Comparison of Selected Forest Certification Standards

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TABLE OF CONTENTS

LIST OF ANNEXES

LIST OF TABLES

ABBREVIATIONS

AS	Australian Standard
ATO	African Timber Organization
B.C.	British Columbia
CSA	Canadian Standards Association
D	Discretionary
EC	European Commission
EPA	Environmental Protection Agency
EU	European Union
FFCS	Finnish Forest Certification Scheme
FII	Forestry Innovation Investment Ltd.
FMU	Forest Management Unit
FPAC	Forest Products Association of Canada
FSC	Forest Stewardship Council
GMO	Gene-manipulated Organism
ha	hectare
HCVF	High Conservation Value Forest
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
MNR	Ministry of Natural Resources
Na	Not Applicable
ND	Non-discretionary
NSW	New South Wales
PEFC	Programme for the Endorsement of Forest Certification Schemes
Per	Performance based
Pro	Procedural
SFI	Sustainable Forest Initiative
SFIS	Sustainable Forestry Initiative Standard
SFL	Sustainable Forest License
SFM	Sustainable Forest Management
WHO	The World Health Organization

EXECUTIVE SUMMARY

The Forest Products Association of Canada (FPAC) and Forestry Innovation Investment Ltd. (FII) requested that Indufor Oy conduct a comparison study of requirements for forest management in designated countries with certified forests. The comparison is based on national or regional legislation and forest certification standards implemented in the respective countries.

Forest certification standards are developed to improve the sustainability of forestry in countries with varying ecological and socio-economic conditions. Because of this variability, the standards often have differing scopes and requirements. They incorporate the national legislation as a foundation and address the key concerns related to the forest use in a given country or region. They also rely on the existing administrative structure for forest management planning, implementation and enforcement; and stipulate additional provisions on any of these activities only if deemed necessary.

Due to the fact that national standards are usually adapted to site-specific conditions and laws, they cannot be directly compared such as they are. A given standard is not drawn up in exactly the same way in different countries or regions. A reliable multi-country comparison of certified forestry performance requirements entails consideration of the existing legal and administrative frameworks, as well as the consideration of other regulations applied in practical forestry.

This study provides an analysis of the various legislations which regulate the 16 elements of sustainable forest management (SFM) covered in this study. A review was conducted of the legal frameworks of the 9 countries. The assessment focused on the legally binding legislative framework and took into account legal updates through December 31, 2008 of forestry related provisions of legislation. The study did not cover non-binding rules, such as best practice manuals and administrative rules. Once the legislative framework was identified, the specific provisions of the 13 certification standards focusing on the same 16 elements of SFM were analyzed, and the overall performance requirements between the standards and countries were compared.

The aim of this study is two-fold: (1) to assess the extent to which the legislation, the certification, and the combination of the two meet the key elements of SFM in the selected countries/regions; and (2) to look objectively at and draw conclusions on how effectively different jurisdictions managed the key SFM elements when both the legislation and certification requirements were evaluated. The comparison of legislations and forest certification standards was carried out as a desk study based on the national forestry laws and the standards identified for each country.

In large countries and federal states, national forestry laws are discretionary, providing only general obligations to forestry authorities and citizens. State- and provincial-level legislation and regulations are more specific, and detailed prescriptions are often given in official directives. Federal states also tend to have stricter rules for the management of public forests than for private forest holdings. In smaller countries, the forestry legislation is usually more practice-oriented, and it is applied equally in public and private forests.

A country's social, economic, and political history affects its legislation. In western developed countries with long traditions of private small-scale forestry, the legislation includes more discretionary laws which are amended with relevant regulations or best practices. On the other hand, in countries such as Russia and Poland, the legislation is characterized by very detailed regulations for the management process.

A comparison of the standards between the countries always requires consideration of the legislation that sets the baseline for forest management in each country. Some parts of the

standards expand on the legislation and include only the amending elements, whereas other standards are more descriptive and repeat requirements already addressed in legislation. Forest certification introduces some additional requirements to forest management even if the standard itself often does not seem to substantially exceed the legal requirements.

In general, the countries and regions included in this study may be divided into two groups, according to the strictness of legal requirements on the assessed elements of SFM: countries/regions with stringent requirements, and those with modest requirements. The latter group is comprised of Russia and Alabama (U.S.), where the legislation on the studied elements is significantly weaker than in the other countries. The rest of the studied countries are more in line on the number of elements for which the legislation has provisions. Canada (B.C., Ontario) and Australia (New South Wales) are the countries with the most demanding legislation on the studied elements. The scope of the Australian legislation is the widest, with its inclusion of provisions for all studied elements. The legislation in Canada states comprehensive requirements, especially for the management of public forests, but in general they are not very restrictive.

Among the studied standards, individual (country or regional-specific) Forest Stewardship Council (FSC) Standards put the FSC Principles and Criteria into practice. The FSC Principles and Criteria include categorical requirements; e.g., a prohibition of the use of gene-manipulated organisms (GMOs) and of the conversion of native forests to plantations. FSC Standards tend to include procedural criteria, especially on complex issues such as biological diversity, water protection, etc., and the achieved performance is based on best practices or legal requirements. FSC criteria are in general more prescriptive than the studied PEFC Standards. The FSC focus is on ecology in most cases, and participatory criteria put less emphasis on silvicultural procedures or forest health management.

For most of the studied 16 elements of SFM, the legislation sets the baseline that reflects the minimum requirements for SFM. Where legislation has been updated and comprehensive, the standards do not significantly exceed by performance requirements the current legislation, especially in public forest management. However, the regular auditing related to certification force forestry organisations to actively collect evidence on the conformity to the standard, which tend to raise the performance in certified forestry above the legal level. When standards are implemented in a weak legal context; e.g., in regulations for private forestry in Alabama, they add significantly to the legal requirements. Thus, the same standard (Sustainable Forest Initiative - SFI) relies largely on pre-existing strict regulations in public forestry in Canada, but is remarkably more demanding when implemented in Alabama. Despite the different nature of Programme for the Endorsement of Forest Certification Schemes (PEFC) and FSC-based standards, there is no clear conclusion to be drawn from the number of elements to which PEFC or FSC-endorsed standards pose additional requirements. In other words, when comparing the number of elements where standards have additional requirements, there is no emerging trend in view of the PEFC and FSC-based standards. According to the summary results, the strength of the legislation contributes to the strictness of the standard more than does the type of the standard (FSC or PEFC).

In general, all of the studied standards and the certification process make a positive contribution to SFM, even in cases where legislation is comprehensive and demanding (e.g., in Australia and in both of the Canadian cases, where legislations are the strongest). When studying the adequacy of the legislation or the standards alone to offer a solid framework for sustainable management, it can be concluded that in most of the countries, the standards and their implementation provide an essential augmentation to the requirements towards the achievement of SFM. In Australia the legislation is the most comprehensive among the studied countries, and the standard does not provide major additions to the legislation. In Canada, the standards bring additional requirements on protection of forest ecosystems and wildlife and on engagement of stakeholders. When equally rated Canada and the Scandinavian countries (Finland and Sweden) are compared, the standards in Scandinavia

provide more additions to the legislation than do the Canadian ones. This is likely because there is more detailed legislation in both B.C. and Ontario, and there are different conditions among these geographical areas.

The European standards are noticeably more tailored to local conditions and legislations. Their contribution to sustainability might be interpreted to be more significant than that of standards elsewhere. Perhaps this is due to an increased ability to tend to more detailed aspects of SFM than can the standards that are implemented in more diverse regions. In the countries where forest law enforcement is not effective, certification based on voluntary standards may improve forest management, provided that the tenets of the certification program are conscientiously followed.

The Brazilian situation illustrates how specific conditions can impact the analysis in the comparison study. In general, the Brazilian legislation is nearly comparable with the Australian legislation in its scope, but it cannot be considered to be at the same level of adequacy for sustainable forestry due to the different conditions, e.g., in obedience to the law. In these cases, it must be determined whether the legislation is adequate but the management system fails to adhere to it, or whether the legislation itself is not strong enough to begin with. Interpretation of these results is not straightforward, but when compiled with the standard's additions to the legislation, a general conclusion of the adequacy of the legislation may be made.

According to the study results, SFM may in general be achieved by means of the combination of the legislation and the supplementing standards. The comparison or evaluation of legislations or standards in isolation from each other is highly unreliable and in most cases leads to erroneously drawn conclusions.

1. INTRODUCTION

1.1 Background

The Forest Products Association of Canada (FPAC) and Forestry Innovation Investment Ltd. (FII) requested that Indufor Oy conduct a comparison study of requirements for forest management in designated countries with certified forests. The comparison is based on national or regional legislation and forest certification standards implemented in the respective countries.

Forest certification standards are developed to improve the sustainability of forestry in countries with varying ecological and socio-economic conditions. Because of this variability, the standards often have differing scopes and requirements. They incorporate the national legislation as a foundation and address the key concerns related to the forest use in a given country or region. They also rely on the existing administrative structure for forest management planning, implementation and enforcement; and stipulate additional provisions on any of these activities only if deemed necessary.

Due to the fact that national standards are usually adapted to site-specific conditions and laws, they cannot be directly compared such as they are. A given standard is not drawn up in exactly the same way in different countries or regions. A reliable multi-country comparison of certified forestry performance requirements entails consideration of the existing legal and administrative frameworks, as well as the consideration of other regulations applied in practical forestry.

International frameworks for forest certification, such as the FSC and the PEFC, set general requirements for certification standards and schemes. These reconcile to a certain extent the diversity in national standards. All FSC-recognized standards must be compatible with the FSC Principles and Criteria for environmentally appropriate, socially beneficial, and economically viable forest management. PEFC endorsed standards must conform to the Criteria and Indicators defined in the relevant intergovernmental process promoting SFM, i.e, Pan European Operational Level Guidelines when implemented in boreal and temperate zones; and Criteria and Indicators of International Tropical Timber Organization (ITTO), or Principles, Criteria and Indicators developed jointly by the African Timber Organization (ATO) and ITTO, when implemented in the tropics).

