

Forest Resource Assessment Policy



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PREFACE

The Forest Resource Assessment Policy (FRAP) contributes to the achievement of Ontario's forest sustainability goal, principles and objectives set out in the *Policy Framework for Sustainable Forests* (MNR 1994), the *Crown Forest Sustainability Act* (1994), the *Environmental Assessment Act* (R.S.O. 1990) and the *Environmental Bill of Rights* (R.S.O. 1993). The five-year update to FRAP is in response to Condition 105 of the *Reasons for Decision and Decision: Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario* as approved by the Environmental Assessment Board on April 5, 1994. For information on the evolution of FRAP, please refer to Appendix 4.

The 2003 FRAP update reflects progressive changes in MNR policy directions and program development since 1998. These changes include the following:

- commitments associated with the implementation of *Ontario's Living Legacy Land Use Strategy* (MNR 1999) and the *Ontario Forest Accord* (MNR 1999);
- progressive development of Ontario's approach to criteria, elements and indicators documented in the *State of the Forest Report, 2001* (MNR 2002)
- a change in legal authority under the *Crown Forest Sustainability Act* (1994) to include public lands and regulate the *Forest Information Manual*;
- the development of regional wood supply strategies;
- the introduction of provincial forest types for consistent regional and provincial planning and reporting;
- a description of the MNR disposition process for forest resources and related business practices;
- a description of ongoing improvements to socio-economic impact assessment for forest management planning and regional wood supply strategies; and
- new terminology.

EXECUTIVE SUMMARY

The *Forest Resource Assessment Policy* (FRAP) provides provincial direction for the preparation and use of assessments of Ontario's Crown forest resources -- locally, regionally, and provincially. Forest resource assessments play an important role in realizing Ontario's commitment to sustainable forest management. This commitment is described in the *Policy Framework for Sustainable Forests* (MNR 1994) and the *Crown Forest Sustainability Act* (1994).

FRAP supports implementation of the provisions in the *Crown Forest Sustainability Act* (1994) for determining forest sustainability and managing Ontario's Crown forests in a sustainable manner. Locally, forest resource assessments are conducted during the preparation of forest management plans. Forest resource assessments are prepared every five years at regional and provincial levels to provide projections of both long-term forest health and long-term availability of Ontario's Crown forest resources. The regional and provincial assessments are published in the report *An Assessment of Ontario's Forest Resources*. An executive summary of this report will be included in the Ontario state of the forest report.

FRAP requires the preparation of regional wood supply strategies to guide adjustments to the provincial wood supply. These adjustments are required to reflect the ability of forest management units to support a sustainable supply of available wood. The strategies will be published in a provincial-level report every five years. A summary of the information will be included in the Ontario state of the forest report.

Assessments of Ontario's forest resources will be prepared consistent with FRAP policy directions and conducted within the context of the MNR planning system, which includes forest management planning. FRAP provides two frameworks -- a sustainable forest management evaluation framework and an analytical framework -- to guide the preparation of forest resource assessments on a regular basis. These two frameworks will continue to evolve over the next several years.

FRAP has been updated every five years to comply with Condition 105 of the *Reasons for Decision and Decision: Class Environmental Assessment for Timber Management on Crown Lands in Ontario*, as approved by the Environmental Assessment Board on April 5, 1994. In 2003, FRAP was revised to reflect progressive changes in MNR policy directions and program development since 1998. The next FRAP review and update is scheduled for 2007.

1.0 INTRODUCTION

The *Forest Resource Assessment Policy* (FRAP) provides resource managers with provincial direction for the preparation and use of assessments of Ontario's forest resources on a regular basis. Forest resource assessments play an important role in realizing Ontario's commitment to sustainable forest management. This commitment is described in the forest sustainability goal, principles and objectives set out in the *Policy Framework for Sustainable Forests* (MNR 1994) and the principles set out in the *Crown Forest Sustainability Act* (1994), the *Environmental Assessment Act* (R.S.O. 1990) and the *Environmental Bill of Rights* (R.S.O. 1993).

In Ontario, resource managers are individuals responsible for the management of Ontario's Crown forest lands and resources. For example, these individuals must:

- know the condition of the forest lands and resources they manage;
- investigate a full range of environmental, social and economic benefits available from Ontario's forest lands and resources at a variety of spatial scales over a number of time periods;
- work with Ministry of Natural Resources (MNR) partners (e.g. forest industry, other government agencies, environmental non-government organizations) and the public to guide forest management practices into the future;
- monitor and assess the long-term health of Ontario's forest lands and resources and the availability of forest resources for a range of environmental, social, cultural and economic values; and
- evaluate and report on progress in achieving Ontario's sustainable forest management goal principles and objectives over time.

These individuals also include people responsible for:

- maintaining and enhancing documents containing Ontario's forest policy and legal authority (e.g. *Crown Forest Sustainability Act* amendments, updates to policies, regulatory manuals, etc.);

- preparing and using the report *An Assessment of Ontario's Forest Resources*;
- providing for the long-term availability of forest resources, including available wood supplies (e.g. forest resource assessments undertaken during the development of forest management plans);
- developing and implementing regional wood supply strategies;
- disposing of Crown forest resources;
- auditing forest management activities; and
- monitoring, assessing, evaluating and reporting on the sustainable management of Ontario's Crown forest lands and resources for the Ontario state of the forest report.

Assessments of Ontario's forest resources will be conducted in an integrated and progressive manner locally, regionally and provincially. At the local level, assessments will be conducted during the preparation of forest management plans. At the provincial level, the report *An Assessment of Ontario's Forest Resources* will be published every five years. The provincial report will contain regional and provincial level assessments of Ontario's Crown forest resources and provide projections of both long-term forest health and the long-term availability of Ontario's Crown forest resources. The local, regional and provincial level assessments will be considered during the development of MNR land use strategies.

All assessments of Ontario's forest resources will be prepared consistent with the common principles, objectives, information and technical requirements set out in FRAP. A sustainable forest management evaluation framework and an analytical framework are provided to guide MNR efforts focused on monitoring and assessing how Ontario's forest lands and resources are managed, and evaluating and reporting on how Ontario is achieving sustainable forest management. These two frameworks will continue to evolve over the next several years. In the future, these frameworks will be used to guide the implementation of FRAP through the MNR planning system.

2.0 POLICY CONTEXT

In Ontario, MNR is the steward of Crown lands and waters, which cover 87 per cent of the province. MNR stewardship responsibilities include overseeing Ontario's forests, fisheries, wildlife, provincial parks, mineral aggregates, and petroleum resources. Ontario's forests cover 66 per cent of the provincial land mass. The Crown owns most of Ontario's forests (82 per cent).

2.1 Strategic Policy Directions

The Ontario government supports the MNR concept and principles of sustainable development. Sustainable development depends on the continuing availability and health of natural resources. Ontario government commitments and responsibilities for the sustainable management of Ontario's Crown lands and resources are expressed in MNR strategic policy direction (i.e. vision, mission, broad objectives and desired outcomes). MNR strategic policy direction is set out in the *MNR Statement of Environmental Values* (MNR 1995, page 5) and *Beyond 2000* (MNR 2000, pages 4-6).

- **Sustainable development** (vision) – to contribute to the environmental, social and economic well being of the people of Ontario through the sustainable development of natural resources.
- **Ecological sustainability** (mission) - to manage Ontario's natural resources in an ecologically sustainable way to ensure that they are available for the enjoyment and use of future generations.

Broad objectives:

- to ensure the long-term health of ecosystems by protecting and conserving our valuable soil, aquatic resources, forest and wildlife resources as well as their biological foundations;
- to ensure the continuing availability of natural resources for the long-term benefit of the people of Ontario: that is, to leave future generations a legacy of the natural wealth that we still enjoy today;
- to protect natural heritage and biological features of provincial significance; and

- to protect human life, the resource base and physical property from the threats of forest fires, floods and erosion.

Desired outcomes of MNR management efforts.

- The long-term health of ecosystems is maintained.
- The continuing availability and sustainability of natural resources is secured.
- Significant natural heritage features and landscape values are protected.
- Economic development potential associated with natural resources is maintained.
- Ontarians receive a fair return for the use of natural resource.
- A variety of natural resource-based recreation opportunities are provided.
- Human life, property and natural resource values are protected from hazards such as forest fires, floods and erosion.
- Management decisions are based on high quality natural resource science and information.
- The public interest in Ontario's natural resources and the need to manage them sustainably is appreciated.

MNR is committed to sustainable forest management, which involves managing Ontario's Crown forests on behalf of the people of Ontario to meet the future needs of successive generations.

2.2 Forest Sustainability

The *Policy Framework for Sustainable Forests* (MNR 1994) provides the overall direction for an ecosystem-based approach to the management of Ontario's Crown forests. The MNR commitment to forest sustainability is expressed in the goal statement: *to ensure the long-term health of Ontario's forest ecosystems for the benefit of the local and global environments, while enabling present and future generations to meet their material and social needs.*¹

The *Policy Framework for Sustainable Forests* (MNR 1994) does not define forest sustainability. Instead, it sets out a series of principles and objectives for

1. MNR 1994. *Policy Framework for Sustainable Forests*. Toronto: Queen's Printer for Ontario, page 1.

forest sustainability, community and resource use sustainability, and decision-making. FRAP supports these principles and objectives by:

- recognizing the need for an encompassing definition that embraces all aspects of forest life, central to the ideas, beliefs and values of society;
- defining desired forest condition and benefits to support the achievement of forest sustainability;
- providing for flexibility through local management actions compatible with maintaining and restoring this condition; and
- supporting adaptive management in Ontario's forests.

The goal of forest sustainability has been entrenched in law as the purpose statement in the *Crown Forest Sustainability Act* (1994): “to provide for the sustainability of Crown forests and, in accordance with that objective, to manage Crown forests to meet social, economic and environmental needs of present and future generations”.² The *Crown Forest Sustainability Act* (1994) links, by definition, the terms ‘Crown forest’, ‘forest sustainability’, ‘forest health’, ‘forest ecosystem’ and ‘forest resource’:

- **Crown forest** means “a forest ecosystem or part of a forest ecosystem that is on land vested in Her Majesty in right of Ontario”;
- **forest sustainability** means “long-term forest health”;
- **forest health** means “the condition of a forest ecosystem that sustains the ecosystem’s complexity while providing for the needs of the people of Ontario”;
- a **forest ecosystem** means “an ecosystem in which trees are or are capable of being a major biological component”; and
- a **forest resource** means “trees in a forest ecosystem, any other type of plant life prescribed by the regulations that is in a forest ecosystem and parts of or residue from trees in a forest ecosystem”.³

The *Forest Management Planning Manual for Ontario’s Crown Forests* (MNR 1996) defines **sustainable forest management** as “the management of forest ecosystems to maintain a healthy forest ecosystem, which provides a continuous, predictable flow of benefits”.⁴

For the purposes of the *Crown Forest Sustainability Act* (1994), the sustainability of a Crown forest is to be determined at the management unit level in accordance with the *Forest Management Planning Manual for Ontario’s Crown Forests*, issued under the regulations of the *Crown Forest Sustainability Act* (1994). The Manual provides for the determination or assessment of the sustainability of Crown forests in a manner consistent with the following principles:

1. large, healthy, diverse and productive Crown forests and their associated ecological processes and biological diversity should be conserved
2. the long-term health and vigour of Crown forests should be provided for by using forest practices that, within the limits of silvicultural requirements, emulate natural disturbances and landscape patterns while minimizing adverse effects on plant life, animal life, water, soil, air and social and economic values, including recreational values and heritage values.⁵

Forest management plan objectives are to be developed for benefits or outcomes, which can be achieved by managing forest cover.

2.3 Adaptive Management

Ecosystem management (sometimes referred to as ecological management or an ecological approach to management) is defined in the *Canadian Biodiversity Strategy* as “the management of human activities so that ecosystems, their structure, composition and function, and the processes that shaped them can continue at appropriate temporal and spatial scales”. (Environment Canada 1995, p. 72) Ecosystem management requires an understanding of

2. Statutes of Ontario. *Crown Forest Sustainability Act*, 1994 (Chapter 25), section 1.

3. Statutes of Ontario. *Crown Forest Sustainability Act*, 1994 (Chapter 25), section 3.

4. MNR 1996. *Forest Management Planning Manual for Ontario’s Crown Forests*. Toronto: Queen’s Printer for Ontario, Glossary of Terms p. GL-32.

5. Statutes of Ontario. *Crown Forest Sustainability Act*, 1994 (Chapter 25), section 2.

ecosystems and the impacts and implications of human activities.

Ecosystem management includes some uncertainty, as our understanding of ecosystems is incomplete. Ontario has adopted adaptive management (Holling 1978) for policy development to address this uncertainty.

The premise of adaptive management is built-in learning processes based on monitoring decision outcomes. As new data, information, scientific knowledge and decision support tools become available, they are tested through application to better understand the complex patterns and processes of ecosystems.

On the ground, adaptive management achieves minimal risk because decisions taken around managing Ontario's forests are revisited strategically at scheduled times. Given active programs of research and monitoring, these time steps are sufficiently short that any misdirection can be rectified before significant area has been altered.

Adaptive management is most instructive when undertaken actively (Smith and Walters 1981) and a set of alternate management activities is applied simultaneously to a number of landscapes. Learning is accelerated since outcomes are contrasted and yearly variation is controlled. However, opportunities for active adaptive management are limited by factors such as necessary scale of experiments, lack of suitable coordinating infrastructure, and social and economic pressures that require a stable and consistent policy environment across the province (the level playing field). Generally, passive adaptive management (Smith and Walters 1981) is used in forest policy development in Ontario.

