

Forest Management, Environmental
and Industrial Performances

2005 Evaluation
of Timber Supply and Forest Management Agreement Holders
and of Forest Management Agreement Holders

INFORMATION DOCUMENT

Fall 2003

Distribution

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Ministère des Ressources naturelles, de la Faune et des Parcs, 2003
Legal Deposit – Bibliothèque nationale du Québec, 2003
ISBN: 2-550-41230-3
Distribution Code: 2003-3060

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List of Abbreviations

TSFMA	Timber supply and forest management agreement
CPRS	Cutting with protection of regeneration and soils
FMA	Forest management agreement
FMC	Forest management contract
FMM	Forest management manual
GFMP	General forest management plan
RSFM	Regulation respecting standards of forest management for forests in the domain of the State
PLUP	Public land use plan
VWAL	Volume of wood affected by logging

INTRODUCTION

This document, intended for the general public, local and Native communities, the holders of timber supply and forest management agreements (TSFMA) and of forest management agreements (FMA), forest users and organizations with an interest in the protection and development of forest lands, contains information concerning the approach retained by the Ministère des Ressources naturelles, de la Faune et des Parcs for its 2005 evaluation of the forest management and environmental performance of TSFMA and FMA holders and of the industrial performance of TSFMA holders.

The document is divided into three parts. Part One summarizes the legal framework governing performance evaluations¹. Part Two describes the indicators and method that will enable the Minister to assess the forest management and environmental performance of agreement holders, along with the use that will be made of the evaluations. Part three describes the approach selected to examine the industrial performance of TSFMA holders.

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¹ The provisions of the *Forest Act* concerning the evaluation of the forest management and environmental performance and of the industrial performance are explained in the document entitled *Managing Forests in the Domain of the State: Public Consultations, Fall 2003*.

1. LEGAL CONTEXT

Access to timber from the public forests is a privilege granted to a limited number of wood processing mills and companies. Those who enjoy this privilege have a duty to maintain and seek to improve their performance in both the forest and the mill, in order to provide society with a range of diversified, sustainable socio-economic and environmental benefits. Therefore, the notion of performance was introduced into the *Forest Act* in 2001:

- Forest management and environmental performance relates to the conservation of forest lands and proper execution of forest management activities with a view to attaining the forest yields and the resource protection and development objectives assigned by the Minister of Natural Resources, Wildlife and Parks;
- Industrial performance relates to the ability of a mill to produce goods efficiently, in a manner conducive to economic use of the resource.

Performance is assessed every five years, and is considered a priority condition for the review of the volumes of timber allocated to TSFMA and FMA holders.

Timber Allocation Methods

Under the *Forest Act*, the Minister has a number of tools for allocating forest resource management responsibility. They include:

- The **timber supply and forest management agreement (TSFMA)**, which authorizes an owner of a wood processing mill to harvest, every year, in one or more territorial units, a volume of timber of predetermined species (fir, spruce, etc.). In exchange, the agreement holder undertakes among other things to prepare a general forest management plan (GFMP) containing a five-year program of activities, monitor forestry activities to ensure that they are sufficient to attain the annual yields specified in the agreement, and comply with forest protection standards;
- The **forest management agreement (FMA)**, which enables organizations that do not own wood processing mills to harvest, every year, in one or more territorial units, a volume of timber of predetermined species (fir, spruce, etc.). The timber is then sold to processing mills. FMA holders have the same obligations as TSFMA holders.

As of June 30, 2003, the public forests were subdivided into 114 territorial units known as “common areas”, in which some 248 TSFMAs and one FMA had been granted.

Under section 77 of the *Forest Act*, the Minister reviews the volumes of timber allocated by agreement once every five years, based on:

- Changes in the requirements of the wood processing mill;
- Changes in the availability of timber and fibre from other supply sources than public forests;
- The average annual volume of timber, from all supply sources, used by the mill in recent years;
- Changes to the allowable annual cut;
- All the forest management activities carried out since the beginning of the period covered by the GFMP, and their impact on the state of conservation of the forest and the forest environment, together with the effectiveness of the silvicultural treatments and other protective measures applied;
- Changes to or a lack of improvement in the mill's timber use performance.

The last two criteria refer in particular to the performance obligations incumbent upon agreement holders. Forest management and environmental performance will be assessed for the common area as a whole and this performance will apply to every agreement holder present in that area. Industrial performance will be measured individually, for each mill. The forest management, environmental and industrial performances of agreement holders will be assessed for the first time in 2005. The evaluation will cover the period 1999-2005.

The forest management and environmental performance of forest management contract (FMC) holders will also be assessed, along with their industrial performance if they also hold a wood processing plant operating permit. The same indicators and methods will be used, and the evaluations will take place whenever a contract is renewed by the Minister.

Forest Management Contract (FMC)

A forest management contract is an agreement under which the Minister entrusts the management of an entire forest to a person. In return, the organization undertakes to fulfill similar obligations to those imposed on TSFMA holders (planning, monitoring, forest management report, etc.). Contracts are granted in forest reserves, i.e. public land located outside forest management units, for which the Minister has not granted a TSFMA or a FMA. FMC holders are entitled to harvest a given volume of timber every year, and sell it to wood processing plants. As of June 30, 2003, 50 FMCs had been signed with municipalities, Native communities and forestry cooperatives.

2. EVALUATION OF FOREST MANAGEMENT AND ENVIRONMENTAL PERFORMANCE

2.1 PERFORMANCE INDICATORS

The Department will be using indicators to assess the forest management and environmental performance of agreement holders. An indicator is a quantitative or qualitative variable that can be measured or described, and that denotes a trend when observed periodically. The use of indicators allows for a more objective approach to the evaluation process.

In 2005, the Department will use twelve indicators to assess the overall forest management and environmental performance of the agreement holders in each common area. The indicators refer to legal or contractual obligations or to government decisions. Some refer to the *Regulation respecting standards of forest management for forests in the domain of the State (RSFM)*, and others to the public land use plan (PLUP).