1.2 Objectives

The objective of this study is two-fold: (1) to assess the extent to which the legislation, the certification, and the combination of the two meet the key elements of SFM in the selected countries/ regions; and (2) to look objectively at and draw conclusions on how effectively different jurisdictions managed the key SFM elements when both the legislation and certification requirements were evaluated. The legislation and standard requirements were analyzed for sixteen elements of SFM. The goal was to obtain information on the scope of the requirements of the nine countries included in the study.

2. MATERIAL – COUNTRY REGULATIONS AND STANDARDS ASSESSED

2.1 Country regulations and standards assessed

2.1.1 Countries selected

The countries included in the study have a significant amount of certified forests, and are certified according to either FSC or PEFC- endorsed national or interim standards for SFM.

The countries included in the study are as follows:

1. Canada: Provinces of Ontario and British Columbia
2. United States: States of Alabama and Oregon
3. Sweden
4. Finland
5. Germany: State of Bavaria
6. Poland
7. Russia
8. Australia: State of New South Wales
9. Brazil

2.1.2 FSC standards

The FSC[1] is a non-governmental organization that promotes the responsible management of native and planted forests.

FSC Principles and Criteria provide a reference base for national, regional, or interim standards; and describe how forests must be managed to meet the social, economic, ecological, cultural, and spiritual needs of present and future generations. They include managerial guidelines as well as environmental and social requirements.

FSC-endorsed national or regional standards are developed according to FSC rules by national stakeholder groups. There are 28 accredited FSC Standards in 17 countries. Large and diverse countries, e.g., the U.S. and Canada, have several regional FSC Standards.

Certification is also possible in those countries that lack a national or regional FSC Standard. FSC-accredited certification bodies may develop a standard based on the FSC Principles and Criteria and on the conditions of the region. The FSC approves the use of such interim standards in certification.

The FSC Standards included in this study are as follows:

1. *Canada* - Regional Forest Management Certification Standard for British Columbia (2005) (FSC-accredited standard);
2. *Canada* - Boreal Standard (2004);
3. *Russia* - SmartWood Interim Forest Management Evaluation Standard for Leningrad and Novgorod Regions (Oblasts). Draft Version 1.1 (June 25, 2007) - hereafter the Russian FSC standard
4. *Sweden* - Swedish FSC Standard (2nd edition) (2000) (FSC-accredited standard);
5. *Poland* - SmartWood Interim Standard for Poland (September 2005);
6. *Brazil* - Brazilian Standard for Forest Management Certification on “Terra Firme” in the Brazilian Amazon (May 2002) (FSC-accredited standard).

[1] www.fsc.org

2.1.3 PEFC Standards

The PEFC Council[2] is an independent, non-profit, non-governmental organization, founded in 1999 which promotes sustainably managed forests through independent third party certification. PEFC is a global umbrella organization for the assessment of and mutual recognition of national forest certification schemes developed in a multi-stakeholder process. These national schemes build upon the inter-governmental processes for the promotion of SFM. (Source: *www.pefc.org*).

PEFC has endorsed 25 independent national forest certification systems that meet the PEFC requirements for scheme development, implementation, and performance.

PEFC-endorsed standards selected to be analyzed in this study are as follows:

1. *Canada* - Canadian Standards Association (CSA) Z809-02 SFM: Requirements and Guidance (2002);
2. *Canada* - Canadian Standards Association (CSA) Draft Standard Z809, (submitted for public review until April 7, 2008);
3. *Canada/US* - Sustainable Forestry Initiative Standard (SFIS) (2005-2009);
4. *Finland* - Finnish Forest Certification Scheme (FFCS) 1002-1:2003, Criteria for Group Certification for the Area of a Forestry Centre (2003);
5. *Australia* - AS 4708(Int)—2003 Interim Australian Standard™ The Australian Forestry Standard (2003);
6. *Germany* - a) PEFC in Germany: Criteria, Guidelines and Indicators for SFM on a Regional Level, adopted by the German Forest Certification Council (January 19, 2005);
7. and b) PEFC Standards for Germany: Guideline for SFM for the Incorporation of Forest Owners into the Regional Framework adopted by the German Forest Certification Council, (January 19, 2005).

2.2 Sustainability elements evaluated

Forestry aiming at responsible management from economic, environmental, social, and cultural standpoints needs to take a broad range of factors into account. The selection of a list of core elements of SFM with relevance to both boreal and temperate forestry in the countries included in this study helps to narrow down the focus of the analysis and comparison of requirements between the countries.

The evaluation has been conducted in terms of the following 16 elements of SFM:

1. Harvesting-level management
2. Reforestation management
3. Clearcutting
4. Forest conversion
5. Plantations
6. Forest risk and productivity management (fire, insect, disease)
7. Illegal-logging avoidance
8. Wildlife habitat management
9. Species management (including endangered species and species at risk)
10. Water quality management
11. Old-growth management/ High conservation value forests (HCVFs) / Special sites
12. Restrictions on the use of GMOs
13. Management of chemical use in forestry
14. Climate change and carbon management
15. Public participation and community involvement/ First nations' input
16. Training and outreach

[2] www.pefc.org

3. METHODS

3.1 Analysis method

As a springboard for the analysis of the different legislation that regulates the 16 elements of SFM covered in this study, an extensive investigation of the legal framework of the 9 countries was undertaken. The assessment focused on the legislative framework that is prescriptive. The scope of the study did not therefore include non-binding rules, such as best practice manuals and administrative rules. The legislation review included legal updates of provisions that can be found in forestry related regulation through December 31, 2008.

Once the legislative framework was identified, an analysis of the specific provisions of the 13 standards was implemented. This analysis focused on the 16 elements of SFM, for comparative purposes. The aim was to assess whether or not the standards' provisions stem from and/or expand on national legislation, and whether they address the key concerns related to forest use in the country.

The legislative and standard requirements were classified according to their structure and method of implementation (Table 3.1).

Table 3.1 Classification of legal and standard requirements/ guidelines[3]

Structure	Abbreviation	Approach
Discretionary	D	Rule encourages but does not require a course of action
Non-discretionary	ND	Rule requires a specific course of action
Method	**Abbreviation**	**Approach**
Performance based (substantive)	Per	Rules address on-the-ground changes
Procedural	Pro	Rules address management systems, rather than on-the-ground actions

This classification is utilized for assessing both regulations and the standards in the Appendices' country summaries. The study concluded that the classification as 'discretionary' and 'non-discretionary' was not explicit enough, and thus it did not provide a valid description of the requirements in practice for the following reasons:

- For practical purposes, the legislation and the standards contain both discretionary guidelines and non-discretionary requirements. The discretionary guidelines in legislation are often specified with lower-level decrees or regulations.
- The standards may be oriented either way. For example, FSC Standards have more non-discretionary requirements than do the other standards, but other standards with seemingly discretionary guidelines, e.g., for issues brought to mandatory discussion, can bring about in the end a very specific practical requirement.

Thus, the structural classification does not always correlate with the actual degree of obligation when implemented in practice as well. Procedural requirements can be better adapted to local conditions whereas a defined performance requirement may fail to deliver the desired improvement in SFM if not relevant or applicable to the local conditions.

The implementation method - performance versus procedural - relates to the direct implementation level of the requirement. Performance requirements regulate individual on-

[3] Adapted from: Cashore, B. 1997. Governing Forestry: Environmental Group Influence in British Columbia and the US Pacific Northwest. PhD, Political Science, University of Toronto, Toronto.

the-ground forest management practices. On the other hand, procedural requirements regulate various forest management processes, so the outcome of procedural requirements has a direct impact on forest management.

3.2 Limitations on interpretation

While a comparison of forestry regulations in different countries with their different circumstances yields useful information about the performance requirements, the task faces some limitations on the comparison itself and on the interpretation of evaluation results. Most of the researched elements of SFM are recognized and addressed at some level in every country included in the study, but the diversity of the contexts, requirements, and the procedures for their implementation make it difficult to draw simple conclusions regarding the level of requirements between the countries in view of SFM.

Each country or region's socio-economic history has an impact on the administrative and operational framework for forestry and on the legislation and enforcement procedures. For example, in some countries, rather discretionary legislation provides adequate and sustainable results, while in other countries, highly non-discretionary, requirement-based legislation seems to be inadequate for SFM. This, along with other locally varying conditions and enforcement policies, limits the possibility of drawing conclusions based solely on written regulations.

Variability in conditions and legislation also affects the comparison of standards between countries. A comparison of standards should always take into account the legislation that sets the baseline for forest management in each country. Some parts of the standards are built on top of the legislation; i.e., they include only the amending elements and take the legislation as a given, whereas other standards are more descriptive and repeat requirements already addressed in legislation. Therefore, a straight comparison of standard requirements is often unreliable.

The decision-making process of whether the regulations and/or standards are adequate for SFM is complex, and often subjective. Forest certification introduces requirements for forest management, even if the standard itself does not seem to exceed legislative requirements substantially. With its regular internal and external audits, the certification procedure requires systematic implementation of given requirements and their appropriate documentation. This improves management and contributes to systematic compliance throughout an organization. In certification, the applicant must demonstrate that practices comply with the requirements, whereas in traditional enforcement, authorities look for evidence of non-compliance, which usually requires a severe violation of a norm. In some cases, this makes the analyses of adequacy difficult.