The cycle for passive adaptive management of Ontario's forests is policy debate, option selection, implementation, monitoring, assessment, policy debate, and so on. Learning is generated by monitoring ecosystem status, under the influence of current forest management activities directed by policy, and comparing the observed outcomes against expected outcomes of these policies.

This adaptive approach to ecosystem management depends on:

- the Ontario Ecological Land Classification;
- scientific infrastructure to support basic science and experimental management;
- monitoring infrastructure for resource state/condition assessment;
- objective reporting mechanism(s) such as the state of the forest report (*Crown Forest Sustainability Act*, 1994);
- public awareness of forest ecosystems, objectives and management tools;
- the Environmental Bill of Rights Registry to invoke public(s) debate and involvement; and
- programs to implement, audit, and enforce forest management policies.

MNR interests in environmental protection and ecological integrity are described in more detail in the *Ministry of Natural Resources Statement of Environmental Values* (MNR 1995) under the *Environmental Bill of Rights* (1993) and *Beyond 2000* (MNR 2000). These documents state how MNR will be publicly accountable for ensuring that the environment is considered in its decision-making processes.

Also, MNR uses integrated resource management approaches to coordinate resource management policies, programs and activities so that long-term benefits are optimized and conflicts among programs, resource uses and users are minimized. Provincial policies and land use strategies provide direction for the conservation and management of critical ecosystem values such as biological diversity. Provincial policies are developed with guidance from the Provincial Forest Policy Committee. Land use strategies are developed with guidance from Regional Advisory Committees. These sources influence operational planning decisions made at the management unit level and provide the context for adaptive management monitoring programs.

2.4 Balancing Local Issues, Needs and Variations in Environmental, Social and Economic Conditions with Regional and Provincial Interests

In Ontario, the process for determining forest sustainability is described in the *Forest Management Planning Manual for Ontario's Crown Forests*. The process requires that the approved forest management plan for a management unit determine harvest and renewal levels and silviculture investment requirements to meet desired forest condition and benefits such as wood supply, wildlife habitat, tourism, etc.

The *Forest Management Planning Manual for Ontario's Crown Forests* (MNR 1996) provides for the determination of forest sustainability through the following:

- forest management plan objectives and targets developed for benefits or outcomes that can be achieved by managing forest cover;
- criteria, elements and indicators of forest sustainability incorporated into strategic decision-making and into periodic assessments of forest environmental and socio-economic conditions; and
- forest operations conducted in a manner that conserves forest health and minimizes undesirable effects on physical and social environments.⁶

This means that forest sustainability is determined from the bottom up beginning at the local management unit level where all planning options prepared by local resource managers and local citizens committees must consider ecological, social, cultural, and economic impacts in the context of regional and provincial interests.

3.0 POLICY DIRECTIONS

3.1 Goal

The purpose of FRAP is to *provide a framework and criteria for the assessment of forest resources on Crown lands in Ontario*.

Assessments of Ontario's forests will support the definition, maintenance and restoration of desired forest condition and benefits at the local management unit level while recognizing regional and provincial interests in the long-term health of Ontario's forests and availability of forest resources.

3.2 Common Principles

The long-term health of Ontario's Crown forests and the availability of forest resources for forest dependent communities and users will depend on:

- the broad policies and priorities set by the Ontario government and MNR, which are used to influence decisions affecting the overall management of Crown forest lands and resources;
- the widely accepted goals, principles and objectives set out in documents containing Ontario's forest policy and legal authority; and
- stewardship arrangements between MNR and its business partners in cooperation with the scientific and academic communities, forest, mining and tourism industries, labour, Aboriginal peoples, and environmental and conservation groups.

Documents containing Ontario's forest policy and legal authority provide overall directions and set the requirements that resource managers must consider when managing Ontario's Crown forest lands. *The Policy Framework for Sustainable Forests* (MNR 1994), FRAP, the *Crown Forest Sustainability Act* (1994) and the *Forest Management Planning Manual* (MNR 1996) are examples of these documents.

Land use and forest management planning decisions affecting the management of Ontario's Crown forests will also be guided by the following principles:

6. MNR 1996. *Forest Management Planning Manual for Ontario's Crown Forests*. Toronto: Queen's Printer for Ontario, Part A Section 2.3, pp. A-38- A-82.

Forest sustainability: Forest sustainability is the first priority and overriding principle.

Forest composition: The broad composition of Ontario's Crown forests must be maintained and, where necessary and practical, improved to reflect the desired forest condition and benefits.

Integration: An ecosystem-based approach to the conservation (i.e. maintenance, enhancement, protection, restoration and sustainable use) of Ontario's natural resources requires the integration and implementation of strategic goals, principles and objectives through policy, program development, land use and resource management planning processes. Land use and resource management planning processes are integrated at a number of spatial scales (e.g. Ontario Ecological Land Classification ecosite, ecodistrict, ecoregion and ecozone scales) within the hierarchy of MNR administrative levels (i.e. management unit, district, region and province) over long time frames.

Diversity and habitat: All Crown forests must be assessed and evaluated for their contributions to forest diversity and wildlife habitat.

Community and resource use sustainability: Forest management and resource use decisions must consider community vitality and resource use stability.

Balance, accountability and consensus: Levels of forest use, including timber production, must be determined at the local management unit level by local resource stewards with full consideration of non-local interests, ecological, social, cultural, and economic impacts within the context of broader regional and provincial policy and planning directions.

Ecological sustainability: The impacts and implications of human activities will be identified and mitigated through:

- the use of adaptive management in policy development;
- the use of new data, information and knowledge (e.g. updated and refined inventories, appropriate science, local

knowledge, sound available data and information, public involvement, applied research, improved and new technologies and applications) during each successive forest management planning cycle;

- the use of adaptive management for the conservation of Ontario's natural resources, where ecosystems are defined as including both the natural environment and the economic and social activities of humans; and
- caution and special concern for natural values when human understanding of the way the natural world works and how human actions affect it is incomplete (i.e. the precautionary principle).

Adaptability, flexibility and continuity:

- levels of forest renewal must be adequate to sustain the forest and, where feasible, be adaptable and flexible to respond to changing needs and opportunities (e.g. expansions in the forest industry, parks and protected areas);
- levels of forest use, including timber production, must be:
 - responsive to changes in environmental concerns, industrial demand and societal needs; and
 - practical to ensure that policy development and legal reform occur consistent with overarching federal and provincial laws and policies, within the context of existing and future priorities and fiscal and/or human resource capabilities (i.e. the reasonable relationship principle).

3.3 Objectives

- To conduct assessments of Ontario's forest resources in an integrated and progressive manner beginning at the local management unit level.
- To prepare and publish regional wood supply strategies every five years.
- To prepare and publish a provincial level assessment every five years in a report *An Assessment of Ontario's Forest Resources*.

- To ensure objectivity and consistency in the preparation, interpretation and use of the results of forest resource assessments through the MNR planning system and through inventory, monitoring, assessment, and reporting processes.

FRAP provides provincial directions for:

- conducting assessments of Ontario's forest resources within the context of the MNR planning system, which includes forest management planning;
- producing regional wood supply strategies every five years; and
- producing the report *An Assessment of Ontario's Forest Resources* every five years.

The FRAP sustainable forest management evaluation framework and analytical framework will be used to guide MNR efforts to:

- monitor and assess how Ontario's forest lands and resources are being managed to support the health of Ontario's forests and availability of forest resources during the development of forest management plans and land use strategies; and
- evaluate and report on how Ontario's forest sustainability goal, principles and objectives are being achieved.

Assessments of Ontario's Crown forest resources will be prepared consistent with FRAP directions (i.e. sub-sections 3.1, 3.2 and 3.3), Ontario's sustainable forest management evaluation framework (refer to sub-section 3.4), the FRAP analytical framework (refer to sub-section 3.5) and the information and technical requirements listed in Appendix 1. Assessments of forest resources in local forest management units will be prepared as directed in the *Forest Management Planning Manual for Ontario's Crown Forests*.

3.4 Ontario's Sustainable Forest Management Evaluation Framework

In 2002, Ontario's sustainable forest management evaluation framework of criteria, elements and indicators was published in the *State of the Forest Report, 2001* (MNR 2002).⁷ The evaluation framework includes seven nationally and internationally accepted criteria. These criteria are:

1. conserving the biological diversity in Ontario's forests;
2. maintaining and enhancing forest ecosystem condition and productivity in Ontario;
3. protecting and conserving Ontario's forest soil and water resources;
4. monitoring Ontario's forest contributions to global ecological cycles;
5. providing for a continuous and predictable flow of economic and social benefits from Ontario's forests;
6. accepting Ontario's social responsibilities for sustainable forest development; and
7. maintaining and enhancing Ontario's framework for sustainable forest management.

For each criterion, a set of elements and indicators has been tailored specifically to Ontario conditions. Each element is assessed based on one or more indicators. Ontario's first set of 67 indicators is described in the *State of the Forest Report, 2001* (MNR 2002). They were built upon the initial set of indicators listed in the *Forest Management Planning Manual for Ontario's Crown Forests*,⁸ the common framework of criteria and indicators developed for the Canadian Council of Forest Ministers,⁹ and finalized through the Montreal Process.¹⁰ These criteria, elements and indicators comprise Ontario's sustainable forest management evaluation framework (Appendix 2). The evaluation framework is expected to evolve over time as new

7. MNR 2002. *State of the Forest Report, 2001*. Toronto: Queen's Printer for Ontario, p. 3-2.

8. MNR 1996. *Forest Management Planning Manual for Ontario's Crown Forests*. Toronto: Queen's Printer for Ontario, Figure C-1, page C-69.

9. Canadian Council of Forest Ministers, 1995. *Defining Sustainable Forest Management, A Canadian Approach to Criteria and Indicators*. Ottawa: Canadian Council of Forest Ministers, pp. 22.

10. The Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (Montreal Process), 1999. *Criteria and indicators for the conservation and sustainable management of temperate and boreal forests: The Montreal Process*. Ottawa: Canadian Forest Service, Natural Resources Canada, pp. 19.

information and knowledge become available.

Data from an analytical framework for inventory, monitoring, assessment, evaluation and reporting results across a number of spatial scales (e.g. Ontario Ecological Land Classification ecosite, ecodistrict, ecoregion and ecozone scales) will demonstrate the achievement of Ontario's forest sustainability goal, principles and objectives. This will be done over long periods within the hierarchy of MNR administrative levels (i.e. management unit, district, region and province).¹¹ These results will be evaluated in the report *An Assessment of Ontario's Forest Resources* and summarized in the Ontario state of the forest report. These reports will play a key role in supporting forest management and land use planning decisions. Ontario's sustainable forest management evaluation framework will be reviewed and updated once in each five-year reporting period.

3.5 Analytical Framework for Forest Resource Assessment

Assessments of Ontario's Crown forests must account for five different types of evolving directions or agents of change. These agents of change are:

- documents containing Ontario's forest policy and legal authority;
- specific Ontario government and/or MNR policy and program changes;
- MNR land use planning and forest resource allocations;
- new information and knowledge from science, research and development initiatives; and
- Ontario's sustainable forest management evaluation framework.

Assessments of Ontario's Crown forests will be conducted in the context of an hierarchical analytical framework designed to facilitate the integration of these five agents of change and information from other pertinent sources (e.g. new forest management plans, independent forest

audits, etc.). When changes occur in one or more of these directions, they must be accounted for in land use planning and directions, forest management plans and all forest resource assessments. Figure 1 conceptually illustrates how the framework will facilitate the integration of these five directions, and how assessments of Ontario's forest resources fit into the MNR's policy and planning continuum.

4.0 AUTHORITY

The authority for FRAP is set out in Sections 2 and 3 of the *Policy Framework for Sustainable Forests* and in Sections 1 to 5 of the *Crown Forest Sustainability Act* (1994).