Regulation respecting standards of forest management for forests in the domain of the State (RSFM)

The RSFM sets out certain measures that must be applied during forestry operations in order to protect the forest. The measures are described in detail, and are designed among other things to give priority protection to habitats that are essential to the survival of certain wildlife species, to prevent soil erosion and to preserve lakes and watercourses. For example, a 20-metre wooded buffer strip must be maintained at all times around lakeshores and along watercourses. The regulation also sets out certain conditions to ensure that forest management work is compatible with the PLUP.

Public Land Use Plan (PLUP)

The public land use plan (PLUP) is a government instrument deriving from the *Act respecting the lands in the domain of the State*. It sets out the government's intentions concerning land and resource development and protection. These intentions, defined in the form of a land use plan, serve as guidelines for interventions on public land. As far as forest management is concerned, the PLUP stipulates where forest production is prohibited (e.g. parks and ecological reserves), where it is permitted if it is respectful of certain specific elements and other land uses (e.g. white-tailed deer yards), and where it is a priority (e.g. forest production zones).

Some of the indicators used in the evaluation refer to criteria governing the admissibility of silvicultural work as payment of dues, while others are concerned with the standards and criteria applicable to areas under management in the years following certain forestry activities, as defined in the Forest Management Manual (FMM).

The Forest Management Manual (FMM)

The FMM, whose content is governed by section 29 of the *Forest Act*, forms an integral part of TSFMAs and FMAs. It stipulates the assumptions used to calculate the allowable annual cuts and annual yields for various silvicultural treatments. To ensure that the yields are attained, the FMM sets out monitoring standards and criteria for each treatment.

Monitoring must take place within stipulated deadlines, which are established according to the nature of the treatments. The FMM may require monitoring measures two, four, eight or ten years after treatment. For example, during black spruce planting work, between 1,500 and 2,000 plants must be sown per hectare, and at least 1,500 young crop trees per hectare should remain after ten years.

Wherever possible, remedial measures should be taken if the criteria have not been met. If this is not possible, yields and allowable annual cuts will be adjusted.

A last set of indicators to be used in the evaluation process relates to the government's commitments concerning forest and resource protection.

Among other things, the twelve indicators chosen will describe or measure the following aspects for each common area:

- the protection actually given to wildlife or plant species at risk (e.g. the bald eagle, the wild leek);
- protection of exceptional forest ecosystems classified under the Forest act and those awaiting classification by the Minister (e.g. shelter forests for vulnerable species, rare forests);
- the extent of the forest area that is still productive after logging;
- the extent of the areas logged using regeneration cutting that do not exhibit rutting problems;
- compliance of forest management activities with the provisions of the RSFM concerning protection of water quality and fish habitats (e.g. size of culverts, distance of gravel pits from watercourses);

- compliance of forest management activities with the provisions of the RSFM concerning protection of wildlife habitats other than fish habitats (e.g. deer yards, heronries);
- compliance of forest management activities with the provisions of the RSFM concerning compatibility with the PLUP (e.g. vacation sites, recreational sites);
- compliance of commercial silvicultural work (admissible as payment of dues) with the Department's acceptability standards;
- compliance of non-commercial silvicultural work (admissible as payment of dues) with the Department's acceptability standards (e.g. presence of 1,500 to 3,125 young black spruces following pre-commercial thinning²);
- compliance with FMM monitoring requirements after cutting with protection of regeneration and soils³ (CPRS) and after planting work (e.g. monitoring ten years after CPRS in spruce stands);
- compliance of CPRS and planting with FMM monitoring standards (e.g. ten years after CPRS, the new spruce stand should have as many trees as it had before logging);
- compliance with the harvest volumes authorized by the annual forest management permit.

² Pre-commercial thinning: cutting of trees that hinder the growth of crop trees in young stands.

³ Cutting with protection of regeneration and soils: cutting of all commercially-sized trees, taking all the precautions required to avoid damaging advance growth and to minimize any disturbance of the soil.

Table 1 Forest Management and Environmental Performance Indicators

Indicator	Definition and Values Measured
1. Protection of species at risk	<p>The term “species at risk” means any animal and plant species that is threatened or vulnerable, or likely to be designated as such. These rare species and their habitats are protected by the measures set out in the <i>Act respecting threatened or vulnerable species</i> and in the 1996 administrative agreement between the Ministère des Ressources naturelles, the Société de la faune et des parcs du Québec and the Ministère de l'Environnement du Québec.</p> <p>The indicator corresponds to the percentage of known species at risk sites located within the areas on which forest management activities have been carried out, and that were protected during those activities. Known sites are those brought to the attention of agreement holders before they planned their forest management activities.</p> <p>$(X \div Y) \times 100 =$ Percentage (%) of known and species at risk sites that are protected within the area under management</p> <p>X : Number of known species at risk sites under protection during forest management activities</p> <p>Y : Number of known species at risk sites likely to be affected by forest management activities</p>
2. Protection of exceptional forest ecosystems	<p>The expression “exceptional forest ecosystems” (EFE) is the legal designation used to refer to certain old growth forests, rare forests and shelter forests for threatened or vulnerable species. Measures have been introduced to protect EFEs once they have been classified under the <i>Forest Act</i> – for example, a ban on all forest management activities, or an obligation to maintain wooded buffer strips.</p> <p>The indicator corresponds to the percentage of known EFEs located within the areas on which forest management activities have been carried out, and that were protected during those activities. Known EFEs are sites already classified by the Minister, or in the case of sites in the process of being classified, those brought to the attention of agreement holders before they planned their forest management activities.</p> <p>$(X \div Y) \times 100 =$ Percentage (%) of known EFEs under protection within the area under management</p> <p>X : Number of known EFEs under protection during forest management activities</p> <p>Y : Number of known EFEs likely to be affected by forest management activities</p>
3. Logged areas remaining productive	<p>Forest road construction work and the carrying out of certain forest management activities (hauling, delimiting, piling, etc.) can result in the loss of productive forest areas. The lost areas include those converted into roads and disturbed roadside areas (baring of mineral soil or rock, ponding and piles of wood residue).</p> <p>Such losses are inevitable, and the Department takes them into account when calculating the allowable annual cut for a common area by subtracting them from the productive area. However, its goal is to maintain losses below an acceptable threshold, which varies according to factors such as topography.</p> <p>The indicator corresponds to the percentage of logged areas that remain productive (i.e. conducive to tree growth) after completion of forest management activities. It is calculated by estimating the productive area actually lost and subtracting it from the area logged each year.</p> <p>$((A - B) \div A) \times 100 =$ Percentage (%) of logged area remaining productive</p> <p>A : Total area (ha) logged each year</p> <p>B : C + D = Loss of productive area (ha)</p> <p>C : Area (ha) converted into forest roads every year (average width x length)</p> <p>D : Area (ha) disturbed along roadsides</p>