The definition of the elements of SFM also has an impact on the evaluation result, in cases where elements overlap. In general, all studied elements are at some level addressed in every case country, but the interpretation is complicated due to the fact that some of the requirements may not directly address the given element for sustainable management, but will still contribute indirectly to its achievement. Elements related to biodiversity, harvesting levels, clearcutting, conversion and reforestation management often fall into this category.

3.3 Summary tables on compared legislation and standards

A summary table of comparison of legislation and standards was compiled for each researched element of SFM. The tables are located in chapter 4 with their corresponding elements. Abbreviations and corresponding acronyms used in the tables are presented below in Table 3.2. Since there are various limiting factors in the classification, the results are to be

interpreted as generalizations. As there is often deviation between the criteria within a given element, requirement classification was made by emphasizing the most important criteria whenever possible. In cases where there was no clear tendency between the criteria, a neutral classification was used to express the variation.

Table 3.2 Abbreviations used in summary tables

Abbreviation	Acronym
Analysis of legislation	
(X)	The topic is addressed with modest or very general provisions in legislation.
X	The legislation addresses the topic with some provisions promoting or regulating the SFM elements.
XX	The legislation includes specified obligatory requirements
0	The topic is not addressed in legislation.
Analysis of standards	
+	The standard adds to the legal requirement.
++	There is a significant addition to the requirement.
n	The standard has no additional provisions.
()[1]	The regulations focus on the management of public forests.
()[2]	CSA, AS708 standards are based on an environmental management system; provisions are specified by the implementing organization.
()[3]	SmartWood standard
Na	Not applicable
Structure and method of requirements (laws and standards)	
D	The requirements (Guidelines) are (mostly) Discretionary.
ND	The requirements are (mostly) Non-Discretionary.
Per	The rules address on-the-ground changes.
Pro	The rules address management systems, rather than on-the ground actions.
-	No clear tendency between the two types or the subject is not addressed.
References to studied countries and standards	
AUS NSW AS4708 -03	Australia New South Wales The Australian Forestry Standard
BRA FSC	Brazil Brazilian Standard for Forest Management Certification “Terra Firme” - Amazon
CAN FSC B.C FSC Bor CSA SFI	Canada Regional forest management standard for British Columbia FSC Boreal Standard Canadian Standards Association standards Z809-02 and Z809-09 (draft) Sustainable Forest Initiative standard
FIN FFCS	Finland Finnish Forest Certification Scheme
GER PEFC	Germany PEFC Criteria, Guidelines and I for SFM indicators (regional level)
POL SW FSC	Poland Smart Wood interim FSC standard for Poland
RUS SW FSC	Russia Smart Wood interim FSC standard for Leningrad and Novgorod regions
SWE FSC	Sweden Swedish FSC Standard
US SFI	The United States Sustainable Forest Initiative standard

4. COMPARISON OF LEGAL AND STANDARD REQUIREMENTS ON THE ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT

4.1 Harvesting-level management

4.1.1 Legislation

Regarding the requirements related to harvesting-level management, the researched countries may be roughly divided into two groups according to their amount of public forest. In Canada, Russia, Australia, and Brazil, where a large portion of forests are public, the harvesting levels for a region are defined by local authorities or through prescriptive inventory/planning processes. In Finland, Sweden, Germany, and partly in the U.S., eligibility for harvesting is judged at the stand level according to prescriptive maturity criteria. Countries in the latter group are characterized by their possession of a large amount of small-scale private forest owners. This division is, however, only suggestive.

In all countries, the approach to regulating the harvesting level is to ensure the maintenance of forest resources, taking into consideration regeneration dynamics at the regional level. In countries with large, often publicly owned management units, e.g., Russia, Canada, and Poland, the forest administration defines the harvesting level in a forest management plan or related document. In such a case, the harvesting level is set as a specified performance level. Regulatory framework defines the upper limit for the harvesting level in all countries included in the study, but in Russia and Poland, for example, forest managers are required to harvest up to the allowed harvesting level.

In Finland, Sweden, and Germany, where the share of private forests is large, and the average size of a planning unit is small, the harvesting level is not predetermined. However, legislation does control the procedure for defining stand maturity for harvesting. A mature stand must fulfill structural requirements which are based on stand-level production dynamics and aim at maximizing the value - production function of the stand. The forest management unit (FMU) level criteria of maturity age of a stand reflect regional- and national- level forest structures, forest growth, and related annual allowable cutting levels.

4.1.2 Standards

Certification standards do not in general go beyond the legal requirements for the definition of harvesting level. Standards impose additional restrictions on harvesting levels and possibilities only in the countries where legal requirements are discretionary, such as for private forests in the U.S. and Germany.

Determination of a harvesting level that ensures maintenance and continuous production of forest resources is fully regulated by legislation in all countries. For this element of SFM, there is a clear non-discretionary tendency in both the legislation and standards. While only a few of the researched standards have additional requirements to the legislation, they differ from it by addressing requirements of on-the-ground changes instead of management systems. The Canadian CSA 02 and CSA 08 differ from the rest of the standards in having a more discretionary approach to the requirements.

Table 4.1 Summary of legislation and standard requirements on harvesting-level management[4]

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				(X)	X	X	X	X	X	X	X	X
	ND				ND				-	ND	D	D	ND	D	ND	ND	ND
	Pro				Pro				Pro	-	Pro	Pro	-	-	Per	Pro	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 03	FSC
	n	n	n	n	n	n	n	n	+	+	n	n	n	+	n	n	n
	D	D	ND	ND	ND	D	D	D	ND	ND	ND	ND	-	ND	-	ND	-
	Pro	Per	Per	-	Per	Pro	Per	Pro	Per	Per	Per	Per	Per	Per	Per	-	-

4.2 Reforestation management

4.2.1 Legislation

Within the European Union (EU) countries of Sweden, Finland, Germany, and Poland, the legislation sets explicit non-discretionary requirements for the regeneration of forests. In these EU countries, regeneration must be done within a limited time after final harvesting (in the case of Germany, the requirement is more general, referring to a 'reasonable' time). For all of these countries, the legislation is adequate to ensure maintenance of sustainable forest resources. However, in Finland and Germany, the standards set some minor additional requirements exceeding the legislation.

In Russia, the new forest code allocates the responsibility of reforestation to the forest user, who sustains the regeneration of forest resources after harvesting. The standard is in line with the legislation.

In Oregon, Canada, and Brazil, the obligation to reforest harvested sites exists in the legislation, and regeneration processes should also be considered in the management plan. In Alabama, there is no regulation concerning reforestation for private forestry.

4.2.2 Standards

The SFI Standard states general requirements to regenerate harvested sites and monitor the success of regeneration. The standard refers to the legislation in U.S. for private forestry, but does not add to the Canadian legislation, which is more demanding concerning reforestation. Still, the SFI Standard may be considered as the most descriptive of the studied standards in defining the requirements to regenerate harvested sites and to assess the regeneration quality in Canada. In Brazil, the new forest code, together with its regulatory decree, approved in 2006, contains stricter requirements than does the FSC Standard (given that the latter was approved prior to the decree in 2002). In Sweden, Russia, Poland and Australia the standards are in line with the legislation, and they add to the legislation only in the cases of Alabama, Finland, and Germany.

[4] See Table 3.2 for abbreviations used in summary tables.

Table 4.2 Summary of legislation and standard requirements on reforestation

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				XX				(X)	X	X	XX	X	X	X	X	X
	ND				ND				D	ND	ND	ND	ND	-	ND	ND	ND
	Pro				-				Pro	Per	Per	Per	Pro	-	-	Pro	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	n	n	n	n	n	n	n	+	n	n	+	n	+	n	n	n
	D	D	ND	D	ND	D	D	-	ND	ND	ND	ND	D	ND	ND	ND	ND
	Pro	Pro	Per	Pro	Per	Pro	Pro	-	Per	Per	-	Per	Pro	-	Per	Pro	-

The assurance of prompt reforestation of harvested sites is of public interest and relates to the maintenance of forest resources. In countries where forests are an important national resource, the reforestation obligation is emphasized (Canada, Finland, and Sweden). Alabama reflects a situation where planted forests are primarily private economic resources that are managed according to the owners' interest. The standards may add to the rate of reforestation (Finland) or amend originally modest requirements (SFI in Alabama).

In general, the rules in both the legislation and standards are quite strict and require specific courses of action. From this standpoint, CSA 02 and CSA 08 differ from the majority of the standards in that they recognize the thoroughness of provincial legislative requirements for reforestation.

4.3 Clearcutting

4.3.1 Legislation

Clearcutting is not prohibited in either the legislation or the standards in any of the case countries, but restrictions on clearcutting are often imposed. In Poland, Finland, Alabama, and Germany, the size of a clearcut area is not directly limited in legislation, but other factors limit the size in practice. The same effect is produced in Poland, because of the requirement to preserve natural regeneration capability, and in Finland, because of the ownership and stand structure.

In cases where legislation sets non-discretionary requirements for clearcutting, it is mostly executed by defining the limitations in allowed clearcut areas. This is done by means of limiting the maximum size of the area directly or by setting the maximum average size for the clearcuts within a certain area. In British Columbia, Russia, Germany, and Brazil, direct, non-discretionary restrictions cover certain types of forest areas. In Sweden non-discretional limitations are imposed by limiting the total area of regeneration fellings by one forest owner within a given municipality.

4.3.2 Standards

In Poland and Sweden, requirements set by the standards are more demanding than the legislation concerning this element. In Finland, Germany, Russia, Ontario, Brazil, and Australia, the legislation may be considered adequate to prevent ecologically unreasonably large clearcutting areas. From the studied standards in Ontario, only the SFI Standard

addresses the issue and sets a limit for the maximum area; furthermore, it requires a visually acceptable definition of cutting areas. In Germany neither the standard nor legislation sets limitations on clearcutting areas, but in German forestry, other management methods are preferred over clearcuts; thus, there is no need for detailed requirements on clearcutting.