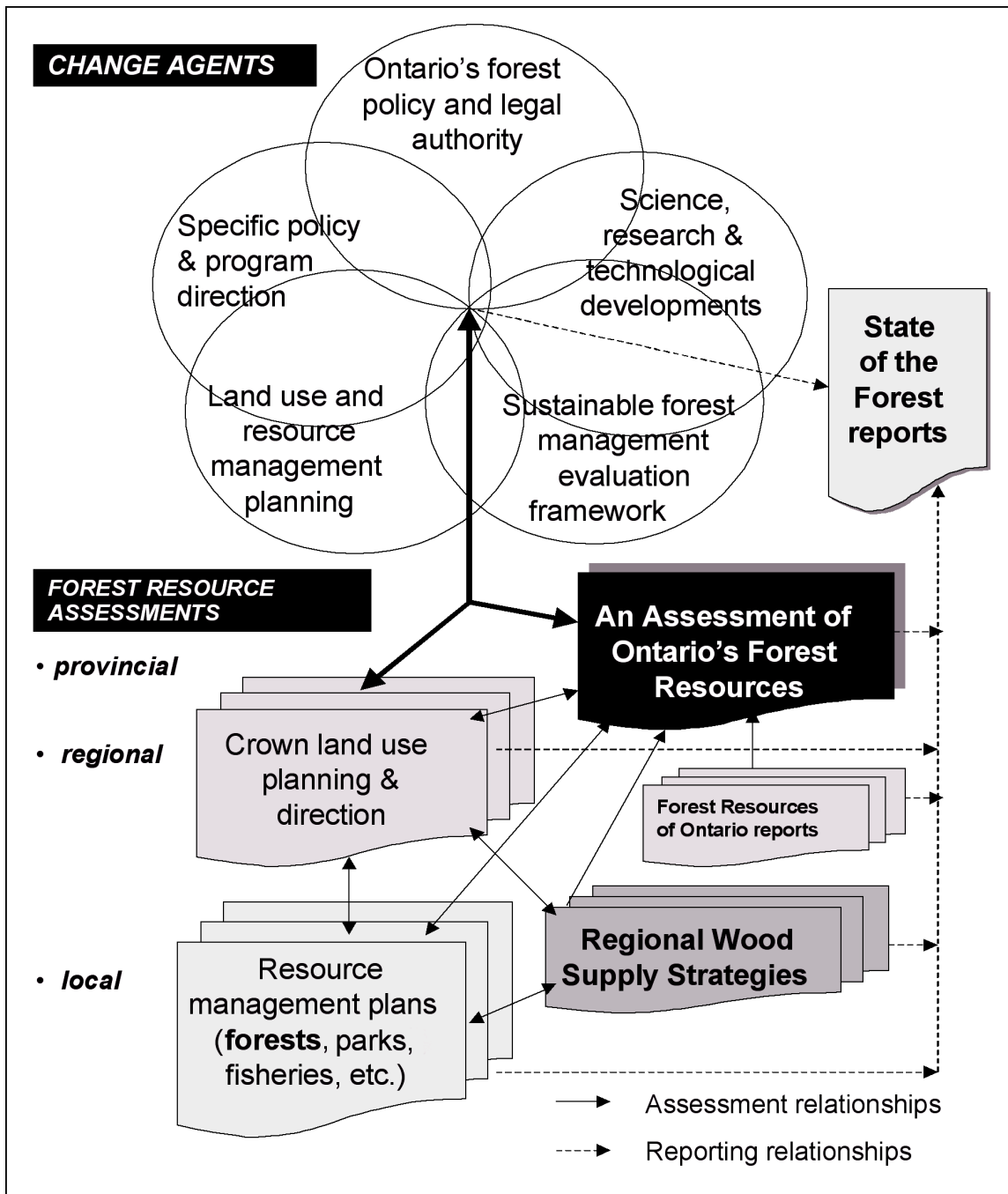
FRAP supports Ontario's forest sustainability goal, principles and objectives as set out in the *Policy Framework for Sustainable Forests* (MNR 1994). It also supports implementation of the provisions in the *Crown Forest Sustainability Act* (1994) for determining forest sustainability and managing Ontario's Crown forests in a sustainable manner.

MNR does not have the legal authority to apply FRAP on forest lands owned by the federal government or private individuals. MNR will respect and honour treaty and Aboriginal rights when making and implementing plans. The implementation of MNR plans will not prejudice the outcome of any land claims being negotiated by Ontario and Canada.

This version of FRAP has been prepared to comply with the five-year update requirement in Condition 105 of the Timber Environmental Assessment Approval (Environmental Assessment Board 1994).

11. These requirements are described in the *Forest Management Planning Manual for Ontario's Crown Forests* (MNR 1996) Part A - Forest Management Plans, Chapter 2.0 Planning Process and Plan Content Requirements including Figure A-2 "Indicators of Forest Sustainability for Planning", Sub-section 2.3.2 and Part C - Monitoring and Reporting, Chapter 4.0 Report of Past Forest Operations, Sub-section 4.3 Assessment of Forest Sustainability including Figure C1 "Indicators for the Assessment of Forest Sustainability".

Figure 1 Analytical framework for forest resource assessment in Ontario



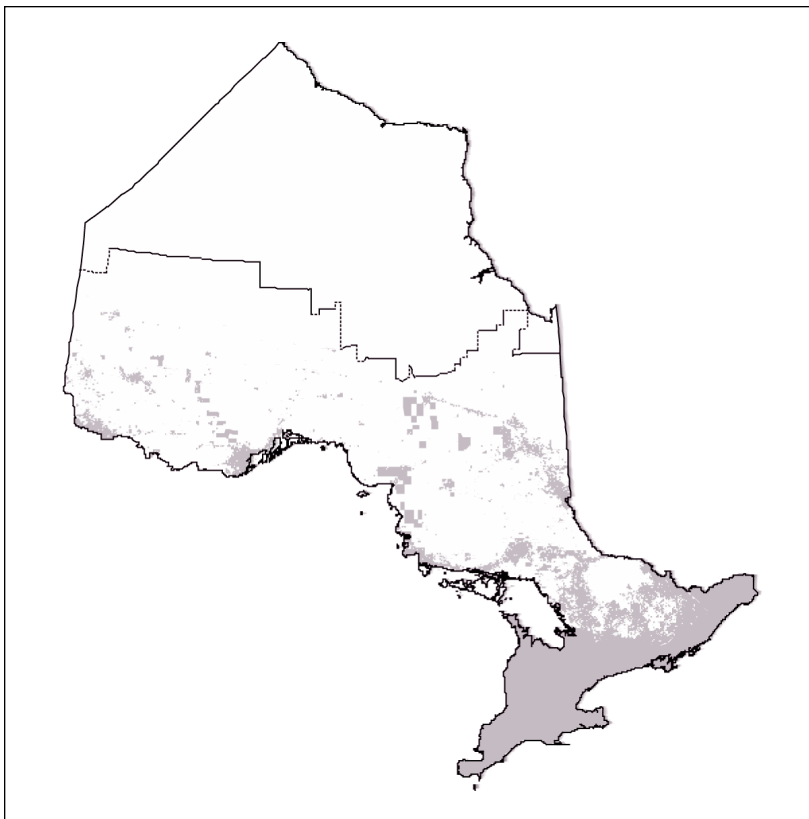
5.0 AREA OF POLICY APPLICATION

The FRAP applies to all Crown forest lands in Ontario (Figure 2) situated within the Area of the Undertaking for the Timber Environmental Assessment (Figure 3), recently overlapped by the *Ontario's Living Legacy* (OLL) planning area (Figure 4).

The report *An Assessment of Ontario's Forest Resources* will focus on Crown forest lands within the Area of the Undertaking for the Timber Environmental Assessment. In the future, the scope of the provincial assessment report will be expanded to encompass OLL planning area. The OLL planning area includes a number of protected areas not within the Area of the Undertaking.

Figure 2 Crown and private land ownership in Ontario

87 per cent of the land in Ontario is held under Crown ownership (unshaded areas). 13 per cent of the land is held under private ownership (shaded areas).



6.0 IMPLEMENTATION

Implementation of FRAP will depend on:

- the successful integration of policy and planning efforts;
- the consideration of a balance of local issues, needs and variations in environment, economic and social conditions in the context of regional and provincial interests;
- the directions provided in the *Forest Management Planning Manual for Ontario's Crown Forests* for all aspects of forest management planning on all management units within the Area of the Undertaking for the Timber Environmental Assessment in Ontario;
- clear quantifiable objectives and targets set out in approved forest management plans for desired forest condition and benefits, including a sustainable level of harvest and renewal as well as estimates of forest renewal investment requirements;
- the preparation and use of regional wood supply strategies;
- the preparation and use of the report *An Assessment of Ontario's Forest Resources*; and
- public reporting on the long-term health of Ontario's forests and the long-term availability of forest resources (e.g. summaries of wood supply, harvest and renewal levels) in the state of the forest report.

Assessments of Ontario's Crown forest resources will be conducted and used to support the MNR planning system (Figure 1, Section 3.5) as described in the following sub-sections.

6.1 MNR Planning System

MNR makes ecologically based decisions about natural resource management and establishes where and how Ontario's Crown lands and natural resources should be managed to meet Ontario government commitments and MNR goals and objectives. This is done through the integration of policy and program directions with land use and resource management planning processes, including forest management planning.

MNR planning system is used to:

- allocate Crown lands for particular uses, to achieve a suitable balance among provincial policies, program objectives, public preferences, competing uses, and anticipated implications, all within the overall context of ecological sustainability;
- establish general conditions for using Crown land and resources based on the application of policies developed at the provincial level;
- develop and maintain a comprehensive Crown land use atlas that consolidates existing land use directions and provides a base for updates to land use directions;
- develop strategies at the regional level to facilitate the interpretation and application of provincial policies for different resource and ecological situations across the province in the context of regional and local concerns; and
- develop local resource management plans to put into operation the directions provided in the higher level planning documents by indicating where specific resource management activities will occur and how certain resources will be managed.

6.1.1 Crown Land Use Planning and Directions

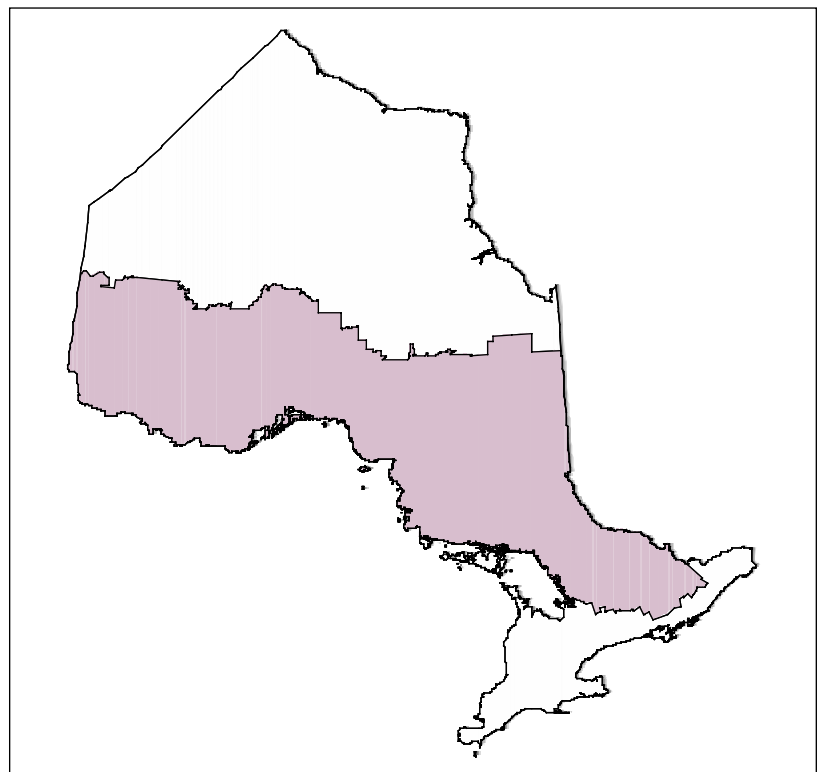
Land use planning identifies the lands that are required to achieve Ontario government and MNR objectives related to forests, natural and cultural heritage, resource-based tourism, fish and wildlife, Crown land recreation, and a range of other resources, values and activities. The allocation process is intended to provide sustainable environmental, social and economic benefits to the people of Ontario. This decision-making process involves setting natural resource objectives, gathering and analyzing information, developing and assessing planning options, and approving and implementing the planning decisions. Public consultation is an essential part of this process.

MNR has long been involved in developing land use directions for Crown lands. Comprehensive plans covering most of the province (District Land

Figure 3 Area of the Undertaking for the Timber Environmental Assessment



Figure 4 Ontario's Living Legacy planning area



Use Guidelines) were developed in the early 1980's. In 1999, after an extensive planning and consultation process, MNR released the *Ontario's Living Legacy Land Use Strategy* (MNR 1999), which provided updated land use directions for the Area of the Undertaking for the Timber Environmental Assessment and a number of protected areas outside of the Area of the Undertaking. Some other local land use plans (e.g. Temagami, Madawaska Highlands, etc.) have also been developed and other documents may contain some land use directions.

MNR has developed a Crown land use atlas to consolidate the variety of land use direction for Crown lands.¹² The atlas brings together existing approved directions and makes it easily accessible. In the future, changes to land use directions will be formalized by amending the land use atlas. The initial release of the atlas covers only the Area of the Undertaking for the Timber Environmental Assessment. Eventually the atlas will be expanded to cover the entire province.

MNR is planning to develop additional integrated directions that will define the desired conditions for a range of ecological, social, and economic values. These directions will be provided through the development of strategies for ecologically based planning units that, in the future, will cover the entire province. The strategies will provide a broader, more consistent context for decisions made about managing natural resources. The broad spectrum of interest groups, associations, Aboriginal peoples, governments, industries, other stakeholders and the public will have an opportunity to participate in the development of these ecological strategies.

The strategies for ecologically based planning units will help to guide the development of operational resource management plans. It is anticipated that the strategies will have a particular application to forest management planning because one of the major topics will be the identification of the desired forest condition and benefits. Over time, the strategies will be renewed on a regular basis to incorporate changes in policy directions, societal demands, and resource knowledge.

6.1.2 Resource Management Planning

According to the MNR planning system, operational resource management plans are developed at the local management unit level. The plans guide specific resource projects and activities for the sustainable production of goods and services. Operational decisions made at the local level will specify the actions that will be taken to deliver upper level decisions. MNR or its partners and resource stakeholders do operational planning. Operational planning is guided by the policies, strategies and directions contained in land use strategies and other broader strategies.

Resource management planning is done for individual resources (e.g. forests, fisheries, water) or land use designations (e.g. provincial parks, conservation reserves). Within the MNR land use and resource management planning system, forest management plans are operational resource management plans. These plans provide direction for forest resource management and the availability of forest resources. They also provide operational direction for activities such as harvest, renewal, and access. Resource management decisions made at the local level will indicate where specific resource management programs will occur and how particular resources will be managed. They will also be used to identify new social and economic opportunities (e.g. potential for new forest resource processing facilities).

6.2 Assessments of Ontario's Forest Resources

Assessments of Ontario's forest resources will be used to support decisions made about the use and management of Ontario's Crown forest lands and resources. Assessments will document changes in land use designations and resource allocations made through the MNR land use and resource management planning processes at local and higher levels. The information will be documented in forest management plans and the report *An Assessment of Ontario's Forest Resources*.