Indicator	Definition and Values Measured
<p>4. Areas harvested using regeneration cutting and without rutting problems</p>	<p>Repetitive use of heavy machinery disturbs wet soil and sometimes leaves deep, permanent scars known as ruts. Rutting (the formation of ruts) on logging sites can alter soil productivity and reduce long-term forest yields. It can also change water circulation patterns within ecosystems and may occasionally cause sedimentation in watercourses. It is impossible to eliminate rutting altogether from logging sites. However, the Department intends to keep it below an acceptable threshold. To do this, it requires the forestry companies to use machinery and techniques that are appropriate to the areas being logged, and to avoid working during critical periods (heavy rain, spring thaw, etc.).</p> <p>The indicator corresponds to the percentage of logging sites within an area (harvested using regeneration cutting) that do not exhibit rutting problems – in other words, where there are few or no ruts. A logging site is a single-block area bordered by forest strips (separators). The purpose of regeneration cutting is to trigger new growth or promote existing growth. Examples would be cutting with protection of regeneration and soils or shelterwood seed cutting.</p> <p>$(A \div B) \times 100 =$ Percentage (%) of logging sites without rutting problems</p> <p>A : Number of logging sites with little or no disturbance (i.e. with a rutting rate of less than 20 %)</p> <p>B : Total number of logging sites harvested in the common area</p> <p>Note: The rutting rate is the percentage of the total length of the cutting and hauling trail network disturbed by rutting.</p>
<p>5. Compliance of forest management activities with RSFM provisions concerning the protection of water quality and fish habitats</p>	<p>The construction of roads, culverts and other infrastructures across watercourses can affect water quality and fish habitats if adequate protective measures are not taken. RSFM provisions require assessments of 87 parameters relating to the protection of water and fish habitats. They include standards for the size and stability of culverts, buffer strips alongside watercourses, and diversion of runoff water from forest road ditches.</p> <p>The indicator corresponds to the extent to which forest operations comply with RSFM provisions concerning the protection of water and fish habitats. The data are weighted according to the relative importance of each RSFM parameter in the attainment of the protection objective. For example, more points are given to the culvert stabilization standard than to the standard concerning the removal of fallen trees from watercourses, because it is more important to the protection of fish habitats. The results are also weighted according to the areas harvested.</p>
<p>6. Compliance of forest management activities with RSFM provisions concerning the protection of wildlife habitats other than fish habitats</p>	<p>Valuable wildlife habitats must be protected. Valuable habitats are those of species such as the heron, muskrat and caribou. They are designated under the <i>Act respecting the conservation and development of wildlife</i>, and have been mapped by the Société de la faune et des parcs. The RSFM provides for protective measures such as buffer strips, periods of the year when forest operations must cease, and the maintenance of a given stand structure or composition where forest operations are permitted.</p> <p>The indicator corresponds to the extent to which the forest management work complies with the provisions of the RSFM.</p> <p>$(A \div B) \times 100 =$ Level of compliance (%) of forest management activities with RSFM provisions</p> <p>A : Number of known sites receiving protection during forest management activities in accordance with RSFM standards</p> <p>B : Number of known sites likely to be affected by forest management activities</p>

Indicator	Definition and Values Measured
<p>7. Compliance of forest management activities with RSFM provisions concerning compatibility with the PLUP</p>	<p>Some types of land use must be protected. The RSFM provides for the protection of certain uses covered by the PLUP, such as vacation sites, recreational sites, archaeological sites, ecological sites and drinking water outlets.</p> <p>The indicator corresponds to the extent to which forest management activities comply with RSFM standards concerning the protection of land uses covered by the PLUP.</p> <p>$(A \div B) \times 100 =$ Level of compliance (%) of forest management activities with RSFM standards</p> <p>A : Number of known land uses protected during management activities in accordance with RSFM standards B : Number of known land uses likely to be affected by forest management activities</p>
<p>8. Compliance of commercial silvicultural work (admissible as payment of dues) with the Department's acceptability standards</p>	<p>The Department has established certain quality standards to ensure that silvicultural work will produce the anticipated impacts on forest yields, thus enabling the allowable annual cut to be maintained. Some silvicultural work is admitted as payment of cutting rights (dues).</p> <p>The indicator is used to assess the performance of agreement holders in carrying out commercial silvicultural work admissible as payment of dues. Commercial silvicultural work includes timber harvesting operations such as commercial thinning⁴.</p> <p>The indicator corresponds to the percentage of commercial silvicultural work admissible as payment of dues that is carried out by the holder, inspected by the Department and found to be in compliance with the Department's acceptability standards.</p> <p>$(A \div B) \times 100 =$ Level of compliance (%) of admissible commercial silvicultural work</p> <p>A : Area of commercial silvicultural work inspected by the Department and found to be in compliance with the Department's acceptability standards B : Area of commercial silvicultural work inspected by the Department</p>
<p>9. Compliance of non-commercial silvicultural work (admissible as payment of dues) with the Department's acceptability standards</p>	<p>This indicator is similar to the preceding one, except that it refers to the quality of non-commercial silvicultural work admissible as payment of the cutting dues established to ensure maintenance of the allowable annual cut. Non-commercial silvicultural work refers to operations not involving commercial timber harvesting, such as pre-commercial thinning and stand release.</p> <p>The indicator corresponds to the percentage of non-commercial silvicultural work admissible as payment of dues carried out by the holder, inspected by the Department and found to be in compliance with the Department's acceptability standards.</p> <p>$(A \div B) \times 100 =$ Level of compliance (%) of admissible non-commercial silvicultural work</p> <p>A : Area of non-commercial silvicultural work inspected by the Department and found to be in compliance with the Department's acceptability standards B : Area of non-commercial silvicultural work inspected by the Department</p>
<p>10. Compliance with the FMM's CPRS monitoring and planting requirements</p>	<p>The FMM specifies monitoring schedules for cutting with protection of regeneration and soils (CPRS, ten years) and planting (eight or ten years, depending on the species).</p> <p>The indicator corresponds to the extent to which the agreement holder has carried out monitoring work within the FMM timeframe.</p> <p>$(A \div B) \times 100 =$ Rate of completion (%) of monitoring in accordance with the FMM schedule</p> <p>A : Area of CPRS and planting monitored by the holder in accordance with the FMM schedule, for which results have been sent to the Department B : Area of CPRS and planting to be monitored by the holder according to the FMM schedule</p>