Table 4.3 Summary of legislation and standard requirements on clearcutting

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	XX				X				0	X	0	0	X	X	0	X	X
	-				ND				-	-	ND	-	ND	ND	ND	-	ND
	Per				-				-	-	Per	-	Pro	Pro	Per	-	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	n	n	n	++	n	n	n	+	n	+	n	n	n	+	n	n
	-	-	ND	D	ND	-	-	-	ND	ND	ND	-	D	-	ND	ND	ND
	-	-	Per	Pro	Per	-	-	-	Per	Per	Per	-	Pro	-	Per	Per	Pro

The relevance of clearcutting as a harvesting method depends on forest ecosystems, the size of FMUs, the silvicultural regime, and economic sustainability. Clearcutting is widely applied in boreal forests (Canada, Finland, and Sweden) and plantation forestry (Australia and Alabama). The need for specific requirements on clearcutting varies between the countries. Countries with large management units may restrict the size of clearcutting (e.g., Canada), but in countries with small logging areas (Finland and Sweden), it is not relevant. The standards do not contribute additionally to SFM through the requirements on clearcutting. In general, both the legislation and the standards set rather non-discretionary requirements and address the rules straight to the operational level.

4.4 Forest conversion

Forest conversion, i.e., clearance for other uses, is in most countries regulated by land use legislation and municipal planning procedures. The general approach is that if an area is classified as forest land, it should have a productive forest cover, but if it is used for other purposes, e.g., agriculture and community/infrastructure development, it ceases to be forest land and falls under other legislation. In Australia, Poland, and Russia, any conversion of forests requires a permit. Forestry legislation on conversion is quite discretionary, especially in countries with abundant forest resources, a low/non-existent rate of deforestation, and in which forest ownership is dominated by private forestry, such as in Finland and Sweden. Countries with a large share of public forests require a permit for conversion of state forests to other purposes (Poland, Russia, and Canada).

In Alabama and Oregon, neither the legislation nor the SFI Standard regulates forest conversion. In Canada, forest conversion is not specifically addressed, but according to legislation, license holders do not have a mandate to convert state forests merely on their own volition. Of the standards applied in Canada, the FSC and CSA Standards reject the conversion of forests to non-forest uses, but do not address conversion to plantation forests, which is currently not of concern in the country. The SFI Standard does not address the issue. However, regulations on management licensure and forest management plans meeting regulations at the FMU level fully regulate plans to undertake any conversion in a forest area.

In Sweden and Finland, the legislation allows forest land conversion to other land uses if the area is not protected by any national or municipal regulations, but it induces regeneration if the area is maintained as a forest. The standards do not restrict conversion, but in Sweden, the researched standard limits afforestation of open fields (that is conversion to forest land). For both of these countries, prescriptive regulations impose adequate provisions to protect forest from conversion.

In Poland and Germany, removal of forest in favour of another kind of land use requires permission from forestry authorities, which does not render the conversion forbidden, but rather very restricted. The German standard requires maintenance of a permanent forest cover, and forest conversion is allowed only when permitted in nature conservation and forest laws. In Poland, the standard limits the conversion from natural forest to plantations or from traditionally open lands to forests.

In Australia, the standard does not address the topic, but according to the legislation, a permit from the forest authorities is required.

In Brazil, the forests are often seen as potential land for different sorts of development, and the legislation on conversion is liberal. The forest code does not forbid conversion, as long as certain provisions such as the preservation of permanent conservation areas and legal reserves are respected. Conversion can at the same time also be suppressed under specific circumstances defined by the law. Conversion is allowed in such cases as settlement linked to the agrarian reform. The FSC standard goes partly beyond the law by including a few provisions on the subject; e.g., restriction of conversion of HCVFs.

Table 4.4 Summary of legislation and standard requirements on forest conversion

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				0	0	X	X	X	X	X	X	(X)
	D				-				-	ND	ND	-	ND	ND	ND	ND	ND
	Pro				Per				-	Per	Per	-	Pro	-	Per	Per	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	+	+	n	+	n	+	+	+	n	n	n	n	n	n	+	n	+
	-	D	-	ND	-	-	D	ND	-	-	D	-	ND	ND	-	ND	ND
	Pro	Pro	-	-	-	Pro	Per	Per	-	-	Pro	-	Pro	-	Per	Per	Per

Legislation largely controls the conversion of forests to other uses. In countries with abundant forest resources and less alternative land uses for forests the legislation is not very restrictive in viewpoint of forest protection. In countries with a large share of private forests, the conversion relates primarily to conversion of forest land for other uses and is regulated by the respective legislation. In countries where the majority of the forests are public, the legislation often takes a different approach, and a permit is required for undertaking a conversion. While this tendency is not clear on the legislative side, the standards tend to have additions to the legislation in the countries with a large amount of public forests. Still, the variation on the approach in both the legislations and the standards is great between the countries and regions included in this study.

CSA 02 and CSA 08 standards do not set some specification to the legal requirements in view of landscape level forest cover, but at a FMU level they do not add to the legal restrictions for conversion

4.5 Plantations[5]

4.5.1 Legislation

The legislation and standards concerning plantations vary markedly between the studied countries due to significant differences in environmental conditions and general practices. In countries where plantations are not relevant, there is no related legislation or standard requirements (Canada, Finland, Sweden, Germany, Oregon, Russia, and Poland). Among the studied countries and regions, plantations have great significance to the forestry sector in Australia, Alabama, and Brazil.

In Russia and Brazil, the legislation does not set any restrictions on plantation establishment, but does set certain conditions that need to be met. In the U.S., Poland, and Australia, the establishment and in some circumstances afforestation of former agricultural land is supported financially, by providing some relief from general obligations of forest management.

4.5.2 Standards

As in the legislations, the standards address the plantation issue only in countries where plantation forestry has some significance. Elsewhere, limitations concern mainly the regulation of the use of exotic species or the maximum clearcut area of forest. Australia is the only country that has a specific standard for plantation forests, yet the standard does not go beyond the legislation. In Poland and Russia, the standards provide rules for plantation establishment and are stricter than the legislation. In Canada and the U.S., the SFI standard does not include plantation forests, but the Canadian FSC standards limit the area to be established and managed as plantations. Use of exotic species is limited by the standards in Finland, Sweden, and Poland. German and Brazilian standards reviewed in the study do not address plantations and therefore do not contain any additional provisions for their establishment or management.

Table 4.5 Summary of legislation and standard requirements on plantation

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	Na				Na				0	X	Na	Na	0	0	0	X	(X)
	D				ND				-	D	-	-	D	ND	ND	ND	ND
	Pro				-				-	Pro	-	-	Pro	Per	Per	Per	Per
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	Na	Na	Na	+	Na	Na	Na	+	n	n	+	Na	+	n	+	n	n
	-	-	-	D	-	-	-	ND	-	-	-	-	D	-	ND	ND	-
	-	-	-	Pro	-	-	-	Pro	-	-	-	-	Pro	-	Per	Per	-

[5] In this study regulations related to large scale intensive forest plantations are discussed under the Plantation title. Planted forests established after harvesting are covered by the chapter 4.2 on Reforestation.

Regulations on intensive, large-scale forest plantations are not relevant to most of the countries included in the study. In countries where plantation forestry is relevant the forestry legislation as such does not set strict restrictions for their establishment, but regulations how the establishment takes place may include strict provisions for environmental protection and social contributions.

4.6 Forest risk and productivity management

Covers forest health and risks for fire, insect and other damages.

4.6.1 Legislation

Legislation for controlling forest damages is adapted in each country according to the likelihood and severity of different damaging agents. Methods and procedures for controlling damaging agents causing high economic losses (e.g., fire) are regulated in detail, especially in countries with intensive forest management, whereas regulations are general and less efficient in countries with extensive forestry (Brazil).

Forest fires are a major damaging agent in Canada, Australia, Russia, Brazil, and the U.S. Large scale insect damage is also common in the U.S., Canada, Russia, and Germany. In Australia, Canada, Germany, Russia, and the U.S., which all have federal and provincial/state governments, laws require that authorities take responsibility for preventing and mitigating any forest damage relevant to the country/region. Detailed requirements are issued by a regional administration. For example, in Canada, forest managers must adhere to the legislation issued by provincial governments on preparedness to control fire and on actions taken in cases of other damage. In Russia, the federal- and regional- level regulations on forest management aim at mitigation of any damage outbreak in risk areas.

4.6.2 Standards

In general, forest certification standards as such do not impose additional requirements for damage control, except through a more systematic monitoring of legal compliance. The standards in Canada, the U.S., Australia, and Russia address the risk of damages, but do not set specific performance requirements. In Brazil, the legislation addresses the topic, but requirements for maintaining forest health are weak despite the high risk of forest fires. The FSC standard for the Amazon region goes well beyond the legislation and includes several provisions on fire management and protection from fire and other damaging agents.

In Sweden and Finland, legislation also contains detailed practical rules for forest management that preclude the risk of insect damage and diseases. In general, standard criteria do not add to the legal requirements, except in Finland where the standard obliges certified foresters to take active measure to prevent a specific fungal disease (root rot) in a harvested area. In Poland, forest managers are under general requirements to maintain good resistance against damages. In cases where pests exist, the legislation requires protective treatments. The Polish FSC standard does not substantially add to the legal requirements.