12. The atlas is available in print form. It is also accessible on the Ministry of Natural Resources public Internet site at <http://crownlanduseatlas.mnr.gov.on.ca>.

6.2.1 Forest Management Plans

Forest management plans direct activities on a management unit designated under the *Crown Forest Sustainability Act* (1994). These plans project how planning activities affect forest sustainability, forest condition and forest resource supply. They are the legal basis for identifying the available supply of forest resources, including wood. The policy, strategies and directions in land use strategies and other broader strategies will be used to guide the development of forest management plans.

The *Forest Management Planning Manual for Ontario's Crown Forests* provides direction for all aspects of forest management planning in all management units within the Area of the Undertaking for the Timber Environmental Assessment in Ontario (Figure 3). As prescribed in the Manual, forest resource assessments are required as part of the development of alternative management strategies considered during the preparation of a forest management plan. The management unit level information will be summed up every five years and documented at the higher MNR regional and provincial administrative levels. These aggregated estimates will change annually as new forest management plans are approved. The information will be used to document how the anticipated industrial demand defined in regional wood supply strategies can or cannot be met within each management unit. (Refer to sub-section 6.3)

6.2.2 An Assessment of Ontario's Forest Resources

The report *An Assessment of Ontario's Forest Resources* will project long-term forest health and long-term availability of forest resources on Crown lands in Ontario. These projections will be based on information about current forest condition, estimates of the availability of forest resources including available wood, silvicultural investment requirements, potential wildlife habitat, forest diversity, and current industrial demand. The forecast of forest resource production potential will be based on a consistent range of management strategies and assumptions for a mix of land uses,

which support a variety of activities such as natural heritage protection, tourism, and timber harvesting.

The provincial assessment report will assess forest resource potential (i.e. forest conditions, wildlife habitat, wood supply and silvicultural effort) based on a consistent range of management strategies and assumptions. The report will be used to support decisions made about the use and management of Ontario's Crown forest lands and resources developed through the MNR land use and resource management planning processes with guidance from citizens' committees and public consultation at local and higher planning levels.

A summary of the report *An Assessment of Ontario's Forest Resources* will be included in the current Ontario state of the forest report.

6.3 Regional Wood Supply Strategies

Regional wood supply strategies will provide a regional situational analysis by comparing the forecast of wood supply with the current level of industrial demand for management units in each MNR administrative region. The provincial wood supply will be adjusted annually to reflect the ability of management units to support a sustainable supply of available wood.

At the management unit level, the regional wood supply strategies will identify wood supply shortages and surpluses and guide distribution. These strategies will be used to address wood supply shortages. Such plans will provide recommendations to be considered during forest management planning, mill benchmarking exercises, or licensing processes, where appropriate.

At the regional level, the strategies will allow MNR to identify permanent increases in future wood supply that can be shared to support opportunities for expansions in the forest industry and additions to parks and protected areas. Changes to wood supply will be determined through the forest management planning process. The strategies will identify a threshold beyond which expansions may be considered.

Any adjustments in Crown wood supply for industrial use will be provided for through the MNR forest resource disposition process in a manner that complements the MNR authority to direct wood supply under the *Crown Forest Sustainability Act* (1994).¹³ Any adjustments in land use allocations will occur through formal amendments to the MNR Crown land use atlas.

6.4 Inventory, Monitoring, Assessment, Evaluation and Reporting

Inventory, monitoring, assessment, evaluation, and reporting provide a necessary foundation for continuing judgements about how the current state of Ontario's Crown forest resources compares to directions for desired ecological conditions at provincial, regional and local scales over a number of time periods. The information and knowledge is essential for effective and efficient planning and management. Then, if the desired outcomes are not being realized, adjustments can be made to management practices through the use of adaptive management.

Assessments of Ontario's forest resources will constitute one component of the MNR forest inventory, monitoring, evaluation and reporting requirements. Other components include:

- a comprehensive forest information system comprised of ground checks, other data and information sources, technical and scientific analyses and interpretation;
- various provincial, regional and operational reviews are used to monitor and assess progress in achieving forest sustainability goal, principles and objectives; and
- enforcement and compliance, which are specific types of monitoring activity, are used by MNR, its partners and the general public to comply with legal requirements.

Assessments of Ontario's forest resources will be used to demonstrate progress in achieving the sustainable forest management goal, principles and objectives at appropriate spatial scales over a number of time periods. The results will be used to determine whether or not the directions provided in policies, land use strategies and forest management plans have been followed. The information will be summarized in the Ontario state of the forest report.

The Ontario state of the forest report will be prepared every five-years in accordance with the *Crown Forest Sustainability Act* (1994). It will evaluate the ability of MNR and Ontario's primary forest-using industries to achieve sustainable forest management. The report will include a comparison of the current state of Ontario's forests with the forest sustainability goal, principles, objectives and targets for desired forest condition and benefits. The broad goal, principles and objectives exist and targets will be developed. The targets will be a blend of quantitative and qualitative measures.

The evaluation will include, but not be limited to:

- analysis of information consolidated from the five previous provincial annual reports on forest management;
- a description of significant advances in forest research and other developments, and a discussion of how the results are being incorporated into forest management;
- a synopsis of the findings of independent forest audits conducted in the previous five years, and a discussion of how the findings are being addressed in forest management;
- a discussion of the status of Ontario's forest resources in the context of Ontario's sustainable forest management evaluation framework;
- wood supply, harvest, and renewal summaries; and
- an update to the five-year report *Forest Resources of Ontario*.

13. MNR 1999. *Ontario Forest Accord*. Toronto: Queen's Printer for Ontario, Item 7. OFFAB, March 2002. *Room to Grow* - Final Report of the Ontario Forest Accord Advisory Board on Implementation of the Accord. Prepared for the Minister of Natural Resources by the Forest Accord Advisory Board. pp. 13-15.

Information required to evaluate forest practices will be found in documents such as:

- compliance monitoring reports;
- independent forest audit reports;
- forest management planning reports (e.g. annual reports);
- approved forest management plans;
- regional wood supply strategies;
- the forest resources of Ontario reports;
- the provincial forest resource assessment reports; and
- the Ontario state of the forest reports.

In the future, the report *Forest Resources of Ontario* will be published every five years as an appendix to the Ontario state of the forest report. The report will provide the most complete, accurate and up-to-date description of the current composition and condition of Ontario's forests published at regional and provincial levels. The report will contain information on the extent of the Ontario's forest resources in the form of tables, graphs, and maps.

The statistical data in the report *Forest Resources of Ontario* will be used as a reference to support further research and forest resource assessments. Annual summaries of data from the MNR Timber Resource Evaluation System (TREES), approved forest management plans, and Statistics Canada will also be provided. Future editions of the report will reflect the format used in the 1996 report. This format will facilitate consistent measurement and reporting over time. It will permit direct comparisons of current and future forest data, including remote sensing data recorded since the early 1990s.

The Ontario state of the forest report will be tabled in the Legislature and made available to the public every five years. Over time, the reports will demonstrate how Ontario's Crown forest lands and resources are being managed toward the achievement of provincial forest sustainability goal, principles, and objectives.

Sustainable forest management evaluation and reporting is a comprehensive and complex endeavour

because the values and expectations held by provincial, national, and international audiences are wide ranging. While the indicators described in the *Forest Management Planning Manual for Ontario's Crown Forests* used to determine forest sustainability at the management unit level are meaningful, provincial level reports require broader integrated measures. The provincial synthesis will require a framework to produce an objective and repeatable science-based evaluation. A systematic science-based hierarchical analysis,¹⁴ capable of processing expert opinion and other inputs, will be examined for possible use in future state of the forest reports.

Progress in achieving sustainable forest management in Ontario and improving forest management practices will occur through adaptive management. The knowledge and understanding gained from forest resource assessments will come from periodic comparisons of the forest ecosystems determined predominately by natural events and/or human intervention.

Appendix 3 illustrates the relationships between forest resource assessment information, technical requirements, and public reporting.

7.0 STATUS AND SUNSET REVIEW

The *Forest Resource Assessment Policy* is scheduled for review in five years. It may be updated sooner, if required, to reflect any significant changes in Ontario's forest policy, legal authority, or program delivery.

14. The Centre for International Forestry Research developed the methodology that will be tested for this criteria and indicator evaluation.

APPENDICES

1. Forest Resource Assessment Information and Technical Requirements
2. Ontario’s Sustainable Forest Management Evaluation Framework
3. Forest Resource Assessment Information and Technical Requirements in Relation to the Ontario State of the Forest Report
4. Evolution of the Forest Resource Assessment Policy

APPENDIX 1 FOREST RESOURCE ASSESSMENT INFORMATION AND TECHNICAL REQUIREMENTS

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A1.0 INFORMATION REQUIREMENTS

A1.1 Introduction

As directed in sub-section 68 (3) of the *Crown Forest Sustainability Act* (1994), the *Forest Management Planning Manual for Ontario's Crown Forests* (MNR 1996) provides instructions on how to describe various forest cover conditions, develop management objectives and targets, and estimate silvicultural investment for each forest management unit. The *Forest Information Manual* (MNR 2001) provides details about the type and format of information required for forest management planning.

Traditionally, the Forest Resources Inventory (FRI) has organized information about forest management units into various land requirements and forest cover types (aggregations of dominant tree cover). Recently, MNR developed a new ecologically based forest classification system of traditional FRI information (forest types). The classification is based on species composition as well as understory vegetation and soils and fits into the Ontario Ecological Land Classification. It is needed to describe general forest composition at the management unit level for broad regional and provincial level planning and reporting purposes.

The eight provincial forest types (see glossary) represent a mix of forest cover required for silviculture, wildlife habitat and sustainability assessment requirements at broad regional and provincial planning and reporting levels (Figure 5).

The provincial forest types will be used to consistently compare information about Ontario's Crown forests across multiple management units in support of broader provincial and regional policy and planning objectives developed through the MNR planning system.

The information required to conduct forest resource assessments will include:

- extensive background information to be considered in the inventory for forest management planning;

Figure 5 Ecoregions of Ontario



- current forest condition to describe what the forest cover is now;
- historic forest condition to describe what the forest cover was in the past;
- forest dynamics to describe the way the forest is expected to change over time;
- socio-economic dynamics used to describe how society and the economy relate to forest cover and its management;
- future forest condition to project how the forest will evolve based on forest dynamics;
- desired forest condition and benefits used to describe the expected outcomes of forest management activities on forest cover;
- silvicultural investment sufficient to fund forest management activities;
- silvicultural treatments to describe ways to harvest, renew and tend forest cover;
- projections of future forest condition to describe the forest cover that would evolve

through successive forest management planning cycles based on the desired forest condition and benefits; and

- a management strategy to achieve the desired forest condition and benefits.

A1.2 Background Information

At the management unit level, extensive background information is needed to define the context for decision-making and to describe the land base. The information is used to prepare for forest management planning and to compile further available inventory information. It includes policies, higher level plans, guidelines, biological information, the use of resources from the management unit by native communities, annual reports, analysis, and values maps. These maps are used as background information for planning and display purposes, and to solicit additional information about natural resource features, land uses, and unique ecological, social and cultural values.

A1.3 Current Forest Condition

At the management unit level, an accurate description of the current forest condition is required to plan for the use and management of Ontario's Crown forests. It is essential for making effective resource management decisions and for documenting progress in achieving sustainable forest management objectives.

The data and information used to describe the current forest condition are based on an updated inventory of Ontario's forest resources for each management unit designated under the *Crown Forest Sustainability Act* (1994), as well as compilation, integration and analysis of data prepared at various spatial scales over a variety of time periods (e.g. Ontario Ecological Land Classification ecosite, ecodistrict, ecoregion and ecozone scales) within the hierarchy of MNR

administrative levels (i.e. management unit, district, region and province). The forest resources inventory is updated locally to reflect recent depletions, and renewal and tending activities as described in the *Forest Information Manual*.

Current forest condition will be used for the following:

- setting management directions and assess impacts of past forest management practices in forest management plans;
- describing a comprehensive snapshot of the current condition of Ontario's forests in the report *Forest Resources of Ontario*,¹⁵ and
- providing a description of current forest conditions associated with a number of sustainable forest management indicators in the Ontario state of the forest report.

The current forest condition will be described in forest management plans and forest resource assessments in comparison with historic and future forest conditions.

A1.4 Historic Forest Condition

At the management unit level, a description of the types of forest that existed in the past is used to identify historic trends. The information will help to understand current forest condition and set a context for determining future and desired forest conditions.

Information available for reconstructing historic forest condition can be derived from the following:

- previous forest inventories and reports;
- documented changes in forest cover types (e.g. species, homogeneity of stands) and natural processes;
- fire disturbance history, impacts of fire on forest development and any associated management implications;
- other natural disturbances (i.e. forest growth, insect infestations, disease, wind, ice and forest succession); and

15. The Forest Resources of Ontario reports provide the most complete, accurate and up-to-date description of Ontario's forests at regional and provincial levels. Since 1996, these reports have been published every five years. Before that, they had been published every ten years since the 1920s. These reports provide statistical information on the extent, composition and condition of the province's forests in the form of tables, graphs and maps. Specific information is also provided on the most common tree species growing in Ontario. This comprehensive statistical data is used for reference purposes and further research. It is also used to assist in the preparation of the provincial forest resource assessment report.

- historical and scientific records (e.g. land surveyors' records, pollen analysis, fire scar chronology, dendrochronology, etc.).

Historic forest condition will be documented, where available, to assist in identifying historic trends. The information will be used for the following:

- setting management directions in forest management plans;
- comparing forest cover conditions over time in the report *Forest Resources of Ontario*;
- providing insight into past forest composition and for comparative purposes in the report *An Assessment of Ontario's Forest Resources*; and
- providing baseline information for trend analysis for a variety of sustainable forest management indicators in the Ontario state of the forest report.