⁴ Commercial thinning: cutting of trees in an even-aged stand (trees of the same age) with a view to speeding up the diameter growth of the residual trees and also, through appropriate selection, improving the overall quality of the stand.

Indicator	Definition and Values Measured
<p>11. Compliance of CPRS and planting work with FMM standards</p>	<p>The FMM specifies a number of criteria to be met during the years following CPRS and planting, to ensure that the forest yields set out in the GFMP are attained, thus enabling the allowable annual cut to be maintained.</p> <p>The indicator corresponds to the level of compliance of CPRS and planting with FMM standards.</p> <p>$(A \div B) \times 100 =$ Level of compliance (%) of CPRS and planting with FMM standards</p> <p>A : Area of CPRS and planting inspected by the Department and found to be in compliance with FMM standards</p> <p>B : Total area of CPRS and planting work inspected by the Department</p>
<p>12. Compliance with harvest volumes stipulated in the annual forest management permit</p>	<p>In a common area, the volume of timber harvested must not exceed the volume authorized for each species or group of species in the annual forest management permit, so that the allowable annual cut can be maintained. The timber harvest is the volume of wood affected by logging (VWAL), i.e. the total volume of wood harvested plus the volumes abandoned on logging sites, on piling sites alongside roads, and in unlogged forest pockets.</p> <p>The volume of wood harvested is scaled by the Department, and the VWAL is adjusted to take into account any unallocated volumes. The volume harvested does not exceed the authorized volume if the result is 100% or less.</p> <p>$(\text{Adjusted VWAL} \div \text{authorized volumes}) \times 100 =$ Level of compliance (%) with authorized volumes</p>

2.2 EVALUATION METHOD

The methodology chosen to assess the forest management and environmental performance of agreement holders in a common area is based on the compilation of results from twelve indicators. It comprises five principal elements.

1. Each indicator has the same relative weight in calculating the overall score, reflecting an equivalent importance in terms of performance.
2. A warning level has been established for each indicator. Generally speaking, it has been set at approximately 90%, but in some cases the threshold may be 85%, 95% or even 100%. A result that is below the warning level indicates a problem, but does not necessarily mean a poor overall performance.
3. A score out of 10 is assigned to the result obtained for each indicator (e.g. 10 out of 10 for 100% compliance or 8.5 out of 10 for 85% compliance).
4. The total of all the results for all the indicators gives an overall forest management and environmental performance score (e.g. 90 out of 120 for a 75% performance).
5. The overall score is compared with the “pass” score, below which a performance is considered unsatisfactory.

For the overall performance evaluation, the Department has retained a “pass” score of 75%. To show how the method works, Table 2 contains an example of a forest management and environmental performance evaluation score sheet, to be completed for each common area.

Table 2 Example of a Forest Management and Environmental Performance Score Sheet for a Common Area

Indicator	Warning Level (less than)	Result	Score out of 10	Analyst's Comments
1. Protection of species at risk	90 % of known sites are protected	80 % of known sites were protected	8	One species at risk site was partially damaged but not destroyed. A contravention notice was issued.
2. Protection of exceptional forest ecosystems	90 % of known sites are protected	100 % of known sites were protected	10	As stipulated in the <i>Forest Act</i> , all the EFEs located in areas where forest management activities took place were protected.
3. Logged areas remaining productive	95 % of logged forest areas continue to be productive	94 % of logged areas continued to be productive	5⁵	Some 6% of productive forest areas were lost, which is 1% more than stipulated in the last GFMP calculations. Adjustments should be made accordingly.
4. Areas logged using regeneration cutting and without rutting problems	80 % of logging sites exhibit little or no damage	70 % of logging sites exhibited little or no damage	7	Planning must be improved so that the situation can be remedied.
5. Compliance of forest management activities with RSFM provisions concerning the protection of water quality and fish habitats	85 % compliance with RSFM provisions concerning water quality and fish habitats	75 % compliance with RSFM provisions concerning water quality and fish habitats	7.5	A more detailed analysis of the results revealed a need to improve culvert construction to prevent narrowing of watercourses and to stabilize the banks. Remedial measures should be taken.
6. Compliance of forest management activities with RSFM provisions concerning the protection of wildlife habitats other than fish habitats	90 % compliance with RSFM standards concerning wildlife habitats	80 % compliance with RSFM standards concerning wildlife habitats	8	Two deeryards were disturbed when a handful of trees were cut in a buffer strip. A contravention notice was issued.

