion of the local level indicators (process) at the task team level with periodic team leader meetings for updates.

Team Leader Meetings

Towards the end of February 2000, team leaders for the indicators were recruited and eight teams were assembled to focus on certain similar indicators. The indicators have been distributed to each indicator team in terms of common traits or ease of measurement. The teams were asked to meet and decide on the final descriptions of the indicators, assign responsibilities to team members for the indicators and identify any resource requirements (see *Status Report March 27th, 2000*). The members of each team are volunteering their time to the indicator process.

There have been four team leader meetings since March 2000. The main discussion at each of the meetings was on the status of the indicators. The meetings also focused on updating all the team leaders of what work had been done on the indicators, by each team and the staff at the NFA. The team leaders also approved a format for the technical report that will be used for the NFA's State of the Forest Report. To date 16 indicators have been written up in the technical format.

- The meeting on May 3rd focused on the updates of the team groups and the budget for the committee. Team one requested that a biologist be hired to

investigate plant species at risk (1C) in the NFA area. Also discussed was the hiring of a summer student to work on team indicators.

- The June 22nd meeting focused on the status of each of the indicators and the expected completion of the indicator. Progress from the previous meeting was slight and there were few status reports submitted prior to the meeting.
- Only key indicators were discussed on the Oct 4th meeting, due to the low attendance. Those who attended discussed problems associated with team one indicators. Issues such as data availability, current information/imagery and uncategorized data were considered to be of concern. Team three indicators were discussed; an overall consensus was reached on how those indicators have been collected. Discussion and refinement on team five indicators was also done and there was consensus on the indicators approach. Format for the technical report (State of the Forest) was discussed and a summary of the budget was also given. Due to the low attendance agreement on the final format could not be reached. For the budget, the expenditures (so far) were greater than the budgeted amount.
- The Dec 8 meeting was a conference call and indicators that had not been completed were the focus, as well as some of the ones that had already been completed. The team leaders also agreed upon the format for the technical reports and a deadline for the technical reports was decided.

Team Meetings

Team One

There have been three team meetings since March 2000, all focusing on several issues regarding the indicators for this group. One major issue was dealing with the need to update the GIS data for the indicators. Another was understanding the limits of the GIS database and determining ways to manage the restriction. These two issues were resolved with a request for assistance from the NSDNR. For the species at risk indicator, it was determined that there is a need to determine the status of endangered plants species within the NFA area. Two botanists were hired to determine which species are at risk. The work of a Dalhousie masters student on fragmentation has led to the placement of a

secondary priority indicator (fragmentation) to be added to the current list of LLI's that the NFA is focusing on. This was done with the assurance that the effort placed on the new indicator would not adversely effect the other indicators.

Team leader: *Colin Stewart* Team members: *Peter Jones, Peter Duinker, Mike Rader, Mark Elderkin, Bruce Stewart, Brian Sykes, Jason Kostopoulos, Rob Williams, Ewa Downarowicz* Contributors: *Dave Westlake, Peter Neily, Karen Beasley, Bevan Lock, Richard Morash, Tony Duke, Sean Blaney and Ruth Newell*

Indicators:

- *1.A: Total forest area by percent and extent in all the combinations of forest cover types and maturity classes.*
- *1.B: Area of forest permanently converted to non-forest land use.*
- *1.C: Known forest-dependant species that are at risk.*
- *1.D: Area of habitat suitable and available for selected species and/or species guilds.*
- *1.E: Amount of area with natural cover type suited to the Acadian Forest Region and Site.*
- *1.F: Level of Fragmentation and connectiveness of forest ecosystem components.*
- *2.C: Percent and extent of forest cover types and maturity classes.*

Team Two

There has been only one meeting by this team and the issues were similar to team one with regard to current data and GIS database concerns. The request for assistance from NSDNR is believed to alleviate these concerns.

Team leader: *Eldon Gunn* Team members: *Brian Sykes, Jason Kostopoulos, Rob Williams, Ewa Downarowicz* Contributors: *Dave Westlake, Peter Neily, Karen Beasley, Bevan Lock, Richard Morash*

Indicators:

- *2.A: Climate indices: (pH and amount of precipitation).*
- *2.B: Area and type of human disturbances specific to forest harvesting.*
- *2.D: Percent of area meeting expected growth targets for site type.*
- *2.E: Growing stock by forest cover type.*
- *3.B: Percentage of watershed area in a recent cut condition.*

Team Three

There have been two meetings and several consultations with NFA staff on how to proceed with the assigned indicators. One fundamental issue discussed was the collection of information for the indicators. It was determined that a sampling of NFA forests would generate the information required for team three

indicators as well as one indicator from team two (3A) and one from team four (5C). The sampling protocol was reviewed by a selected group of NFA partners who represented a variety of NFA sectors. A new approach to the riparian buffer indicator (3D) was established after it was found that there were not enough watercourse sampling sites. The team agreed that aerial photos needed to be taken of certain areas. Cooperation from the town of Stewiacke was given in exchange for the NFA providing information on the Stewiacke watershed (through the aerial photos).