A1.5 Forest Dynamics

Change is fundamental to ecosystems and to societal needs and demands. Natural events are critical elements of change in forest dynamics (i.e. forest growth, forest fires, insect infestations, disease, and forest succession).

Forest growth, forest resource yields and forest succession can be estimated from growth and yield studies and monitoring programs. Forest fires, insect infestations, disease and wind cannot be predicted in the same manner as forest growth, but assumptions about their frequency and severity can be useful for anticipating how natural events will affect forest conditions in the future. Predicting changes in forest composition, structure and function is essential for establishing forest management objectives, strategies and targets as well as for identifying potential forest benefits. Assumptions concerning these events (e.g. the frequency, size and distribution of forest fires) must be documented in approved forest management plans.

Forest dynamics will be used for the following:

- setting management directions in forest management plans;
- preparing the report *An Assessment of Ontario's Forest Resources*; and

- describing and providing a basis for evaluating change in provincial forest conditions in the Ontario state of the forest report.

A1.6 Socio-Economic Dynamics

Ontario's forests support a vast array of timber and non-timber goods and services based on demands from a large number of land uses and users. The nature and specifics of these demands change over the years, reflecting underlying societal changes in values, knowledge, demographics, and incomes.

Currently, demands are being identified for the following:

- ecological functions such as biological diversity, carbon sequestration and wildlife habitat;
- industrial products generated by forest processing industries;
- non-industrial goods and services associated with hunting and fishing opportunities; and
- commercial and non-commercial goods and services associated with tourism and recreation.

For each management strategy considered during the preparation of a forest management plan (refer to sub-section A2.4.1), socio-economic impacts of environmental, social and economic values attributed to Ontario's forest resources will be documented to understand the impacts of human activities over time. The information is also required to understand how human needs and wants are expected to change.

Community socio-economic profiles and socio-economic impact assessments will be used to document changes in social and socio-economic conditions associated with Ontario's Crown forests. These assessments will involve the following:

- identifying all historic, current and proposed land uses and users;
- identifying all historic, current and proposed infrastructure developments (e.g. roads, airports, etc.);
- identifying non-timber goods and services and their associated values;
- developing a demographic profile for each management unit and community woodshed;

- developing economic models to forecast the demands for Ontario's forest resources generated by both Ontario residents and external markets;
- developing effective demand models to forecast changes in demands for Ontario's forest resources produced by changes in use patterns; and
- monitoring and tracking changes in societal expectations to identify changes in potential forest resource benefits.

A1.7 Desired Forest Condition and Benefits

The potential of the forest to produce the desired forest condition and benefits that can be achieved by managing forest cover will be investigated during the development of a forest management plan. Desired forest condition and benefits are defined locally for the forest in the management unit. They will reflect broader directions set out in documents describing Ontario's forest policy and legal authority, land use planning strategies and other broader strategies (Figure 1 and Appendix 2).

Forest management plans will also investigate alternative management strategies to achieve desired forest condition and benefits. In all cases, forest sustainability is the primary consideration. Investigations and analysis will consider the extent to which desired forest condition and benefits can be realized, based on required silvicultural practices and investment.

The selected alternative management strategy, which is accepted by the public, will be assessed against a relevant set of Ontario's sustainable forest management criteria, elements and indicators. The selected alternative management strategy will achieve a set of benefits through the implementation of reasonable and deliverable management activities.

The change over time in projected forest area and composition will illustrate the dynamic nature of the forest (i.e. anticipated changes in forest structure and composition as a result of planned harvest, renewal and tending operations). These changes will also demonstrate how the desired forest

condition and benefits are expected to evolve through the implementation during successive forest management planning cycles.

With respect to timber harvesting operations, when the planned harvest area is compared with the one projected into the future for the selected alternative management strategy (i.e. the available harvest area), the analysis will examine how the age class distribution of the planned harvest area will achieve the desired forest condition and benefits over the long-term. The analysis will also examine the amount of surplus harvest area and the effects of surpluses on achieving the desired forest condition and benefits.

Assessments of the expected effect of planned levels of harvest, renewal and tending operations on the achievement of desired forest condition and benefits, future forest conditions for the selected management strategy and long-term wood supply will be:

- documented in approved forest management plans;
- used to forecast the supply of wood to meet recognized industrial demand from each management unit or, if there is a surplus in wood supply, to meet other objectives; and
- used to assist in developing provincial level objectives and, where appropriate, objectives and targets for sustainable forest management indicators reported in the Ontario state of the forest report.

A1.8 Silvicultural Investment

Silviculture investment requirements will be determined at the management unit level subject to MNR approved renewal rates. The *Forest Management Planning Manual for Ontario's Crown Forests* requires that each forest management plan provide a forecast of the level of forest renewal and related expenditures required to meet planned objectives for the management unit. The information is used by MNR to set the forest renewal rates. The renewal rates are set at the management unit level to reflect specific local needs and forest conditions.

Since 1995, the *Crown Forest Sustainability Act* (1994) has provided a new system to fund forest renewal on Crown forest lands. The new timber stumpage system provides for special purpose accounts and trust funds. The special purpose accounts are for management units directed by the Crown. The trust funds (i.e. a Forest Renewal Trust and a Forestry Futures Trust) are used for management units managed in partnership with the forest industry. Portions of these revenues (i.e. Crown charges) paid by the forest industry are deposited into the trusts. The accounts and trusts provide the funding necessary to meet the forest renewal objectives for all management units.

The Forest Renewal Trust ensures that Ontario's forests are renewed after timber harvesting. It provides a continuous source of funding for eligible silvicultural activities carried out on Crown forests harvested under a Sustainable Forest Licence. A trustee, appointed by the Minister, manages the fund.

The Forestry Futures Trust provides funding for forest renewal or other forestry practices in situations where for example, forest resources are damaged by fire or another natural cause and funding is needed for silviculture and pest control. A committee operating at arm's length from the Ontario government administers the distribution of funds from the trust. The committee manages the trust to fund forest renewal activities identified through specific projects or if a sustainable forest licence holder becomes insolvent.

If a forest resource licence holder becomes insolvent, both trusts will be used like an insurance policy to pay for the planned forest renewal work.

Costs associated with silvicultural treatments documented through the Forest Renewal Trust are used to determine the silvicultural costs for the options, then analyzed in the report *An Assessment of Ontario's Forest Resources*.

Total forest renewal expenditures for the province will be reported annually in the MNR report *Annual Report on Forest Management*.

A1.9 Silvicultural Practices and Prescriptions

Silvicultural practices specify the silvicultural systems (e.g. clearcut, shelterwood, selection) and types of harvest, renewal and tending treatments that may be used to manage forest cover on a management unit. They determine the type of forest that is expected to develop in response to these treatments. These practices are selected based on an ecosystem approach to management that considers tree growth, wildlife habitat, natural and cultural heritage protection, and other values. The range of harvest, renewal and tending treatments may be used at various intervals throughout the life of a forest stand.

The intended effect of these practices, combined across the forest as a whole, will direct the development of the forest toward the desired forest condition. Silvicultural practices are recorded in approved forest management plans.

Silvicultural prescriptions are developed using approved MNR guidelines and associated implementation manuals described in the *Forest Operations and Silviculture Manual* as well as other planning tools (e.g. viewscape analysis used to develop prescriptions for viewsheds and flyways of particular concern to remote tourism interests). For example, areas of concern are defined geographic features and areas within selected operational areas. On values maps prepared for the management unit, areas of concern are next to identified values.¹⁶

A1.10 Future Forest Conditions

Future forest conditions will be predicted for each alternative management strategy. Predictions are made to demonstrate how the forest is expected to develop as a result of management activities. For comparison, future forest conditions are also predicted to demonstrate how the forest might evolve in the absence of human activities (i.e. through normal growth, natural succession and natural disturbance). Predictive forest models will be used to project changes in forest composition,

16. MNR 1996. *Forest Management Planning Manual for Ontario's Crown Forests*. Toronto: Queen's Printer for Ontario, Part A Section 1.4.4, pp. A-8.

structure and age class frequency distribution over the long-term for each alternative management strategy. The predicted forest condition, in the absence of management activities, will be used as a benchmark for comparing management strategies at various planning levels.

A1.11 Management Objectives and Targets

The management objectives stated in approved forest management plans are developed for benefits or outcomes that can be achieved by managing forest cover over the long-term. All management objectives are to be established within the context of the broader direction set out in documents containing Ontario's forest policy and legal authority. Combinations of objectives and a variety of alternative management strategies will be formulated during the development of a forest management plan. The objectives will be developed for:

- forest diversity, including consideration of the conservation of natural landscape patterns, forest structure and composition, habitat for other plant and animal life and the abundance and distribution of forest ecosystems;
- social and economic values, including harvest levels and a recognition that healthy forest ecosystems are vital to the well being of Ontario communities;
- values dependent on the provision of forest cover; and
- silviculture including the harvest, renewal and maintenance of the Crown forest.¹⁷

The management objectives and targets for the selected management strategy will be documented in the approved forest management plan. These objectives and targets will be used to:

- establish regional level objectives and targets for use in the report *An Assessment of Ontario's Forest Resources*; and
- assist in developing provincial level objectives and, where appropriate sustainable forest management indicators.

Once the forest management plan is approved, the future forest condition for the selected management strategy will be used to demonstrate how the desired forest condition is expected to evolve through successive planning cycles.

A2.0 TECHNICAL REQUIREMENTS

A2.1 Introduction

Forest resource assessments will be conducted in an integrated and progressive manner. At the local level, assessments will be conducted during the preparation of forest management plans. The regional and provincial level assessments contained in *An Assessment of Ontario's Forest Resources* will be published every five years. The report will contain an assessment of Ontario's Crown forest resources and provide projections of both long-term forest health and the long-term availability of Ontario's Crown forest resources. At the regional level, the local and provincial assessments will be considered in the development of MNR land use strategies and used to contribute to:

- the contents and preparation of forest management plans, forest operations prescriptions and work schedules, including public involvement and decision-making processes;
- the determination of forest sustainability on Crown forest management units;
- ensuring that management objectives in each forest management plan are compatible with the sustainability determined for the management unit; and
- ensuring that indicators are identified in each forest management plan for assessing the effectiveness of forestry activities in achieving the management objectives and assessing the sustainability of the Crown forest.¹⁸

17. Statutes of Ontario. *Crown Forest Sustainability Act*, 1994 (Chapter 25), Section 68.(5) (b).

18. Statutes of Ontario. *Crown Forest Sustainability Act*, 1994 (Chapter 25), sections 1, 2 and 68.

A2.2 Forest Resource Assessments

All assessments of Ontario's forest lands and resources at management unit and higher levels will:

- describe the assessment methodology;
- define the amount of land base available and unavailable for Crown timber production (e.g. operable forest, reserve forest, non-forest land).
- describe current forest condition;
- quantify the available wood supply;
- identify forest products produced (timber and non-timber goods and services);
- provide a review of the regulated harvest of timber in Ontario;
- provide a review of Ontario's forest products industries including demand for timber and non-timber goods and services;
- identify historic forest conditions and/or trends;
- describe and account for changes in the forest that result from natural forces such as forest succession, natural growth and disturbance due to fire, insects and disease and human activities;
- examine the entire forested land base and range of resource uses for its contribution to:
 - forest diversity and wildlife habitat;
 - provincial natural heritage benchmarks and/or targets for such land uses as parks, old growth, ecological reserves and areas of natural and scientific interest;
 - economic diversity and socio-economic vitality of associated communities;
- develop or use specific objectives for the desired forest condition and benefits (i.e. set targets on the overall composition and structure of the forest) toward which forest management activities will be directed in the future;
- project future forest conditions;
- investigate a variety of alternative management strategies and assess the ability of the management unit to:
 - realize the full wood production potential;
 - meet current industrial demand;
 - increase wood supply to support industrial expansion and additional non-timber goods and services, parks and protected areas;

- monitor, assess, evaluate and report on measurable sustainable forest management indicators appropriate for the level of assessment being conducted; and
- support a sustainable supply of wood based on approved forest management plans at the management unit level, where the supply is calculated for the desired benefits consistent with sustainable forest management objectives projected over a 100-year period.¹⁹

All investigations and assessments will be documented in an analysis package that will:

- document the sources of data;
- document the manner in which the data are classified and updated;
- identify the analytical tools used for strategic analysis and the manner in which they will be used;
- define the assumptions made during the analysis and rationale for data inputs;
- outline how objectives have been represented in the analysis and how the achievement of the objectives will be interpreted from the results of the analysis;
- define the management strategies and management scenarios analyzed during the investigations and the development of the selected management strategy;
- describe any sensitivity analysis conducted; and
- record the results and conclusions of the analysis.

When selecting the desired forest condition and benefits and evaluating forest management practices the following three time periods will be reported on:

- the short term (5 years or as defined in the *Forest Management Planning Manual for Ontario's Crown Forests*);
- the medium term (20 years); and
- the long-term (100 years).

For the purposes of forest modelling, a time frame of at least 160 years will be used to consider longer term impacts on the forest. The modelling time frame must be long enough to allow for the

19. For broader level planning and reporting purposes, supply will be summed up from the management unit level to higher MNR regional and provincial administrative levels.

modelling of aberrations that sometimes occur near the end of the modelling horizon.