Note: The indicators with results below the warning level have been shaded.

⁵ Rule governing the distribution of points for this indicator: if the actual loss is below or equal to the loss specified in the calculations, score 10 points; if the actual loss exceeds the specified loss by 1% or less, score 5 points; if the actual loss exceeds the specified loss by more than 1%, score no points (0).

Indicator	Warning Level (less than)	Result	Score out of 10	Analyst's Comments
7. Compliance of forest management activities with RSFM provisions concerning compatibility with the PLUP	90 % compliance with RSFM provisions concerning land use compatibility	90 % compliance with RSFM provisions concerning land use compatibility	9	Some trees fell onto a snowmobile trail, but the situation was rectified in 2002.
8. Compliance of commercial silvicultural treatments (admissible as payment of dues) with the Department's acceptability standards	90 % of all inspected commercial treatments admissible as payment of dues are found to be compliant	85 % of inspected commercial treatments admissible as payment of dues were compliant	8.5	Improvements should be made during selection cutting.
9. Compliance of non-commercial silvicultural treatments (admissible as payment of dues) with the Department's acceptability standards	90 % of all inspected non-commercial treatments admissible as payment of dues are found to be compliant	94 % of inspected non-commercial treatments admissible as payment of dues were compliant	9.4	Improvements should be made during reforestation work.
10. Compliance with FMM monitoring requirements for CPRS and planting	90 % of the required monitoring work has been carried out	60 % of the required monitoring work had been carried out	6	This result is clearly unsatisfactory. Very close annual monitoring must be introduced in order to remedy the situation.
11. Compliance of CPRS and planting work with FMM standards	90 % of all inspected interventions from previous years comply with FMM standards	80 % of all inspected interventions from previous years complied with FMM standards	8	Compliance with FMM criteria must be improved, Wherever possible, remedial measures should be applied.
12. Compliance with harvest volumes authorized by the annual forest management permit	100 % A result in excess of the warning level would indicate a problem	90 % of the volume authorized in the permit was affected by logging operations (scaled volumes and residues)	10⁶	The cutting rate is within the volume authorized in the permit for every species or group of species. However, analysis of the VWAL suggests that the volumes left on logging sites (residues) need to be reduced.

⁶ Rule governing the distribution of points for this indicator : For authorized volumes by species or group of species of below 20,000 m³, if the result is ≤ 100 %, score 10 points; if the result is > 100 % but ≤ 102 %, score 5 points; if the result is > 102 %, but ≤ 104 %, score 3 points; if the result is > 104 %, score no points (0). For authorized volumes by species or group of species of above 20,000 m³, if the result ≤ 100 %, score 10 points; if the result is > 100 %, but ≤ 101 %, score 5 points; if the result is > 101 % but ≤ 102 %, score 3 points; if the result is > 102 %, score no points (0).

Indicator	Warning Level (less than)	Result	Score out of 10	Analyst's Comments												
Total (Overall score)	A score of 75 % or 90 points out of 120 indicates a generally satisfactory performance		80 % or 96.4 points out of 120	The general performance is satisfactory. However, remedial measures and more stringent annual monitoring are required in the next five-year period to improve some individual results.												
<p>Comments</p> <p>The results for some indicators are below the warning level. Improvements will be required in respect of the following elements: rutting rate, culvert construction, compliance with monitoring timeframes established in the FMM and compliance of planting work with FMM standards.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%; border: none;">_____</td> <td style="width: 40%; border: none;">_____</td> </tr> <tr> <td style="border: none;">Departmental Analyst</td> <td style="border: none;">Date</td> </tr> <tr> <td style="border: none;">_____</td> <td style="border: none;">_____</td> </tr> <tr> <td style="border: none;">Head of Management Unit</td> <td style="border: none;">Date</td> </tr> <tr> <td style="border: none;">_____</td> <td style="border: none;">_____</td> </tr> <tr> <td style="border: none;">Regional Manager</td> <td style="border: none;">Date</td> </tr> </table>					_____	_____	Departmental Analyst	Date	_____	_____	Head of Management Unit	Date	_____	_____	Regional Manager	Date
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2.3 Using the Results

As explained earlier, the forest management and environmental performance of agreement holders will be measured in 2005 on the basis of the common areas, which are the territorial subdivisions used for forest planning and forest management activities in the period under evaluation (1999-2005). The new forest management units (FMUs) resulting from the new territorial subdivision of the public forests will come into force in 2005. The Minister will then review the allocated volumes on the basis of the new subdivisions, and the performance scores of agreement holders will be an important factor in that process.

If the forest management and environmental performance of agreement holders in a common area is considered satisfactory, the Minister may increase the allocated volumes if the allowable annual cut and the other criteria considered during the revision process permit him to do so.

If the performance is satisfactory (an overall score in excess of 75%), but the results of some indicators are below their warning levels, the allocated volumes will not be reduced. However, the Minister may ask the agreement holders in question to introduce remedial measures. He may also monitor the forest management activities of those holders more stringently in the new forest management units during the subsequent five-year period.