Team leader: *Bevan Lock* Team members: *Peter Jones, Brian Sykes, Jason Kostopoulos, Rob Williams, Ewa Downarowicz* Contributors: *Ed MacDonell, Earl Tanner, Gordon Crowe, Pam Langille*

Indicators:

- *3.A: Extent of harvest area with significant soil disturbance.*
- *3.C: Percentage of forest managed under BMP's and other guidelines.*
- *3.D: Percentage of riparian zones meeting specifications.*
- *3.E: Percentage of stream crossings constructed and maintained to standard.*

Team Four

There have been three meetings where the development of the indicator's collection process has occurred. One issue discussed was the link with team three sampling for the 'merchantable wood left on-site' indicator (5C). Discussion also focused on indicators that could be collected through existing documentation, such as the information from the *Registry of Buyers*. Available data for non timber products was also discussed. An issue that hindered the collection of the by-products and waste indicator (5D) was the lack of information from the Sustainable Forestry Management mill survey that was sent to various NFA industry partners. However, the indicator will be collected through an alternative strategy.

Team leader: *Peter Jones* Team members: *Bevan Lock, Bruce Stewart, Brian Sykes, Jason Kostopoulos, Rob Williams, Ewa Downarowicz* Contributors: *Tom Ruldolph, Eldon Gunn, Charles Harrington, Jean Bentley, Jorg Beyeler, Ches MacDonald, Vincent Power*

Indicators:

- *5.A: Annual removal of forest products.*
- *5.B: Landbase available for production of forest products.*
- *5.C: Volume of merchantable wood left on site after harvest.*
- *5.D: Annual volume of forest by-products and waste.*

Team Five

There have been no significant meetings held by team five, however, certain indicators will be collected in conjunction with team eight indicator collection.

Team leader: *Peter MacQuarrie* Team members: *Derek MacFarlane, Brian Sykes, Jason Kostopoulos, Rob Williams, Ewa Downarowicz* Contributors: *Bruce Meyers*

Indicators:

- *5.E: Contributions to Gross Provincial Product by specific timber and non-timber sectors.*
- *5.F: Employment in specific timber and non-timber sectors.*
- *5.G: Use of forests for non-market goods and services.*

Team Six

Since there was an insufficient amount of previously collected information, the four meetings for team six were used to design and refine new approaches to the collection of the indicators. For one of the indicators (5H) assistance was obtained from the NS Museum, which agreed to provide its locations and descriptions of special forest places.

Team leader: *Crawford MacPherson* Team members: *Allen Peters, Ian Millar, Rick Walker, John Gass, Gordon Crowe, Brian Sykes, Jason Kostopoulos, Rob Williams, Ewa Downarowicz, Kelly Cowper* Contributors: *Tom Murray, Dave Westlake, Robert Ogilvie, Ed Symons, Dawn Allen*

Indicators:

- *5.H: Area and # of special forest places.*
- *5.I: Visual characteristics of the landscape.*
- *5.J: Density/Quality/Diversity of interpretative trails.*
- *5.K: Quantity of garbage deposited.*
- *5.L: Satisfaction levels of users with forest recreation opportunities.*

Team Seven

There have been no meetings, however the indicator collection was completed through the Sustainable Forest Management mill survey and with a research project conducted by the Office of Aboriginal Affairs.

Team leader: *Brian Sykes* Team members: *Jason Kostopoulos*

Indicators:

- *6.A: Degree of involvement of Mi'kmaq and/or Aboriginal people in SFM process.*
- *6.B: Level of understanding of all parties involved in SFM of Mi'kmaq issues.*

Team Eight

Three meetings were held to discuss the collection of the indicators. Some of the information was already collected through the public opinion survey and additional figures were accumulated through the Sustainable Forest Management mill survey. It was also agreed that indicators that focused on employment issues should be assembled through Statistics Canada.

Team leader: *Derek MacFarlane* Team members: *Chalmers MacLeod, Ian Millar, Brian Sykes, Jason Kostopoulos, Rob Williams, Ewa Downarowicz* Contributors: *Bruce Meyers, Bill White, Tom Beckley*

Indicators:

- *6.C: Percent of households with forest based employment full or part time.*
- *6.D: Number of communities (households) with a significant forestry component to their economic base.*
- *6.E: "Index of diversity" of local industrial base with significant forest economic base.*
- *6.F: Degree of public participation in SFM process.*
- *6.G: Investments in forest-related research and technology transfer.*
- *6.H: Percentage of forest area under SFM plans.*
- *6.I: Degree of public knowledge of SFM.*

GLOSSARY

Biodiversity: The total variability of life on Earth, including the diversity of genes, species and ecosystems.

Non-Timber Values: Includes all forest-related values that are not derived from timber harvesting and the subsequent production of forest products.

C and I: Criteria and Indicators.

CCFM: Canadian Council of Forest Ministers.

Canadian Council of Forest Ministers: The council was established in 1985 to give sufficient attention to forest issues. It expedites the development of policies and initiatives for strengthening the forest sector, including the forest resource and its use. It provides leadership, addresses national and international issues and sets the overall direction for stewardship and sustainable management of Canada's forest.

Criteria: Distinguishable characteristics of sustainable forest management.

Indicator: A quantitative or qualitative measure that is capable of showing the status and/or direction of change.

LLI: Local Level Indicator.

Local Level Indicator: An indicator that has local attributes.

SFM: Sustainable Forest Management.

Sustainable Forest Management: Management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things while providing environmental, economic, social and cultural opportunities for present and future generations.

Value: Principles, standards or qualities considered worthwhile or desirable.