Table 4.6 Summary of legislation and standard requirements on forest risk management

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	XX				X				X	X	X	X	X	X	X	X	x
	D				-				D	D	ND	ND	ND	-	ND	D	-
	Pro				-				Pro	Pro	Per	Per	Pro	Pro	Per	Pro	-
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	n	n	n	n	n	n	n	n	n	n	++	n	n	n	n	++
	-	-	ND	D	ND	-	-	D	ND	ND	-	ND	ND	D	ND	ND	ND
	-	-	Per	Pro	Per	-	-	Pro	Per	Per	-	Per	Pre	Pro	Per	-	Pro

Forest health is of great concern in all countries and relates directly to the maintenance of forest resources. Legal regulations set provisions for forest health that are adequate in general, although not powerful enough in cases of disease caused by insect epidemics (the U.S., Canada, Germany, and Russia) or outbreak of large scale forest fires (Russia, Canada, the U.S., Australia, and Brazil). Of all the studied standards, only the Brazilian FSC and Finnish FFCS standards are have notable additions to legislation.

4.7 Illegal logging avoidance

Forestry legislation does not, in general (with the exception of Australia and U.S.), require that a manager have the responsibility to control the legality of all activities in his or her forest area. On the other hand, some certification standards issue such an obligation to cover either all use in a given forest area or only the activities of contractors and other parties in the timber supply chain. Standards, if addressing the issue, tend to extend the control obligation from illegal logging to cover all uses of forest resources (including hunting, fishing, etc.).

In Finland, Sweden, Germany, Canada and US illegal logging is not a major concern. In all of these countries, regulations and documentation of land titles are strict, and the legislation is adequate in setting the restrictions, including labour related issues. The standards are in line with the legislation or provide only minor supplements to it. In Poland, the legislation addresses the issue, but the standard enlarges the scope of legality, by obliging a certificate holder to control and prevent all potential illegal activity in the certified forest area. The current legislation in Russia does not address illegal logging or actions that should be taken against it, but there is a draft federal law on “Amendments to legislative acts of the Russian Federation with the purpose of prevention of illegal logging and illegal wood trading” being assessed. The standard determines that forest and plantation management must be protected from illegal harvesting, settlement, and other unauthorized activities; and thus slightly increases the responsibility, compared with the legal requirements in the draft. Illegal logging is of major concern in Russia.

The legislation in Australia states specific and strict requirements to avoid illegal logging, and appropriate steps must be taken to prevent unauthorized or illegal actions. The standard is in line with the legislation, with some minor additional requirements. In the U.S., illegal logging is criminalized in both Alabama and Oregon. The SFI Standard requires that a program participant must assess the risk that their procurement program could acquire material from illegal logging, and must actively take steps to avoid procuring such material. In Canada, there are several specified and performance-based procedures to prevent illegal logging. Of the

examined standards, FSC, CSA 02 and CSA 08 Standards are overall more demanding, but the SFI Standard extends the monitoring responsibility to the supplier.

Legislation for protecting forests from illegal harvest in Brazil is extensive in regards to specific restrictions of various types, but it partially lacks enforcement. The standard requires that the forest management area be protected against illegal exploitation, but does not have any detailed provisions on the matter. In order to reduce the illegal wood trade, it states that there shall not be evidence that the person responsible for the FMU is involved in illegal logging activities, and requires that there be very little to no evidence of inappropriate harvesting. Despite the extensive legislation and the standard, illegal logging is still a major concern in Brazil.

Table 4.7 Summary of legislation and standard requirements on illegal logging avoidance

Leg.	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
	X				X				X	X	X	X	X	X	X	X	X
	ND				D				ND	ND	-	ND	-	ND	ND	ND	ND
	-				Pro				Per	Per	-	Pro	-	Pro	Per	Per	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	+	+	++	n	++	+	+	+	+	+	+	+	+	n	+	+	n
	-	-	ND	ND	ND	-	-	-	ND	ND	ND	ND	ND	-	ND	ND	ND
	-	-	Pro	Pro	Pro	-	-	Pro	Pro	Pro	Per	Per	-	-	Per	Per	Per

Standards provide a complementary tool in addition to the legislation to regulate illegal use of forests. A standard can oblige a forest manager to control the operations of all forest users in certified area (SFI, CSA, AS). All the standards require monitoring and evidence of conformity to the requirements that goes beyond legal enforcement procedures in the standard text or through third party auditing procedures.

As with the plantations element, the sustainable forestry management element is impacted by differences in local conditions; e.g., in the levels of obedience of the law. In most of the studied countries, illegal logging is not a major concern, while in Russia and Brazil, it is. Even though illegal logging is addressed in both of the countries, especially in Brazil, it is obvious that it still takes place, and the adequacy of the legislation and standard is difficult to measure. However, it is obvious that certification process with regular monitoring and audits is an efficient tool to increase the control of forest use and decrease the possibilities for illegal logging on certified areas.

4.8 Wildlife habitat management

4.8.1 Legislation

Wildlife populations are managed through habitat protection, species management, and hunting regulations. The main focus in wildlife management related legislation is on protecting endangered or threatened species. Wildlife habitat management must be included in forest management plans in Polish and Canadian (Ontario) legislation. In British Columbia and Oregon, management requirements are applied for certain listed species. Wildlife habitats are included, at a very general level, in general biodiversity and ecosystem management related legislation in Australia, Germany, Russia, Finland, and Sweden; and in Brazil. In the U.S.,

Alabama legislation only protects endangered species, but it does provide support programs for wildlife management. In Finland and Sweden, habitats are preserved in protected areas and in smaller key biotopes. Outside of these contexts, wildlife management is also regulated in most countries in legislation concerning hunting.

4.8.2 Standards

The standards exceed the legal requirements or provide some performance-based requirements for wildlife management in roughly half of the researched cases. The standards consider the issue in the criteria pertaining to the preservation of biodiversity and ecosystem service values in Canada, Poland, and Australia. In Germany, wildlife management is addressed in the standard, but without clear targets. In Sweden, important habitats must be identified, and landscape level ecological planning is required from major land owners. The Finnish standard refers to the legislation. In Russia and the U.S., standards cover only the protection of endangered species.

The most significant difference in the standard requirements when compared with the legislation is in the Brazilian standard. This standard makes reference to the legally required protected areas, but then goes beyond the law to require that as a part of pre-harvesting activities, sites and areas of reproduction of rare animals or animals under threat of extinction are to be identified, and steps taken to protect them. It also states that large scale area management should avoid fragmentation of ecosystems to safeguard the movement of fauna. There should also be plans for the identification and protection of rare, threatened, and endangered species; and for the management of the sites and areas of reproduction of these species. The regulations for wildlife habitat management in Brazil are more or less intermingled with the species management element.

Table 4.8 Summary of legislation and standard requirements on wildlife habitat management

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				XX				X	X	X	X	X	X	(X)	X	X
	-				ND				D	ND	D	ND	ND	D	D	ND	ND
	Pro				Per				Pro	Per	Per	Per	Per	Pro	Pro	Per	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	+	+	+	n	n	+	+	+	+	+	n	n	n	+	n	+
	ND	D	ND	ND	ND	ND	D	-	ND	ND	D	-	ND	ND	ND	-	ND
	Pro	Per	-	Pro	-	Pro	Per	Pro	-	-	Per	Per	Pre	Per	Per	-	-

The legislation related to this element is partly overlapping with the species management element which is also reflected in Table 4.8, but in general, the legislation in all studied countries addresses the topic and provides a solid base for wildlife habitat management, often through the hunting regulations. Forest legislation was strongest in Ontario for this element.

4.9 Species management

4.9.1 Legislation

Among all the researched elements of SFM, the variation between the studied countries was lowest in the element of species management; i.e., management of rare, threatened, and endangered species. In all of the assessed cases, the legislation generally requires national or provincial lists of protected endangered species and sets strict requirements to protect them.

4.9.2 Standards

In addition, the compared standards are rather congruent with each other and tend to expand species protection to also include other vulnerable species and their habitats. The standards, especially FSC standards, set discretionary requirements for the protection of species and habitat diversity in a management unit. As with the legislation, in most cases the standards have rules requiring specific courses of action. Despite this, sometimes the requirements contradictorily lack details on how the requirements should be fulfilled.

In Australia and the U.S., the forestry administration develops species protection programs that forest managers must adhere to. In Brazil legislation backs up species protection, and authorities have high-level programs (e.g., in reserves and in set aside areas in plantation forestry) to safeguard at-risk species. In Finland, Sweden, and Poland, species and a number of biotopes that are often important to endangered species are (as in the other countries) protected by law, but the standard adds only slightly to the scope and area of key biotopes.

Table 4.9 Summary of legislation and standard requirements on species management

Leg.	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
	X				XX				X	X	X	X	(X)	X	X	X	X
	ND				ND				-	ND	ND	ND	ND	ND	ND	D	ND
	Pro				Per				-	-	Per	Per	Per	-	Per	Pro	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	+	+	+	+	+	+	+	+	++	+	n	+	+	+	+	n	+
	ND	D	ND	ND	ND	ND	D	ND	ND	ND	D	ND	ND	ND	ND	ND	ND
	Pro	Per	-	Pro	-	Pro	Per	Pro	-	-	Pro	Per	Per	-	Per	Pro	Per

Forestry-related legislation focuses on endangered species. Their protection is in the interest of the state and covered by legislation. The standards add precautionary measures to identify and protect endangered species and thus contribute to the preservation and enhancement of these populations.

4.10 Water quality management

4.10.1 Legislation

Water protection is addressed by the forest related legislation in all of the studied countries. The water related legislation aims at maintaining the water quality and quantity and prohibits any actions which may have adverse impacts on water resources. Legislation may add an aspect of water ecosystem protection in various forest activities, as is the case in B.C., Ontario, Sweden, and Finland.

In Ontario, Oregon, and Brazil, the legislation has non-discretionary instructions of actual practices to be followed. In Russia non-discretionary protection requirements cover only larger water bodies, which are protected by either wide buffer zones or classification of the adjacent forest area as protected forest with very limited use. The Russian legislation does not take into account smaller brooks and creeks that may not be important for water resource management, but that are important in water ecosystem protection and in watershed management.