A2.3 Ontario's Sustainable Forest Management Evaluation Framework

MNR will use Ontario's sustainable forest management evaluation framework of criteria, elements and indicators to evaluate and report on progress in achieving sustainable forest management in Ontario. This will require the following:

- considering the type, intensity, duration, and extent of the activity evaluated for appropriate time frames and spatial scales;
- identifying information gaps for any of the criteria, elements and indicators;
- quantifying the effects of forest activities for the criterion they describe;
- integrating the indicators at the local, regional, national, and international levels to ensure that all seven criteria are being met at appropriate scales (Appendix 1); and
- developing methods to evaluate forest sustainability within and across criteria and elements.

The results will be reported in the Ontario state of the forest report and adjustments made to policy, program directions, forest management practices, etc. where required and feasible to provide for the long-term sustainability of the forest resource, its component parts, forest-dependent communities, and industries.

A characteristic of good indicators of forest sustainability is their association with a benchmark and/or target defining a sustainable level. The Ontario indicators will be improved through the definition of targets. The process of improvement may require an extended implementation period. Progress towards implementation will be reported. Indicators published in the *State of the Forest Report, 2001* (MNR 2002) will be reviewed for relevance and utility, and the review will form the basis for modifications to Ontario's sustainable forest management evaluation framework. Indicators of

forest sustainability draw on existing publicly accepted and tested benchmarks such as standards for sustainable levels of harvest, regeneration, silvicultural practices, critical wildlife habitat, representation of protected areas, etc. where these are available.

The indicators published in the *State of the Forest Report, 2001* (MNR 2002) and existing benchmarks and/or targets define a sustainable level. They will be used to monitor and assess performance shortfalls and successes, set priorities, improve forest management practices and report on how forest management planning decisions and practices support the long-term health and sustainable use of Ontario's Crown forests.²⁰

In the future, the following will enhance information provided through Ontario's sustainable forest management evaluation framework:

- comprehensive and consistent inventory, monitoring, assessment and reporting on the renewal and state of Ontario's Crown forest lands and resources;
- licensee compliance with the terms and conditions of forest resource licences;
- monitoring, assessing, evaluating and reporting on silvicultural practices; and
- research into the many facets of sustainable forest management.

A2.4 Assessments of Ontario's Forest Resources

During the development of forest management plans, forest resource assessments will be prepared according to the directions in the sub-sections that follow. These assessments will also be included in the provincial report *An Assessment of Ontario's Forest Resources*.

A2.4.1 Management Unit Level – Forest Management Plans

A valid range of alternative management strategies (e.g. silviculture) will be considered when assessing forests and their production potential. The

20. MNR 2002. *State of the Forest Report, 2001*. Toronto: Queen's Printer for Ontario. Chapter 2, pp. 2-1 to 2-9.

strategies must be tailored to meet local issues, and needs, as well as variations in environment, economic and social conditions. Directions in higher level policies and plans will guide the development of these strategies.

The range of alternative management strategies must include, but not be limited to an investigation and assessment of the ability of the forest to:

- provide for the full production potential for industrial timber products;
- meet current industrial demand; and
- increase wood supply to support industrial expansion and additional non-timber goods and services including additional parks and protected areas.

As part of the forest management planning process, these required alternative management strategies should be augmented with others, which have been developed locally for various timber and non-timber objectives and targets. All alternative management strategies considered will include an investigation of capability, production, supply, demand, expansion opportunities, and forest sustainability.

Investigations of alternative management strategies will include sensitivity analysis for varying levels of silvicultural investment, silvicultural options, wildlife habitat requirements, etc. For each strategy considered, the degree to which objectives are met for forest diversity, social and economic benefits, forest cover and wildlife habitat will be addressed and quantified. Also, for each alternative management strategy, the impact of forest resource use on social and economic conditions will be described and assessed.

Community stability and district profiles will be prepared to support the identification of local socio-economic objectives. In addition to these requirements, a natural benchmark scenario will be established for each management unit. The benchmark scenario will consist of an assessment of how the forest would be expected to develop over time in the absence of human activities.

The approved forest management plan for a management unit will determine harvest and renewal

levels and silviculture investment requirements to meet desired forest condition and benefits such as wood supply, wildlife habitat, tourism, etc.

The selected management strategy, which is accepted by the public, will be tested against a set of sustainable forest management evaluation criteria, elements and indicators. The results will be recorded every five years at the provincial level in the Ontario state of the forest report. The results will include a wood supply synopsis, projections based on the quantifiable objectives for sustainable harvest and renewal levels, and silvicultural investment requirements documented in approved forest management plans, up to the provincial level.

A2.4.2 An Assessment of Ontario's Forest Resources

The report *An Assessment of Ontario's Forest Resources* will identify the provincial sustainable forest resource potential (i.e. forest conditions, wildlife habitat, wood supply and silvicultural effort) based on a consistent range of management strategies and assumptions. The provincial assessment report will represent the current state of information and modelling capabilities. It will also provide information and knowledge about current forest condition, estimates of the availability of forest resources and wood supply, silvicultural investment requirements, potential wildlife habitat, forest diversity, and current industrial demand for each of the MNR three administrative regions.

The provincial assessment report will be prepared using information developed for approved forest management plans and additional data, information, knowledge and analysis as required and feasible. Forest managers, planners and analysts will supply the information and knowledge.

A2.5 Regional Wood Supply Strategies and Disposition of Crown Forest Resources

Regional wood supply strategies will address a range of forest values and uses required for maintaining a sustainable supply of available wood to Ontario's primary wood-using industries. The

MNR forest resource disposition process will be used to fairly distribute available wood that is in surplus or deficit supply.

A2.5.1 Regional Wood Supply Strategies

Regional wood supply strategies will be prepared consistent with the requirements of the *Crown Forest Sustainability Act* (1994). The strategies will be used to guide MNR and the forest industry through land use and forest management planning. As the strategies are updated, they will reflect changes in land use planning allocations.

Regional wood supply strategies will be developed and used to:

- track, analyze and report on forecasts of industrial wood supply and demand based on estimates derived from approved forest management plans;
- identify opportunities and challenges related to forecast wood supply;
- develop and promote strategies for government and industry partners to effectively manage surplus and deficit situations identified in the analysis; and
- support commitments associated with the implementation of *Ontario's Living Legacy Land Use Strategy* (MNR 1999) and the *Ontario Forest Accord* (MNR 1999).

The regional wood supply strategies will be published in a provincial-level report. The report will include components such as:

- an examination of past harvesting levels, by species group and region;
- a long-term forecast for industrial wood supply, by species group and region;
- the forecast demand for industrial wood supply, by species group and region;
- an identification of anticipated wood supply issues; and
- a description and assessment of strategies proposed to address the identified wood supply issues.

A summary of the most recent provincial wood supply strategies will be included in the current Ontario state of the forest report.

Over the next five years, the regional wood supply strategies will:

- continue to support commitments associated with the implementation of *Ontario's Living Legacy Land Use Strategy* (MNR 1999) and the *Ontario Forest Accord* (MNR 1999);
- refine current industrial demand requirements with the forest industry;
- expand wood supply forecasts to include product specific projections (e.g. sawlog versus pulpwood) and residue availability (e.g. chips, sawdust, shavings);
- investigate supply opportunities from non-Crown sources (e.g. patent lands);
- produce forecasts of industrial demand for forest products, and the competitiveness of Ontario's forest industry and identify impacts of changing land use policies;
- project and forecast demand for industrial wood manufactured products and the market competitiveness of Ontario's forest industry; and
- examine more options for managing wood supply shortfalls.

A2.5.2 Disposition of Crown Forest Resources

The disposition of Crown forest resources refers to the processes used by MNR to make Crown forest resources available for harvest and use in Ontario forest resource processing facilities.

The disposition of Crown forest resources only occurs after a supply of wood is made available through an approved forest management plan. The available wood is determined based on:

- the capability of the forest to provide a sustainable supply of forest resources;
- the selected management strategy, when the following have been assessed:
 - a set of environmental, social, cultural and economic benefits that should be achievable through reasonable deliverable management activities;

- public consultation; and
- a relevant set of sustainable forest management evaluation criteria, elements and indicators.

The *Crown Forest Sustainability Act* (1994) provides for the fair distribution of available forest resources among existing and proposed users. MNR follows a process set out under the Act, which provides for the distribution of wood whether there is a surplus or a deficit. The process is described in a set of MNR policy procedures defining the criteria used to manage resources in either surplus or deficit situations.

In Ontario, MNR adjusts the disposition of Crown forest resources to:

- provide economic opportunities to increase opportunities for trade, generate revenues, and create wealth;
- ensure balanced social, economic and environmental benefits are provided;
- provide for social needs of communities (including community stability, opportunities for Aboriginal peoples, and creating and sustaining employment);
- support the goal, principle and objectives for sustainable development, ecological sustainability and forest sustainability;
- provide for the orderly distribution and use of forest resources;
- provide for the needs of the business community;
- meet legal obligations under the *Crown Forest Sustainability Act* (1994); and
- meet traditional obligations.

The distribution of Crown forest resources involves a number of processes for business practices related to activities including:

- legal obligations associated with the supply of forest resources;
- roles and responsibilities for the disposition of forest resources;
- making resources available under Section 25 of the *Crown Forest Sustainability Act* (1994);

- determining the sustainability of Crown forest resources now and into the future;
- determining existing and future demand for forest resources;
- determining a balance for wood supply demand (surplus or deficit); and
- supporting commitments associated with the implementation of *Ontario's Living Legacy Land Use Strategy* (MNR 1999) and the *Ontario Forest Accord* (MNR 1999).

Directions for the disposition of Crown forest resources are provided under the *Crown Forest Sustainability Act* (1994), and the *Environmental Assessment Act* (R.S.O. 1990). The report *The Wood Disposition Process and Regional Wood Supply and Demand Outlooks Phase 1* (MNR 1998)²¹ provides additional information about the process and how it is applied.

A2.6 Decision Support Models and Tools

Analytical models and tools provide forest managers with the ability to investigate and evaluate multiple objectives and the variety of alternative management strategies considered during the development of a forest management plan. With experience and the continued development of new analytical methodologies, models and tools, forest managers will be better able to:

- represent forest areas when planning;
- understand how a forest ecosystem develops;
- investigate landscape management opportunities;
- determine harvest levels and associated silvicultural activity;
- forecast wood supply availability and demand;
- evaluate changes in wildlife habitat supply;
- understand how forests support communities, industries and economies;
- identify and analyze the impacts of planned management activities to support assessments of the sustainability of forest management practices on the health of Ontario's forests and the availability of forest resources over time;

21. MNR 1998. *Wood Disposition Process and Regional Wood Supply and Demand Outlooks*. Prepared for the Minister of Natural Resources by the Joint Industry/MNR Wood Disposition Committee. Toronto: Queen's Printer for Ontario, pp. 144. This report was prepared by a committee comprised of representatives from both the Ministry of Natural Resources and the forest industry. This report describes a disposition process to fairly distribute the available forest resources in surplus and deficit situations as well as other related components such as business plans and the Ministry Recognized Operating Level for forest resource processing facilities.

- explore forest management strategies and trade-offs; and
- prepare long-term forest management plans.

For the purposes of forest modelling, a set of best practices will be used to guide resource managers in setting up and conducting forest-level analysis. These best practices will be included with the regional wood supply strategies.

Over the next five years, MNR will examine the relative strengths and weaknesses of its efforts to conduct socio-economic analysis for forest management planning. This will include the need to:

- identify, develop and use additional approaches, models and tools for enhancing socio-economic analysis for forest management planning; and
- study the effects of short-term land and resource use allocations (i.e. twenty years or less) on the forest by specific uses and users and the long-term impacts and implications that these decisions have on meeting emerging and changing demands on the forest over extended periods.

A2.7 Natural Heritage Protection

Ontario is committed to establishing and maintaining representative, protected forest lands as part of Ontario's natural heritage.²² Forests and a wide variety of prairies, savannahs, barrens and tundra constitute the rich and changing mosaic of indigenous terrestrial ecosystems in Ontario. Protected areas help to retain the least disturbed examples of these ecosystems.

Natural heritage features and areas protected in Ontario's network of provincial parks and protected areas (e.g. conservation reserves) are identified based on the representation of diversity. That is, they contain the best available examples to represent the full spectrum of natural characteristics, or natural diversity, of the province, including natural features, species and ecosystems. Some of these representative natural areas and features are considered to be provincially, nationally or internationally significant. Species, features and ecosystems are identified as being provincially

significant based on their uniqueness, rarity, sensitivity or special societal values. These values range from endangered species such as the Peregrine Falcon, to old growth red and white pine-dominated forest ecosystems that provide unique habitat or hold a special social significance for the people of Ontario.

MNR conducts an analysis to identify gaps in the representation of terrestrial geological, terrestrial and aquatic diversity and special values based on themes such as vulnerable, threatened and endangered species, old growth forests, wetlands, prairies, and alvars. MNR will document changes in forest diversity and natural heritage protection provided by information from Ontario's network of provincial parks and other protected areas as part of the reporting requirements in the provincial resource assessment report and the Ontario state of the forest report.

22. *Policy Framework for Sustainable Forests, "Strategic Objectives for Forest Sustainability"*. (MNR 1994, page 2).