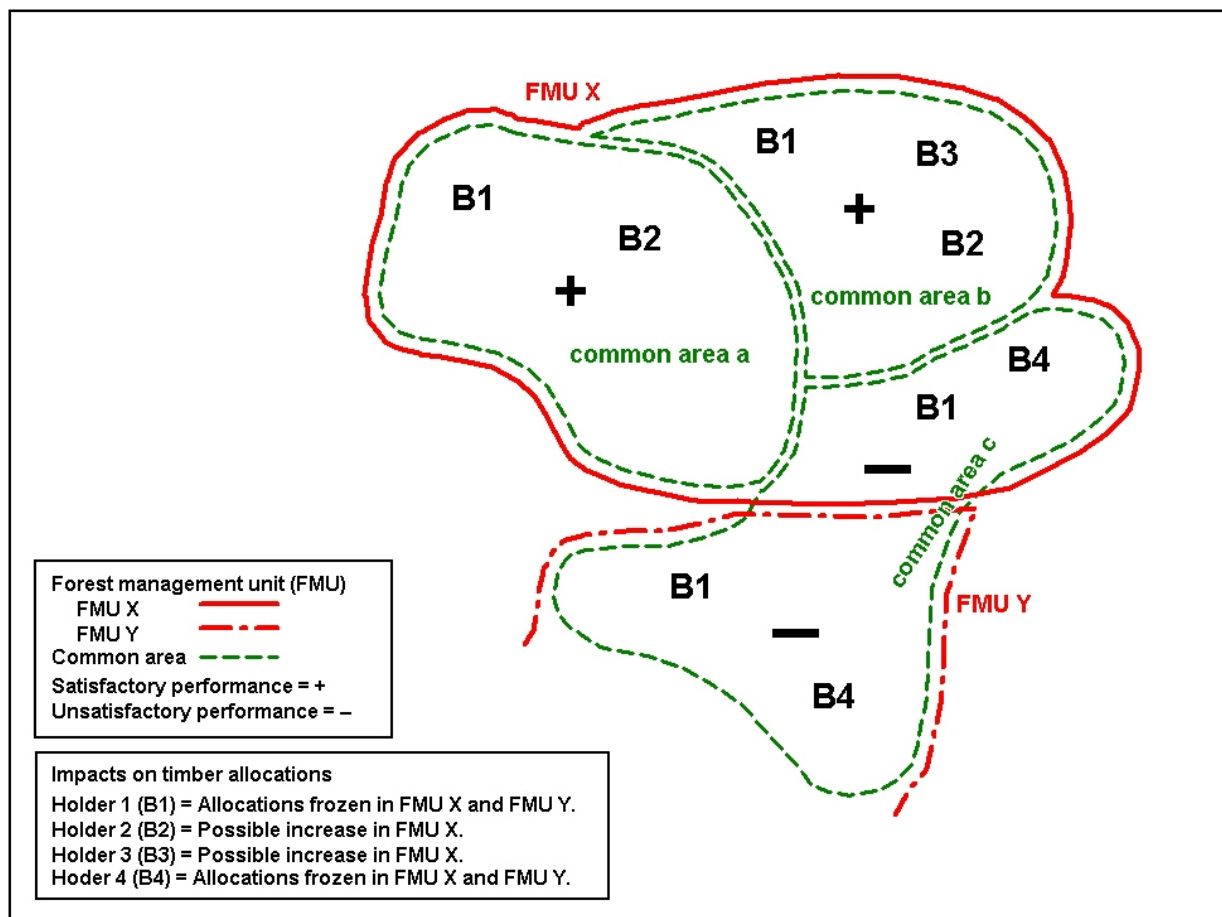
If the performance of all the agreement holders in a common area is unsatisfactory (an overall score of below 75%), the Minister:

- cannot increase the volumes of timber allocated to those holders in their new management units (section 77.1 of the *Forest Act*);
- may reduce the volumes of timber allocated in the agreements, or may impose a remedial program (section 77.3 of the *Forest Act*).

The Minister will decide whether to maintain the allocation, impose a remedial program or reduce the volumes allocated. If the results are poor, the Minister will first check to see whether this is due to elements beyond the control of the agreement holders because certain uncontrollable phenomena or activities (fires, insect infestations, etc.) can have an impact on the course of forestry activities.

The following diagrams present two illustrations (see figure 1 and 2) of how forest management and environmental performance results may be used when reviewing timber allocations for the new forest management units.

Figure 1 Use of Forest Management and Environmental Performance Results: Case No. 1



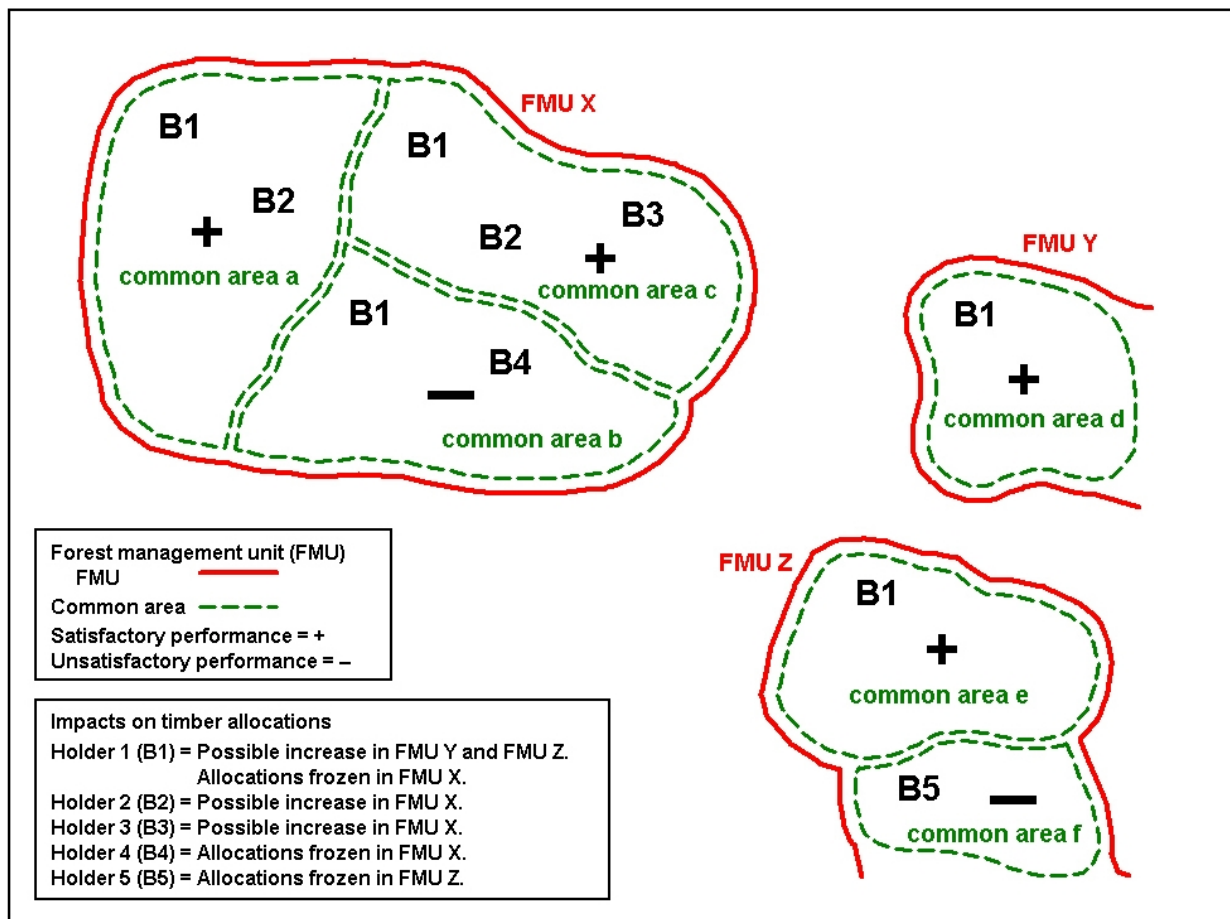
The points of interest from this first case are as follows:

- for the new subdivision, common areas a and b were merged with part of common area c to form forest management unit X;
- four agreement holders held forestry rights in common areas a, b and c. Holder B1 worked in all three common areas, holder B2 worked in common areas a and b only, and holder B3 worked exclusively in common area b. Holder B4 was present in common area c but did not carry out any forest management work. The timber was delivered to holder B4 by holder B1;
- the forest management and environmental performance was considered to be satisfactory (+) in common areas a and b, but unsatisfactory (-) in common area c.

This forest management and environmental performance evaluation will have the following consequences:

- holders B1 and B4 are judged to have performed poorly in FMU X and FMU Y because both these units contain a portion of common area c, for which a negative performance was recorded. Thus, the volumes of timber allocated to these two holders in FMU X and FMU Y will not be increased;
- holders B2 and B3 may, however, receive higher volumes in FMU X thanks to the satisfactory performance obtained in common areas a and b.

Figure 2 Use of Forest Management and Environmental Performance Results: Case No. 2



In this second case, the following points are important:

- five agreement holders carried out forest management activities in the six common areas. Holder B1 was present in five of them (a, b, c, d, e), and holder B2 was present in two areas (a and c). Holders B3, B4 and B5 worked in areas c, b and f respectively;

- common areas a, b and c were merged to form forest management unit X. Common area d was incorporated into FMU Y, and common areas e and f were both incorporated into FMU Z.

An analysis of the forest management and environmental performance led to the following outcomes:

- the unsatisfactory performance in common area b means that allocations will be frozen for holders B1 and B4 in FMU X. However, holders B2 and B3 may receive higher allocations in the same FMU;
- the performance is also considered to be unsatisfactory in common area f, where management work was carried out by holder B5. In FMU Z, this results in a freeze on allocations for holder B5, but a potential increase for holder B1, whose performance in common area e is judged to be satisfactory;
- in FMU Y, holder B1 qualifies for an increased allocation thanks to its satisfactory performance in common area d.

It is important to note that when revising timber allocations, the Minister must give the agreement holders an opportunity to present their views (section 77 of the *Forest Act*).

3. EVALUATION OF THE INDUSTRIAL PERFORMANCE

3.1 Performance Indicator

The most effective mills are those that, in their everyday activities, use the least raw material to manufacture a given product. Accordingly, the indicator used to judge industrial performance is the material yield, i.e. the ratio of the volume of timber consumed, expressed as cubic metres of roundwood⁷, to the amount of product manufactured, using the usual measurement unit for the product.

For example, in the sawmill industry, the material yield is the ratio of the volume of roundwood used (m^3) to the volume of lumber produced, measured in thousands of board feet (000 FBM)⁸.

The industrial performance indicator may vary according to the category⁹ or sub-category¹⁰ of wood processing mill. Table 3 shows the various measurement units used to establish the material yield for each category and sub-category of mill.

⁷ Roundwood: part of a tree minus its crown and branches (whole trunk); if the roundwood has been cross-cut, it becomes logs or logwood.

⁸ 000 FBM : Thousands of board-feet. One board foot is the equivalent of a piece of wood measuring one square foot in area by one inch thick.

⁹ Categories of wood processing mills, as defined in the Regulation respecting wood processing plant operating permits.

¹⁰ Sub-category: A set of mills from the same category producing the same products from the same tree species or group of species.

Table 3 Material Yield Indicators by Mill Category

Category	Sub-category	Indicator
Pulp and paper industry		m ³ of roundwood/anhydrous metric tonne ¹¹
Sawmill industry	<ul style="list-style-type: none"> • Fir, spruce, jack pine and larch • White and red pine • Hemlock • Hardwoods • Poplar • Cedar • Shingles 	m ³ of roundwood/000 FBM m ³ of roundwood/000 FBM m ³ of roundwood/000 FBM m ³ of roundwood/000 FBM m ³ of roundwood/000 FBM m ³ of roundwood/000 FBM m ³ of roundwood/square ¹²
Veneer and plywood industry	<ul style="list-style-type: none"> • Veneer¹³ • Plywood¹⁴ 	m ³ of roundwood/m ³ of veneer m ³ of roundwood/m ³ of plywood
Wood derivatives industry	<ul style="list-style-type: none"> • Oriented strandboard¹⁵ • Medium and high density fibreboard (MDF-HDF) 	m ³ of roundwood/m ³ of board m ³ of roundwood/m ³ of board
Turning and processing industry (poles)		m ³ of roundwood/m ³ of poles
Cogeneration and fuel products industry	<ul style="list-style-type: none"> • Cogeneration¹⁶ • Fuel products (charcoal) • Fuel products (pellets) 	m ³ of roundwood/kWh m ³ of roundwood/anhydrous metric tonne of charcoal m ³ of roundwood/anhydrous metric tonne of pellets
Pharmaceutical products mill		kg of dry branches/kg of pharmaceutical products

¹¹ Anhydrous: not containing water (dry).