In Finland and Sweden, forest related water protection focuses on protection of water ecosystems in larger and smaller water bodies, and on mitigation of runoffs from drainage and soil scarification activities. In Finland certain water protection measures are subsidized by the government. In Alabama the state government has subsidy programs for water quality management.

4.10.2 Standards

In most of the cases, the certification standards do not go beyond legal requirements in water protection. In Alabama the standard refers to the legislation and slightly exceeds it by requiring compliance with Best Management Practices, which in many cases are also referred to in the legislation. In Canada and Poland, the standards require specific measures to protect water resources, but the Canadian standards can still be considered to be in line with the legislation. The standards accept the baseline defined in regulations but require prompt implementation of adequate protective measures. In Finland the FFCS standard requires development of water protection plans for road construction and drainage, and it requires buffer zones and protection of small water bodies to conserve water ecosystems. In Germany the standard complements the legislation with discretionary and procedural requirements.

The Brazilian FSC standard does not address water protection at all. The Russian standard states some discretionary instructions that forest and plantation management operations should recognize, maintain, and if appropriate, enhance the value of forest services and resources such as watersheds and fisheries.

SFI obliges a program participant to meet or exceed legal regulations both on water quality and best management practices and in approved state water quality programs. It also requires a program participant to apply water protection measures and identify and map waterbodies and implement the programs for their protection.

Water protection measures are regulated by legislation in all the studied countries. Standards add, in some cases, precautionary measures for specific forest management activities (Finland, Germany, Poland, and Alabama).

Table 4.10 Summary of legislation and standard requirements on water management

Leg.	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
	XX				X				X	X	X	X	X	X	X	X	X
	ND				ND				D	ND	D	D	-	D	D	ND	ND
	Per				Pro				Pro	-	Per	Per	Pro	Pro	Pro	Pro	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	n	n	n	n	n	n	n	+	n	n	+	n	n	+	n	n
	D	D	ND	ND	ND	D	D	ND	ND	ND	ND	ND	ND	-	ND	ND	ND
	Pro	Per	Per	Pro	Per	Pro	Per	-	Per	Per	Per	Per	Per	Pro	-	-	-

4.11 Old growth management / HCVFs / special sites

4.11.1 Legislation

Old-growth management is rarely separately addressed in the legislation, but it is in most cases governed by regulations concerning the establishment of protected areas and by biodiversity related legislation. However, in Canada and Poland, legislation clearly requires identification and special management of old-growth forests and forests with high conservation value. In Germany the legislation also recognizes old-growth and HCVFs, but does not set explicit performance requirements for their protection in forestry.

Old-growth forests are not recognized in Swedish, Finnish, Brazilian, and German legislation, but the most valuable areas are still usually included in protected areas. In Finland and Sweden, the legislation also includes requirements for protecting listed small key biotopes that may conserve old-growth elements in the ecosystem.

In New South Wales, Australia, old-growth management is not singled out in the legislation, but the law sets a non-discretionary procedural requirement to carry out an environmental assessment to identify special sites for protection. In Russia the issue is not addressed in the legislation, but legal national parks and protected areas safeguard some of the most valuable old-growth ecosystems.

4.11.2 Standards

In Sweden the standard's impact on old-growth protection is mostly in line with the legislation, but it adds requirements for set-aside areas and active restoration of forest ecosystems. Such activities often include the increase of old-growth elements (e.g., decaying wood and uneven age structure) in forests.

In Finland, Germany, and Australia, the standards are mainly in line with the legislation, and additions are fairly minor.

In Russia the standard requires that conservation values be taken into consideration at the FMU level and in industrial forestry, but in general, the standard is still in line with the legislation. In Oregon the standard and legislation have similar requirements, whereas in Alabama, where the legislation does not address the topic, the SFI standard goes beyond the legislation in private forestry, as it requires recognition and protection of special sites. In

Canada old-growth management is recognized in legislation in both B.C and Ontario, and all the four studied standards are in line with the legal framework.

Table 4.11 Summary of legislation and standard requirements on old-growth management

Leg.	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
	X				X				0	(X)	X	X	(X)	X	X	X	X
	-				ND				D	-	D	D	-	ND	ND	ND	ND
	Pro				Pro				Pro	-	Per	Per	Pro	Pro	Per	Pro	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	n	n	n	n	n	n	n	+	n	++	+	n	+	+	+	n
	D	D	ND	ND	ND	D	D	-	ND	ND	D	ND	ND	ND	ND	ND	ND
	Pro	Per	Per	-	Per	Pro	Per	Pro	Per	Per	Per	Per	Pro	Pro	Per	Per	-

Legislation assures the protection of old growth forest to the extent desired in the society. Standards set provisions to protect small areas where some elements of old growth forests may be preserved in a limited scale to support specific species.

4.12 Restrictions on the use of GMOs

4.12.1 Legislation

The forest related legislation on the use of GMO varies between the countries. Within the EU, any commercial release of GMOs is strictly controlled, and in practice, forestry applications of GMOs are prohibited by EU directives. Also, any experimental or scientific forestry studies concerning GMO are strictly restricted, and a permit is always required for any field testing. The EU directives are applied through national legislation in the studied EU countries; i.e., in Finland, Sweden, Germany, and Poland.

Brazil has several laws regulating the management of GMOs. Their use in forestry is generally forbidden in the country. Specific laws establish requirements for licensing, security norms, and compliance mechanisms for the use of GMOs. Australian legislation establishes a licensing system for GMOs; and only those GMOs that are registered are allowed to be used.

In Russia there are no provisions linking forests and GMOs. In Canada forestry related legislation does not address GMOs directly, although regulations on regeneration material prohibit their use in practice. The reviewed forest legislation in the U.S. does not regulate the use of GMOs. The U.S. National Environmental Policy Act has provisions for GMOs in the form of an environmental impact statement requirement, but it does not have a major effect on forest management as long as commercial and tested species are used.

4.12.2 Standards

Among the standards, FSC categorically prohibits the use of GMOs, whereas PEFC- based standards generally allow GMO use for research purposes. In Europe all studied standards set non-discretionary bans on the use of GMOs in forest management. The U.S., Russian, and Canadian legislations do not have specific provisions for GMOs, but the subject is addressed in the CSA 08 and FSC based standards.

Table 4.12 Summary of legislation and standard requirements on restrictions on GMOs

Leg.	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
	(X)				0				0	0	X	X	0	0	X	X	X
	-				-				-	-	ND	ND	D	-	ND	ND	ND
	-				-				-	-	-	Pro	-	-	-	Pro	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	+	n	+	n	n	n	++	+	+	n	n	+	+	n	n	+
	-	-	ND	-	ND	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	-	-	Pro	-	Pro	-	-	Per	Pro	Pro	Per	Per	Per	Per	Per	Pro	Per

Use of GMOs is of general concern and regulated by biosafety legislation. The general criteria set for forest plant and seed material, as well as for other biosafety issues, apply in forestry. Legislation in this element of SFM may be considered partly inadequate. In general, the requirements concerning the use of GMOs are non-discretionary.

4.13 Management of chemical use

4.13.1 Legislation

In Sweden, Finland, Germany, and Poland, EU regulations and national legislation define a non-discretionary basis for the use of chemicals. Only the chemicals approved by the EU and national agencies may be used in forestry. The approved chemicals are mostly non-toxic and biodegradable. These rules restrict the use of chemicals in ground water areas and in valuable sites. They also control their dissemination, storing, and end-use. Whenever chemicals are used, the use must be documented and monitored.

In the U.S. and Canada, all chemicals used must also be registered. State-level authorities may develop detailed standards regulating their use. In Russia the legislation of chemical use in forestry concerns only protected forests; e.g., forests adjacent to water bodies and urban forests. The legislation is sufficient for large water bodies, but does not provide protection for smaller water bodies. Australian legislation requires on a more or less discretional basis that chemicals be used according to label instructions, and that the use may not harm environmental or human health. There is no specific legislation in Brazil for chemical use in forestry, but the issue is generally dealt with under specific administrative rules.

4.13.2 Standards

In Russia, Australia, Germany, Poland, and the U.S., the standards complement and exceed the legislation requirements, by either promoting alternative methods or encouraging the reduction of the use of chemicals. In Finland the standard stipulates discretionally that chemicals should be used only when other options are not feasible, but no performance targets for the requirement are stated.

In Brazil, whereas the legislation is silent on chemical use, the standard has several provisions on the topic. In Canada FSC, SFI and CSA 08 Standards go beyond the legal provisions, while CSA 02 does not refer to chemical use in forests. In the U.S. standards are also twofold: in Alabama the standard adds to the legislation by requiring compliance with the

Best Management Practices, while in Oregon the standard relies on legislation (which is also the case in Australia).

Table 4.13 Summary of legislation and standard requirements on chemical use

Leg.	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
	X				X				X	X	X	X	(X)	0	X	X	0
	ND				ND				-	ND	ND	ND	-	D	ND	ND	D
	Per				Pro				-	Per	-	Per	-	Pro	Pro	Per	-
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	+	+	+	+	n	+	+	n	+	n	+	+	+	n	+	+
	-	-	ND	D	ND	-	-	-	ND	ND	D	ND	ND	ND	ND	ND	ND
	-	-	Per	Per	Per	-	-	-	Per	Per	Pro	Per	Per	Per	Per	Pro	Per

Legislation sets the baseline for chemical use, requiring registration in all countries. The standards complement the legislation by restricting the use of certain habitats or by requiring the utilization of other protection methods.

4.14 Climate change / carbon management

4.14.1 Legislation

Climate change is a relatively new subject worldwide, and therefore most countries have not yet integrated this topic into their national legislation, and especially into forestry related legislation. However, given the importance of forests with respect to the efforts of tackling climate change, we anticipate that the matter will be soon regulated. Of the countries covered in this study, Australia is the one that mostly regulates on climate change, given that there is already a national mandatory climate scheme that covers forest activities.