APPENDIX 2

Ontario's Sustainable Forest Management Evaluation Framework

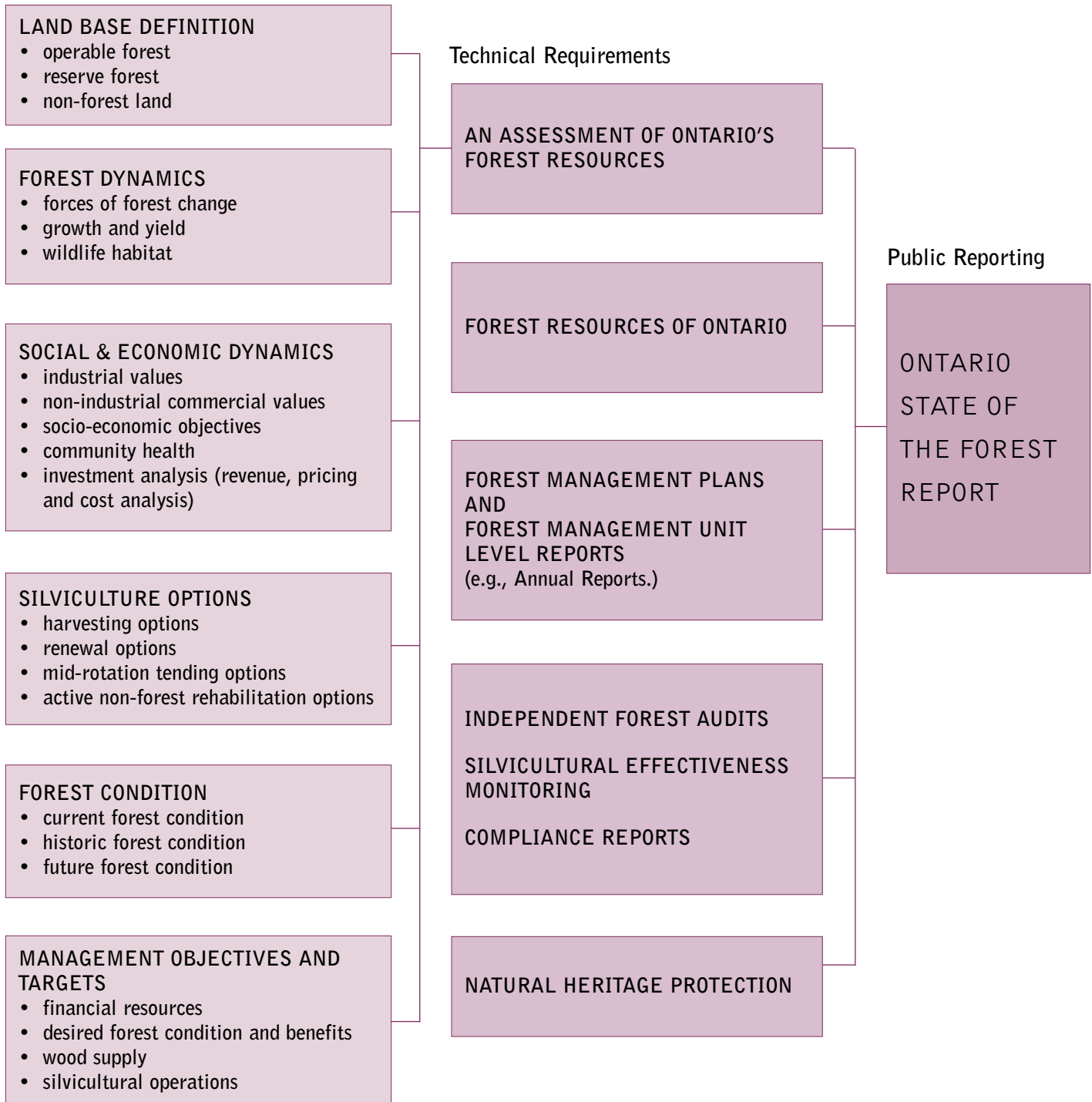
Criterion for Forest Sustainability	Elements for Forest Sustainability
1. Conserving the Biological Diversity	<ul style="list-style-type: none"> 1.1 Conserving Landscape Diversity 1.2 Conserving Ecosystem Diversity 1.3 Conserving Species Diversity 1.4 Conserving Genetic Diversity
2. Maintaining and Enhancing Forest Ecosystem Condition and Productivity	<ul style="list-style-type: none"> 2.1 Monitoring and Managing Incidences of Forest Disturbance 2.2 Maintaining or Enhancing Forest Ecosystem Resilience and Productivity
3. Protecting and Conserving Forest Soil and Water Resources	<ul style="list-style-type: none"> 3.1 Minimizing the Effects of Forest Management Practices on Ontario's Forest Soil Resources 3.2 Minimizing the Effects of Forest Management Practices on Water Resources in Ontario's Forests
4. Monitoring Forest Contributions to Global Ecological Cycles	<ul style="list-style-type: none"> 4.1 Monitoring and Modelling Ontario's Forest Sector Contributions to Global Carbon Enrichment 4.2 Monitoring and Managing Conversion of Forest Land to Other Uses in Ontario
5. Providing for a Continuous and Predictable Flow of Economic and Social Benefits from the forest	<ul style="list-style-type: none"> 5.1 Maintaining or Enhancing the Resource Production Capability of Ontario's Forests 5.2 Monitoring and Supporting Forest Sector Employment, Investment and Competitiveness 5.3 Monitoring and Supporting Enhanced Forest Sector Contributions to the Economy 5.4 Maintaining or Enhancing Recreation, Tourism and Other Social and Environmental Values Associated with the Forest
6. Accepting Social Responsibilities for Sustainable Development	<ul style="list-style-type: none"> 6.1 Respecting Aboriginal Rights and Supporting Aboriginal Participation in Sustainable Forest Management Activities 6.2 Maintaining and Supporting Forest-Based Communities 6.3 Maintaining Effective Public Participation in Sustainable Forest Management Decision-Making
7. Maintaining and Enhancing Frameworks for Sustainable Forest Management	<ul style="list-style-type: none"> 7.1 Maintaining and Enhancing Ontario's Legal Framework 7.2 Maintaining and Enhancing Ontario's Institutional Framework for Sustainable Forest Management 7.3 Maintaining and Enhancing Ontario's Economic Framework for Sustainable Forest Management 7.4 Maintaining and Enhancing Ontario's Monitoring Framework for Sustainable Forest Management 7.5 Maintaining and Enhancing Ontario's Research and Development Framework for Sustainable Forest Management

Refer to the current version of the Ontario state of the forest report for the list of **indicators for forest sustainability**.

APPENDIX 3

Forest Resource Assessment Information and Technical Requirements in Relation to the Ontario State of the Forest Report

Information Requirements



APPENDIX 4

Evolution of the Forest Resource Assessment Policy

In the late 1980s and early 1990s, harvest and renewal methods and the level of harvest and renewal received a great deal of attention during the Environmental Assessment Board hearings on the *Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario*. One of the Environmental Assessment Board terms and conditions of approval dealt with the board's concern that the MNR level of forest renewal funding, which was declining at the time, might not be sufficient to meet future demand for Ontario forest products. In its decision, the board ordered MNR to replace the *Forest Production Policy* (MNR 1972) with a new timber production policy and related implementation schedule addressing the matter of harvest and renewal levels, by December 31, 1994.

Timber Environmental Assessment Term and Condition 105 – MNR shall complete and submit for approval a new Timber Production Policy and related implementation schedule by no later than December 31, 1994. The Timber Production Policy shall be updated thereafter every five years.

- (a) the Timber Production Policy shall be prepared in consultation with the public generally and with input from the various advisory committees described in Appendix 1
- (b) the Timber Production Policy shall provide clear quantifiable objectives for a sustainable level of harvest and regeneration on a 20-year projection as well as for the five-year term of the policy. These objectives shall be provided for the entire Area of the Undertaking and for all individual management units
- (c) the Timber Production Policy shall develop estimates of funding required to meet regeneration objectives for the Area of the Undertaking and for individual management units
- (d) the sustainable harvest level and regeneration objective for the province in the updated Timber Production Policy shall be reported in the State of the Forest Report (Appendix 22, section 1(i)).²³

From 1972 to 1994, the *Crown Timber Act* (R.S.O. 1990) and the *Forest Production Policy* (MNR 1972) provided for a sustained yield of timber from managed Crown forest lands in Ontario. The *Forest Production Policy* (MNR 1972):

- provided a framework for both the planning and management of the Ontario's Crown forest lands and resources;
- contained forecasts of future timber demand, timber harvest availability, forest renewal requirements and forest management funding; and
- defined a provincial production target for timber of 9.1 million cunits (25.8 million cubic metres) of wood annually by the year 2020.

The target was used to set Ontario government investment levels for forest renewal activities. It was implemented through a schedule that provided top-down directions for MNR administrative regions and districts in the form of annual targets for harvesting, renewal, site preparation, tending, marking, and stock production activities.

As a public policy tool, the *Forest Production Policy* (MNR 1972) was a significant catalyst for stimulating investment for forest management and generating an awareness of the importance of the forest resource to the Ontario economy. It also served for two decades as a benchmark for program control and evaluation.

By the late 1980s, the assumptions in the *Forest Production Policy* (MNR 1972) were considered to be outdated. Crown timber supplies were changing as a result of differences in the age of the forest and reductions in the size of the land base available for timber production.

In 1987-1988, while the Timber Environmental Assessment hearings were being conducted, MNR initiated the Timber Production Policy Project to update and replace the *Forest Production Policy* (MNR 1972). Under the project, MNR implemented a public consultation process in 1993. The process was aimed at informing, engaging and considering the views of the affected parties, which ranged from industrial users, northern communities and business

23. Environmental Assessment Board, 1994. *Reasons for Decision and Decision - Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario*. Toronto: Environmental Assessment Board, page 379.

interests, conservation and environmental associations, and Aboriginal peoples. These consultations were done through a series of symposiums and workshops, which led to the development of options for provincial harvest and renewal levels for timber. These options were then shared with the public, analyzed, and discussed.

From 1990 to 1994, MNR changed its corporate strategic directions. The first priority in these new directions called for Ontario's Crown forests to be managed primarily for the sustainability of the forest resource itself, while recognizing the importance of community and resource use sustainability for a full range of timber and non-timber benefits. These new directions were described in *Direction '90s* (MNR 1991), the *Policy Framework for Sustainable Forests* (MNR 1994), and the *Crown Forest Sustainability Act* (1994), which replaced the *Crown Timber Act* on April 1, 1995.

The *Crown Forest Sustainability Act* (1994) defines sustainability as maintaining long-term forest health. This means that more than timber growing stocks and timber production potential must be assessed to ensure that Ontario's Crown forest lands and resources are sustained in perpetuity. For example, forest diversity and wildlife habitat, among other attributes, must be measured and accounted for in decision-making processes affecting the management of Ontario's forest lands and resources. It also means that the impacts forest management decisions have on communities, forest-based industries and the economy must be quantified.

These new directions were to move forest management in Ontario beyond the timber-oriented, sustained yield approach, for which MNR had been criticized at the environmental assessment hearings, toward sustainable forest management using ecosystem-based approaches to forest management. The shift in strategic directions meant that MNR would no longer be setting a provincial-level timber production target and using a top-down approach for implementation of the policy. As legislated in the *Crown Forest Sustainability Act* (1994), the availability of Crown forest lands and resources for industrial use is to be determined using a bottom-up process described in the *Forest Management Planning Manual*

for Ontario's Crown Forests (MNR 1996). This meant setting harvest and renewal level objectives and targets at the management unit level to be in balance with a fuller range of environmental, social, and economic objectives.

These changes necessitated an immediate re-evaluation of the Timber Production Policy Project and the adoption of the bottom-up approach for assessing the impact of forest management activities on the long-term health of Ontario's forests beginning at the management unit level. This meant that forest resource assessments were to be considered part of the process for determining forest sustainability as described in the *Forest Management Planning Manual for Ontario's Crown Forests* (MNR 1996). The process requires that the approved forest management plan for a management unit set harvest and renewal levels and silviculture investment requirements to meet desired forest condition and benefits such as wood supply, wildlife habitat, and tourism.

The actual funding for forest renewal comes from revenues paid by the forest industry through a new stumpage system designed to support implementation of the *Crown Forest Sustainability Act* (1994). The new stumpage system directs a portion of these revenues (i.e. Crown charges) into special purpose accounts and trusts.

The impacts of these changes on the proposed successor of the *Forest Production Policy* (MNR 1972) were documented in the *Discussion Paper on the Proposed Forest Resource Assessment Policy* (MNR 1994). In the fall of 1994, the paper was circulated to the parties involved in the development of proposed successor of the *Forest Production Policy* (MNR 1972), for their review and comment.

In December 1994, the *Forest Resource Assessment* was completed and approved by MNR. FRAP (1994) and the report *An Assessment of Ontario's Forest Resources* (1994) satisfied Term and Condition 105 of the *Timber Environmental Assessment Approval* (1994). However, the MNR planning system was about to undergo a major revision. This meant that FRAP (1994) would require an update prior to the five-year review, required under Timber Environmental Assessment Condition 105. For this

reason, FRAP (1994) was released with “interim” status in September 1995.

FRAP (1994) was written to meet Term and Condition 105 of the Timber Environmental Assessment, but went beyond the stated requirements. It also provided common principles and a conceptual framework for analyzing (i.e. monitoring, assessing and reporting on) how Ontario’s forest lands and resources are being managed and how Ontario is achieving forest sustainability goal, principles and objectives. The analytical framework for monitoring, assessing, evaluating and reporting identified the minimum requirements for what must be accounted for when forests are being assessed for any purpose, including forest cover and diversity, social and economic benefits, and wildlife habitat. The policy also required that the impacts of the variety of alternative management strategies considered during the development of a forest management plan will be identified, and the availability of timber and non-timber products will be determined. The new policy direction was integrated into the forest management planning process described in the *Forest Management Planning Manual for Ontario’s Crown Forests* (MNR 1996).