¹² Square: surface unit generally covering 9.3 square metres (100 square feet) corresponding to four packs of shingles.

¹³ Veneer: thin sheet of standard-thickness wood obtained by peeling or slicing.

¹⁴ Plywood: wooden board obtained by glueing sheets of veneer on top of one another.

¹⁵ Oriented strandboard: boards made from large strands (rather like chips) of wood oriented cross-wise, like plywood.

¹⁶ Cogeneration: production of steam by the burning of forest biomass (e.g. branches, parts of logs, bark, etc.) and subsequent use of the steam to drive a turbine that produces electricity.

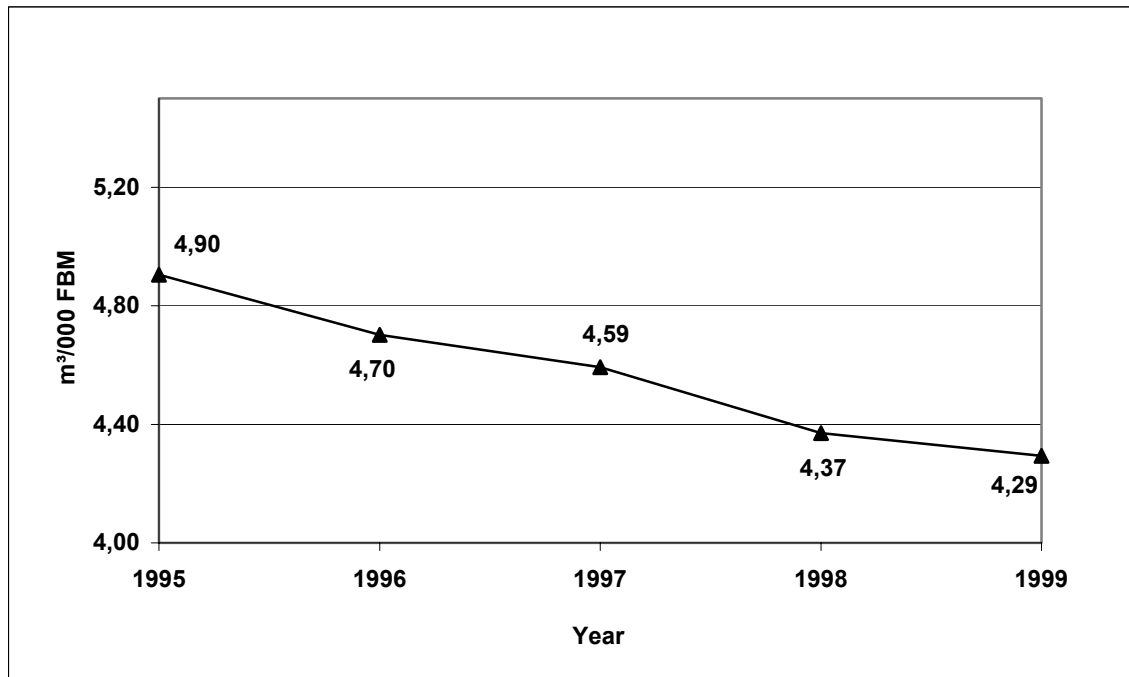
3.2 Evaluation Method

The method consists in establishing the material yield for every mill that consumes roundwood from forests in the domain of the State, and describing any changes.

The material yield is established from data on wood consumption and production obtained from the forest register that every mill is required to keep and submit each year to the Minister. The operating permit of a mill that does not submit its data in the form and at the time specified by regulation will not be renewed. Data from the forest registers are inspected by the Department, which then produces a profile of changes in the mill's material yield at the end of the five-year period covered by the GFMP.

Figure 3 shows changes in the yield of a softwood sawmill for the period 1995 to 1999. In 1995, the mill used 4.90 cubic metres of roundwood to produce one thousand board feet, but this figure had dropped to just 4.29 cubic metres by 1999. The mill's performance therefore improved progressively over the period in question.

Figure 3 Changes in the Material Yield of a Softwood Sawmill



3.3 USING THE RESULTS

A TSMFA holder whose material yield performance declines over the five-year period covered by the general forest management plan will be considered unsatisfactory.

If the holder is unable to claim superior force¹⁷, its counter-performance will result in a freeze or a reduction of the volumes of wood allocated to the mill. The Minister may reconsider his decision if the holder submits a remedial plan, and in any case will give the holder an opportunity to present its views and inform him of any special circumstances.

If the Minister decides to reduce the volume of wood allocated in the TSMFA, the reduction will affect only the excess volume used by the mill. To establish this volume, the mill's average yield during the period covered by the current general forest management plan is compared with the average yield during the period covered by the previous plan.

For example:

- Average yield of the sawmill during the period covered by the current GFMP (1995-1999) = 5.00 m³/000 FBM;
- Average yield of the sawmill during the period covered by the previous GFMP (1990-1994) = 4.58 m³/000 FBM.

A mill with an authorized consumption of 200,000 m³ produced 40,000,000 FBM, giving an average yield of 5.00 m³/000 FBM. If the yield is 4.58 m³/000 FBM, only 183,200 m³ of wood is required to produce an equivalent FBM. The Minister could therefore reduce the volume allocated in the TSMFA by the difference between these two yields, i.e. 16,800 m³ (200,000 m³ – 183,200 m³).

* * * *

¹⁷ Superior force (Civil Code): An event outside the control of the company that has had a direct impact on the material yield by affecting the mill's infrastructures (fire, flooding, etc.) or the resource (processing of fire-damaged wood or wood damaged by insects or diseases, etc.).