4.14.2 Standards

With the exception of the Canadian CSA Standards, none of the standards reviewed in this study address the issue extensively. However, given the increased importance of the matter, we again anticipate that, when revised, the standards will also integrate aspects relating to climate change and forestry. Hopefully these will be aligned with forthcoming country legislations. Of the Canadian CSA standards, which both address the topic, the CSA 08 sets up measures to estimate the net carbon uptake and also includes a mandatory discussion item on carbon emissions from fossil fuels used in forest operations.

Climate change requirements are only now emerging in forest related legislation and standards. In cases where they exist, they mostly encourage, but do not require, a specific course of action.

Table 4.14 Summary of legislation and standard requirements on climate change and carbon management

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	0				0				(X)	X	0	0	0	0	0	X	(X)
	-				-				ND	ND	D	D	-	-	D	ND	D
	-				-				Pro	Pro	Pro	Pro	-	-	Pro	Pro	-
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	n	+	n	n	n	n	+	n	n	n	n	n	n	n	n	n	n
	ND	D	-	D	-	ND	D	-	-	-	-	-	D	-	-	-	-
	Pro	Per	-	Pro	-	Pro	Per	-	-	-	-	-	Per	-	-	Pro	-

4.15 Public participation and community involvement / indigenous people input

4.15.1 Legislation

In private forestry, issues of public participation, community involvement, and indigenous people input are not very often covered in forestry related legislation. If regulations do exist, they are often general and all-encompassing. In Canada, Brazil, and Poland, forest legislation requires public participation. Typical to all these countries is that the proportion of privately owned forests is low compared to public forests.

In Finland and Australia, public participation is highlighted for state and public forests, but not for the private sector. Some indigenous rights are protected under legislation in Australia and Canada, and also to some extent in Finland and Sweden. In the U.S., Russia, and Germany, this issue is not addressed directly in the legislation related to forestry.

4.15.2 Standards

The studied Brazilian, Australian and Polish standards are in line with the legislation, but add some specific rules. These standards outline the importance of public participation more than do the legal requirements. In Germany neither legislation nor the standard addresses public participation.

In Russia the standard requires public involvement in the forest land lease process. The standard also has special provisions on indigenous people's rights, highlighting the need to respect their traditional use of natural resources.

In Finland and Sweden, the standards rely mostly on legislation but set specific requirements for stakeholders in reindeer herding areas and in Samí homelands. In Finland the provisions cover only the public forestry dominant in that area.

For both studied states in the U.S., only the SFI Standards set any requirements for participation. The standard has several discretionary recommendations concerning the topic; e.g., instructions for the implementation of Best Management Practices.

In Canada prescriptions for forest management planning for public forests set the legal basis for the participatory process, which the standards in general do not exceed. However, the CSA standards put a great focus on the participatory process, through which the detailed

performance requirements for forest management are identified. For private forestry, the standards tend to go beyond the legislation.

Table 4.15 Summary of legislation and standard requirements on public participation and community involvement

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	XX				XX[1]				0	(X)	X	X	0	0	X	X	X
	ND				ND				D	-	ND	ND	D	-	ND	ND	ND
	-				Pro				Pro	-	-	-	-	-	Pro	Pro	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	+	+	n	n	n	+	+	n	+	+	+	n	+	n	+	+	+
	-	-	ND	ND	ND	-	-	D	ND	ND	ND	-	D	ND	ND	ND	ND
	Pro	Pro	-	Pro	-	Pro	Pro	Pro	-	-	Per	-	Per	Pro	Per	-	Per

The legislation in some of the studied countries requires involvement of stakeholder participation in ordinary forest management planning and operations. On the other hand, the participatory requirements are demanding in public forestry in Canada, Sweden, Finland, and Australia. A participatory approach is also required in Poland and Brazil. Canadian legislation is the most stringent for this element.

In most cases the standards add significantly to the requirements. Within the American (SFI) and Canadian (CSA 02 and CSA 08) societies and level of local democracy, the implementation of the management system based standards have the potential to provide an efficient and transparent channel for consideration of stakeholder views in forestry.

4.16 Training and outreach

The concept of training and outreach covers competence building, as well as the requirements of and transparency in information dissemination. The legislation and standards tend to emphasize either one or both of these aspects. Training and education does not necessarily fall under forest administration or legislation, or these may be regulated through laws not covered by this study, which should be considered in the interpretation of the summary results.

In Sweden forest legislation itself does not address training or outreach, but in practice these are both provided for by the state or municipalities. Compared with the legislation, the FSC standard is slightly more specific, but the legislation fundamentally ensures the availability of training opportunities. In Finland regional forestry centers and local forest management associations are responsible for providing information to forest owners. The FFCS standard sets targets for the training of forest owners, workers, and the public. Regulations in both countries require transparency in all decisions made and documentation issued by the relevant authorities. The legislation and standard in Germany is mostly congruent with those of Finland. In Poland training and outreach are not addressed in the legislation. However, the standard is at the same level as in other studied EU countries, except for the requirement of transparency, which is not addressed. In Russia the regulation does not have specific provisions on training and outreach, but the standard has some discretionary provisions for this element.

In Australia the legislation establishes forestry authorities' responsibilities in educational and research issues. The standard does not directly address training but requires the forest manager to ensure that staff and contractors have an adequate skill base and the competencies to achieve the forest management objectives and targets. In general, the standard and legislation are in line.

In Canada the legislation requires adequate competence for professionals providing services in forest. It also entitles provincial foresters' associations to promote and increase the proficiency of its members. All four studied standards require an awareness of the criteria for sustainable management and for their practical implementation. SFI extends the training need specifically to cover timber producers and contractors. CSA 02 and FSC Boreal standards strongly encourage a training system of staff members. CSA 08 measures the inputs in training. SFI and FSC B.C. also specify some areas of training. In the U.S., there are no set obligations in this regard, but supportive forestry programs do contain training components. The SFI Standard sets specific requirements for training to be provided to different stakeholder groups on various topics.

In Brazil the approach to training and outreach in legislation and the standard differs from the other studied countries. The focus in legislation is on making documents public and on the need to promote formal and informal education, while the standard focuses on making sure that all stakeholders are aware of this issue.

Table 4.16 Summary of legislation and standard requirements on training and outreach

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				X	X	X	X	0	X	0	X	X
	D				-				-	D	ND	ND	D	ND	ND	ND	ND
	Pro				Pro				-	Pro	Pro	Pro	-	-	Per	Per	Pro
Std.	CSA[2] 02	CSA[2] 08	SFI	FSC BC	SFI	CSA 02	CSA 08	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS4708 (2003)	FSC
	+	+	+	n	+	n	n	n	+	+	+	n	+	+	+	n	+
	-	D	ND	D	ND	-	D	-	ND	ND	ND	ND	D	D	ND	ND	ND
	Pro	Pro	-	Pro	-	Pro	Pro	Pro	-	-	Per	Per	Per	Pro	Per	Per	Per

The Canadian regulations concerning the competence of forestry staff is key to sustainable management procedures. In Finland and Sweden, which both have a high rate of formally trained forestry staff, the dispensing of information to forest owners responsible for management decisions is a vital issue. Training and awareness are considered to be essential for responsible forest management, but each country views the issue from its own perspective, and the actual performance requirements relate to the level of education and resources in forestry.

The standards address the issue, but with only fairly modest performance requirements. The CSAs, SFI and Australian Standards monitor training inputs, but do not set specific requirements on them as such. However, if implemented under a certified management system, competence development will become an important objective via management system requirements (e.g., ISO standards).

5. CONCLUSIONS

5.1 Legislation

In large countries and federal states, national forestry laws are discretionary, providing only general obligations to forestry authorities or citizens. State- and provincial-level legislation and regulations are more specific, and detailed prescriptions are often given in official directives. Federal states also tend to have stricter rules for the management of public forests than for private forest holdings. In smaller countries, the forestry legislation is usually more practice-oriented, and it is applied equally in public and private forests.

In a given country, the balance of incentives for conducting forestry activities according to legal and standard requirements versus the risks of sanctions for violating the norms is an important factor for determining the level of legal compliance in forestry. In some countries, the level of conformity to the laws and commitment to fulfil their objectives is high in general, which allows for weaker but adequate enforcement procedures, whereas in other countries, illegal operations are common despite heavy but partially ineffective enforcement procedures.

A country's social and political history has implications on its type of legislation. In western developed countries with long traditions of private small-scale forestry, the legislation includes more discretionary laws which are augmented with relevant regulations or best practices. On the other hand, in countries such as Russia and Poland, the legislation is characterized by very detailed regulations for the management process. Most countries have enacted a combination of general and detailed legislation, especially on environmental issues.

In most of the studied countries, but especially in Brazil, Alabama (U.S.) and Russia, the legislation on the elements of clearcutting, harvesting level, old-growth management and conversion includes either a general policy rule, or very modest performance requirements that in practice restrict operations very little. In Finland and Sweden, these issues are not fully regulated in legislation, but are addressed and safeguarded through regulations guiding other related processes; e.g., regulations on maturity for harvesting instead of on harvesting level.

In general, the countries and regions included in this study may be divided into two groups, according to the level of legal requirements: countries/ regions with stringent requirements, and those with modest requirements. The latter group is comprised of Russia and Alabama (U.S.), where the legislation on the studied elements is significantly weaker than in the other countries. The rest of the studied countries are more in agreement on the number of elements for which the legislation has provisions. Canada (B.C., Ontario) and Australia (New South Wales) are the countries with the most comprehensive legislation adequately addressing merely all of the SFM elements. The scope of the Australian legislation is the broadest, with its inclusion of provisions for all studied elements. The legislation in Canada differs from the others by stating more stringent requirements for forest management while also including requirements for wildlife habitat, water quality and public and indigenous people involvement. A summary table of the comparison may be found in Annex 10.