From 1994 to 1998, the Interim FRAP (1994):

- supported implementation of the provisions in the *Crown Forest Sustainability Act* (1994) for determining forest sustainability and managing Ontario’s Crown forests in a sustainable manner;
- provided consistent directions for the assessment of Ontario’s Crown forest lands and resources as documented in *An Assessment of Ontario’s Forest Resources 1996* (MNR 1996);
- guided the application of the new bottom-up approach for the determination of forest sustainability and the establishment of harvest and renewal objectives and targets in approved forest management plans while accommodating local issues and variations in environmental, economic and social conditions; and
- guided efforts aimed at developing criteria, elements and indicators against which Ontario’s forest resources would be assessed and evaluated.

In 1997-1998, MNR conducted the first five-year review and update of the FRAP (1994). The recommended revisions to update the policy reflected:

- minor changes to MNR strategic policy directions published in *Direction 90’s ... Moving Ahead 1995* (MNR 1995) and the MNR *Statement of Environmental Values* (MNR 1995), under the Environmental Bill of Rights (1993);
- changes in the MNR planning system;
- replacement of the Canadian Council of Forest Ministers’ framework of criteria and indicators with the made-in-Ontario approach; and
- the need for additional information and technical requirements to support, maintain and enhance forest resource assessment efforts for the next five years.

In 1998, MNR updated FRAP with the release of the *Forest Resource Assessment on Crown Lands in Ontario* (FRAP 1998). FRAP (1998) replaced FRAP (1994) and the *Forest Production Policy* (1972).

MNR scheduled the next five-year review and update of FRAP for 2003.

GLOSSARY

The purpose of the glossary is to define and to explain terms used in this document. The definitions have been taken fully, modified or adapted from the sources referenced.

Abbreviated references used throughout the document and for the sources of terms used the document are abbreviated as follows:

CFSA Statutes of Ontario. *Crown Forest Sustainability Act*, 1994 (Chapter 25), Section 3.

EAB Environmental Assessment Board

EBR Environmental Bill of Rights

EC Environment Canada, 1995. *Canadian Biodiversity Strategy, Canada's Response to the Convention on Biological Diversity*. Ottawa: Biological Convention Office, Glossary.

FRI Forest Resources Inventory

FMPM Ministry of Natural Resources, 1996. *Forest Management Planning Manual for Ontario's Crown Forests for Ontario's Crown Forests*. Toronto: Queen's Printer for Ontario, Glossary.

FRAP Forest Resource Assessment Policy

GPD Ministry of Natural Resources, 1995. *The Guide to Policy Development*. Toronto: Queen's Printer for Ontario.

MMAH Ministry of Municipal Affairs and Housing, 1997. *Provincial Policy Statement*. Toronto: Queen's Printer for Ontario, Definitions, p. 16.

MNR Ministry of Natural Resources

OFFAB Ontario Forest Accord Advisory Board

OLL Ontario Living Legacy

RSO Revised Statutes of Ontario

SOFR Ministry of Natural Resources, 2002. *State of the Forest Report, 2001*. Toronto: Queen's Printer for Ontario, Glossary of Terms.

TREES Ministry of Natural Resources Timber Resource Evaluation System

DEFINITIONS

Adaptive management – Management based on continuous learning. (FMPM)

Alternative management strategy – 1. *Alternative Management Strategy* – A set of specific management objectives, each with quantified targets, which aim to achieve the objectives.

2. *Selected Management Strategy* – The management strategy, which achieves a realistic, set of benefits (timber and non-timber), and is sustainable. The selected management strategy defines the long-term direction for the management of the forest. The selected management strategy is acceptable to the public and reflected in the approved Forest Management Plan. (modified FMPM)

Area of concern – An area of value to users/uses, which may be affected by forest management activities. These areas require modifications to those operations usually prescribed. Areas of Concern include such features as wildlife habitats, rare vegetation, tourism considerations, streams, canoe routes, railways, trout lakes/fisheries, other lakes, campsites, portages, park boundaries, residences, lodges, cottages, deer yards, public roads, osprey nesting sites, heronries. (FMPM)

Area of natural and scientific interest – Areas of land and water containing natural landscapes or features, which have been identified as having values, related to natural heritage protection, scientific study, or education. Depending upon the features of particular areas, they may be referred to as life science or earth science sites. These areas vary in their level of significance and their vulnerability to environmental impacts. (FMPM)

Area of the undertaking – The area within the geographic boundaries of the area of the undertaking for Ontario's Timber Environmental Assessment. This area includes all land and water within forest management unit boundary lines. The northern boundary is generally the northern limit of current commercial timber operations, the southern boundary is generally the limit of the

forest on Crown land. Crown land within that area is subject to the undertaking. (FMPM)

Assessment – The analysis or evaluation of data and information collected through inventory and monitoring programs. (FMPM)

Assessment involves analyzing or evaluating the information that's collected through monitoring and inventory projects, usually to support making or revising plans, programs and policies. It generates a forecast of resource potential and impacts on the forest resource. Includes an evaluation of performance based on an examination of data and information collected through means such as inventory, ground checks, other data and information sources, technical and scientific analyses and interpretation and monitoring programs. It is used to provide advice and recommendations in support of management programs and policy.

Biological diversity (Syn.: Biodiversity) – The variability among living organisms from all sources including *inter alia* terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (FMPM)

Criteria (Syn: Criterion)

Criterion (plural is criteria)

1. A criterion is characterized by a set of related indicators that are monitored periodically to assess change

2. A category of conditions or processes by which sustainable forest management may be assessed. A criterion is characterized by a set of related indicators that are measured or assessed periodically to assess change. A distinguishable characteristic of sustainable forest management; a value that must be considered in setting objectives and in assessing performance. (SOFR)

Crown forest – A Crown forest means a forest ecosystem or part of a forest ecosystem that is on land vested in Her Majesty in right of Ontario. (CFSA)

Ecosystem – The sum of plants, animals, environmental influences and their interactions within a particular habitat. (FMPM)

Ecosystem management – The management of human activities so that ecosystems, their structure, function, composition, and the physical, chemical, and biological processes that shaped them continue at appropriate temporal and spatial scales. Requires integrated policy development and management and learning to develop resources with the capacity of ecosystems to renew themselves. Sometimes called ecosystem management or an ecological approach to management. (EC)

Element – A refinement or subdivision of a criterion. Elements provide a more detailed definition of the values embodied in each criterion, and represent an intermediate level of organization between the criterion and the associated features and indicators. (SOFR)

Forest – 1. (Ecology) A plant community predominantly of trees and other woody vegetation, growing more or less closely together;

2. (Silvicultural Management) An area managed for the production of timber and other forest products, or maintained under woody vegetation for such indirect benefits as protection of site or for recreation.

3. (Forest Diversity) An aggregate of stands. (FMPM)

Forest ecosystem – An ecosystem in which trees are, or are capable of being a major biological component. (CFSA)

Forest health – The condition of a forest ecosystem that sustains the ecosystem's complexity while providing for the needs of the people of Ontario. (CFSA)

Forest management plan – A document containing pertinent information and prescriptions by means of which forest policy, aims, and objectives are translated into a continuity of specific treatments on a management unit for a specified period of years.

Current Plan or Currently Approved Plan: An approved forest management plan that is in the implementation stage of the planning cycle.

Past Plan or Previous Plan: The expired forest management plan for the planning term immediately preceding the current plan/planning term. (FMPM)

Forest model – A computer-based simulation that within definable parameters forecasts the development of the forest and the resources that become available from a forest through time.

Forest models simulate forest development in response to both natural forces (growth, succession, disturbances) and active intervention (harvesting, renewal, tending). (FMPM)

Forest resource inventory (FRI) – A resource inventory conducted for each management unit on average every twenty years. The FRI divides the area into a number of components, such as water, non-forested, non-productive forest, and productive forest; and further classifies each component by ownership/land use categories. The FRI provides descriptive information about the timber resource on each management unit (e.g. stand age, stand height, species composition, stocking level) in the form of interpreted aerial photographs, forest stand maps and a set of standard inventory ledgers referred to as reports. (FMPM)

Forest stand (Syn.: Stand) – A community of trees possessing sufficient uniformity in composition, constitution, age, arrangement, or condition to be distinguishable from adjacent communities. (FMPM)

Forest type – A group of forested areas or stands of similar composition; forest types are usually separated and identified by species composition and often by height and crown closure classes. (FMPM)

Forest unit – An aggregation of forest stands for management purposes which have similar species composition, develop in a similar manner (both naturally and in response to silvicultural treatments), and are managed under the same silvicultural system. (FMPM)

Indicator – A selected measurable variable that relates to a specific forest sustainability criterion (pl. criteria). Indicators are used in the determination and assessment of forest sustainability and to report on progress. (FMPM)

Indicators are used to demonstrate how well Ontario is practising sustainable forest management.

Integrated resource management – Comprehensive management of two or more natural resources (see Resources) that integrates the values and interests of the global community when conceiving, designing and implementing policies, programs and projects to use and sustain these resources in perpetuity. (SOFR)

Landscape – A heterogeneous land area composed of a cluster of interacting ecosystems that is repeated in similar form throughout.

A landscape is normally defined by geomorphology or climate. (FMPM)

Managed forest – Crown forest for which there is no legal or land use planning decision which prevents the land from being managed for timber production. (FMPM)

Management unit – All or part of a Crown forest which has been designated as a management unit for the purposes of the *Crown Forest Sustainability Act* (1994). (FMPM)

Monitoring – The collection and analysis of data over extended periods of time. It provides information on past and present ecological, social, cultural, and economic trends and a basis for predictions about future conditions. (FMPM)

Natural heritage features and areas – Natural heritage features and areas means features and areas, such as significant wetlands, fish habitat, significant woodlands south and east of the Canadian Shield, significant valleylands south and east of the Canadian Shield, significant portions of the habitat of endangered and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area. (MMAH)

Objective – An object of action, an end as a cause of action. (FMPM)

Ontario's Living Legacy Planning Area – This area was defined when *Ontario's Living Legacy Land Use*

Strategy (MNR 1999) was developed. It encompasses the Area of the Undertaking for the Timber Environmental Assessment as well as the addition of five large parks bordering this area (Figures 3 and 4).

Planning cycle – That period of time beginning with the initiation of plan preparation and ending with the expiration date of the plan. The cycle includes both the plan preparation and plan implementation. (FMPM)

Policy – A policy is a statement of intended direction developed for the purpose of guiding present and future actions and decisions. (GPD, p. 1.1)

Provincial forest types – The Provincial Forest Types is an ecologically based forest classification system of traditional Forest Resources Inventory (FRI) information (forest types). The forest classification is based on species composition as well as understory vegetation and soils and fits into the Ontario Ecological Land Classification. It is needed to describe general forest composition at the

management unit level for broad regional and provincial level planning and reporting purposes.

The eight provincial forest types listed represent a mix of forest cover required for silviculture, wildlife habitat and sustainability assessment requirements at broad regional and provincial planning and reporting levels. MNR recognizes that the application of these forest types to the two predominant forest regions in Ontario (i.e. Boreal and Great Lakes - St. Lawrence forest regions) will result in some variations from the descriptions provided (e.g. tree species).

The Provincial Forest Types will be used to consistently compare information about Ontario’s Crown forests across multiple management units in support of broader provincial and regional policy and planning objectives developed through the MNR planning system. It does not preclude the need for monitoring, assessing and/or reporting on other forest classifications for any other purpose or scale as long as the other forest classifications are nested within the Provincial Forest Types.

Code	Forest Type	Description
PWR	Red and White Pine	White and red pine dominated stands, often mixedwood with an overstory of white pine, and a lower canopy of other tree species such as poplar and spruce.
PJK	Jack Pine	Jack pine dominated even-aged stands, often on well drained sandy sites. Can be associated with poplar and spruce on some sites, but is generally almost pure jack pine.
MCU	Upland Conifers	Mixed conifer stands dominated by spruce, pine, fir and hemlock with a significant component of poplar, white birch and other upland hardwoods. Occurs on upland or well drained deep to shallow sites.
MCL	Lowland Conifers	Conifer stands dominated by black spruce, often with cedar and larch and black ash. Commonly found on moist to wet soils on lowland sites in the boreal forest.
MIX	Mixedwoods	Mixedwood forest composed of mostly spruce, jack pine, balsam fir, poplar and white birch. Occurring on a wide variety of sites.
POP	Poplar	Poplar dominated sites, often associated with some white birch, spruce, jack pine and balsam fir. Occurs mostly on deep, fresh upland sites.
BWT	White Birch	White birch dominated stands, with some poplar, spruce and fir. Typically found on fresh to moist sandy sites.
TOL	Tolerant Hardwoods	Tolerant hardwood stands, generally maple, with a lesser component of yellow birch, oak, beech, basswood, elm and ash. Dominant Forest Type in the Great Lakes Forest Region.

Reporting – Reporting means taking the findings of inventory, monitoring and assessment activities and preparing, transferring, communicating and making them accessible.

Standard – 1. A standard is a document that provides for common and repeated use, rules, guidelines, or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

2. Measurable parameters established for use as a rule or basis for comparison in measuring or judging quantity, quality, value, capacity, or other characteristics.

(FMPM)

Strategy – The means or steps to achieving an objective. (FMPM)

Sustainable forest management – The management of forest ecosystems to maintain a healthy forest ecosystem which provides a continuous, predictable flow of benefits. Indicators of forest sustainability criteria are incorporated into strategic decision-making and into periodic assessment of both forest and socio-economic conditions. Forest operations are conducted in a manner that conserve forest health and minimize undesirable effects on the physical and social environments. (FMPM)

Sustainability – Long-term Crown forest health. (CFSA)

Sustainability criteria – Standards by which forest sustainability is judged. For each criterion, there may be one or more elements, each with one or more indicators, which demonstrate whether or not a standard is being attained. (FMPM)

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