The comparison is somewhat limited by the fact that the conditions in studied countries vary markedly. It is typical for the countries with exacting requirements for the differences to occur mostly in the elements most sensitive to the conditional variation; e.g., plantations and clearcutting. Due to this variation, the classification results cannot be directly extrapolated to determine the adequacy or the level of sustainability reached by the legislation. Still, this classification provides some indication of the scale of provisions towards sustainability.

5.2 Standards

A comparison of the standards between the countries always requires consideration of the legislation that sets the baseline for forest management in each country. Some parts of the standards expand on the legislation and include only the amending elements, whereas other standards are more descriptive and repeat requirements already addressed in legislation. Therefore, the straight comparison of the elements is often difficult or even impossible.

Forest certification introduces some additional requirements to forest management even if the standard itself often does not seem to substantially exceed the legal requirements. The certification procedure with its regular internal and external audits requires systematic implementation of given requirements and their appropriate documentation. Such rigour improves management and contributes to systematic compliance throughout an organization. With certification, the applicant must proactively demonstrate that practices comply with the requirements, whereas with traditional enforcement, authorities must look for evidence for non-compliance (which requires already a severe violation of a law).

Among the assessed standards, SFI, CSA, AS 4708, and the German PEFC Standards include procedural and performance-based requirements but, in general, ask applicants to define the exact performance targets, either based on their own policies or the existing legal framework. In most elements of SFM, the standards do not significantly exceed the current legal requirements, especially in public forest management.

FSC Standards incorporate the FSC Principles and Criteria and include categorical requirements; e.g., prohibiting the use of GMOs and forestland conversion. FSC Standards tend to include procedural criteria, especially for complex issues such as biological diversity, water protection, etc., and the achieved performance is based on best practices or legal requirements. FSC criteria are in general more performance based than the management-system oriented SFI, CSA and AS 4708 Standards. The FSC standards often focus on ecological, participatory criteria and place less emphasis on silvicultural procedures or forest health management.

The fairly demanding management system requirements indicated in the CSA Standards and partially in the SFI and AS4708 Standards provide the flexibility to adapt the exact performance requirements to local needs. The required procedure to define the performance targets may be rigorous and resulting outcome (actions) may be demanding. The fact that one cannot directly assess explicit requirements to be implemented in practice in a standard review requires circumspection in drawing conclusions.

When comparing the level of additional requirements standards add to the legislations, the tendency is that the stricter the legislation, the less additional performance requirements standards impose, however, they tend to amend the scope of the legislation. For example, in Australia, where the legislation has provisions for all of the studied elements of SFM, the studied standard has the least additional requirements. In general, there is no clear tendency with the PEFC and FSC-based Standards, and the level of additional requirements is more dependent on the legislation in the country or region in question than on the type of standard. On the basis of the results, the level of legislation contributes to the standards more than the type of the standard. Good examples of this are both B.C and Ontario, each having four standards. When the number of elements with additional requirements is examined, in B.C all of the standards add to five to nine elements, while in Ontario, the standards add to four to seven elements.

When comparing the two CSA Standards in Canada with each other, the CSA Z809-08 Standard requires monitoring and also addresses emerging issues in sustainable forest management, such as climate change and gene manipulation.

Poland can be considered to deviate from the rest by both having relatively strong legislation and a strong standard, with additional requirements for 10 of the studied elements.

The standards generally contribute more to SFM in those cases where the legislation is weak. The largest number of elements with additional standard requirements, 11 elements, is in the SFI Standard when implemented in Alabama. The differences between the legislations in Canada and the U.S. can be seen clearly when observing the SFI Standard implemented in both of the countries. In the U.S., and especially Alabama, the private forest land regulations are less stringent than in Canada, and the SFI Standard remarkably exceeds the legislation.

In general, all of the studied standards make a positive contribution to SFM, depending on how stringent the legislation is. For the European standards, it is notable that the standards are more tailored to local conditions and legislations. Because of this, their contribution to sustainability can be interpreted to be more significant. Perhaps this is due to an increased ability to tend to more detailed aspects of SFM than can the standards that are implemented in more diverse regions.

The role of the standards may also be seen as fulfilling the requirements stated in legislation to reach the level of SFM. Therefore, the comparison of the legislations or the standards between the countries is difficult, and it should be conducted using the objectives and outcomes of the legislation, together with the standards. Even then, the differences in the operational environments of the studied cases render the interpretation of the evaluation results difficult.

5.3 Adequacy

Even though sustainability of forest management is not easy to define, the general assumption is that the standards are designed to fulfil the sustainability requirements in cases where the legislation is not adequate. Sometimes this assumption is correct: the adequacy of legislation may be studied by analyzing the additions standards make to the legislation. The interpretation of the sustainability gained with the legislation and standards is what limits the usability of the method. This is brought out especially in those studied countries where there are several implemented standards. The determination of which combination reaches an adequate level is then always open to a subjective interpretation. The certification process with regular audits partly compensate in certified areas for a weak law enforcement and a low level of legal compliance in a country, and thus the role of standard in assuring SFM will be emphasized.

Despite the limiting factors, some general conclusions of the adequacy of the legislation may be drawn from the element classification of the legislations and standards. When studying the adequacy of the legislation strictly by reflecting on the relationship of the legislation and standards, it can be stated that in most of the countries, the standards are needed for the adequacy of sustainability. In Australia the legislation is the most comprehensive among the studied countries, and the standard does not add majorly to the legislation. In Canada the standards have more demands compared with Australia, and in some cases the additional requirements are stricter. When Canada and Scandinavian countries are compared, the number of complementing additions to the legislation in voluntary standards is at a comparable level but in Scandinavia the amendments are more performance based than in Canadian CSA standards. This is logical due to the more detailed legislation in both B.C. and Ontario, and due to the different conditions between these areas. The determination of how adequately legislation or standards alone ensure SFM can be assessed only within the context of the forest management system in the country. The system as understood here includes legislation, its enforcement as well as the general level of competence and legal compliance of the forestry sector.

A good example of the limitations the comparison on this level poses is the Brazilian case. In general, the Brazilian legislation is nearly comparable with the Australian legislation in its scope, but it cannot be considered to be at the same level of adequacy for sustainable forestry due to the different conditions, e.g., in obedience to the law. In these cases, it must be determined whether the legislation is adequate but the management system fails to adhere to it, or whether the legislation itself is not strong enough to begin with. Interpretation of these results is not straightforward, but when compiled with the standard's additions to the legislation, a general conclusion of the adequacy of the legislation may be made.

According to the study results, SFM may in general be achieved with the combination of the legislation and the supplementing standards. The comparison or evaluation of either legislations or standards alone is highly unreliable and in most cases not even advisable. This is especially true for the standards which are strongly based on the legislations.

6. SUMMARY OF LEGISLATION AND STANDARDS IN STUDIED COUNTRIES

6.1 Canada

6.1.1 Ontario

Forests cover about 66% of Ontario's land area. The total forest area is about 71.2 million ha, of which 80% is covered by productive forests. About 90% of the forests are public forests. The forested area is characterized by a diversity of ecosystems; forest types range from temperate deciduous forests to boreal coniferous forests.

Ontario has a long tradition of logging, timber processing and paper manufacturing. Public forests are the crucial suppliers of raw material for the industry.

The forest legislation in Canada sets detailed requirements for concession holders, but in general they are not very restrictive. Strict and significant restrictions are mandated for forests classified as reserves. Law enforcement systems are well developed. Forest legislation is more restrictive for the management of public forests, whereas more liberal rules are set for the management of private forests.

Federal-level legislation establishes general policies for both the use of forests and nature conservation. State-level (provincial) legislation specifies and expands on the requirements. The Ministry of Natural Resources (MNR) in Ontario submits state-level management manuals that interpret legal requirements into practical forestry guidelines for most of the listed sustainability components.

The MNR approves plans for licensed forest areas. Certification standards of the FSC and CSA require plans with a broader scope for SFM. In 2004, the MNR issued the objective to require certified forest management from all holders of Sustainable Forest License (SFL) by 2007. The license gives the right to use public forest resources. Enforcement of forestry legislation is considered to be effective in Ontario.

Currently three forest certification standards are used in Ontario: the National SFM Standard of the CSA, The FSC Standard, and the Sustainable Forestry Initiative (SFI) Standard. Currently 85% of the area licensed under SFLs is certified, and the areas certified under the above-listed standards are 11.2, 7.7, and 8.1 million ha, respectively.

The FSC Boreal Forests Standard sets both procedural and performance requirements that in some aspects go beyond the legislation. The CSA Standard is implemented through an environmental management system, and includes the general criteria and elements for SFM that each applicant organization shall specify, implement, and monitor. The management system requirements increase significantly to the performance requirements in practice compared to a single SFM criterion or indicator.

6.1.2 British Columbia

In the BC forests cover 62% of the land area. Most of the forests (95%) are public. BC forests are considered heterogeneous, as they include a wide range of distinct climatic zones as well as a variety of ecosystems. More than 14% of the province's land base is in protected areas, and more than 40% of the provinces forests are considered old-growth.

The Forest and Range Practices Act, the Forest Planning and Practices Regulation, and complementary acts define provincial objectives for forest management. The legal requirements are specified by regulations. Forestry related legislation addresses all of the listed elements of sustainability at some level, except for plantations and climate change.

Tenure rights are issued for a land area or for a volume of timber; also short-term cutting rights are issued. A tenure-right holder prepares and submits a forest stewardship plan (for approval by the Ministry of Forests and Range) and technical site plans. Enforcement is effective in BC.

Currently there are three standards in use in the BC: SFI, CSA and a regional FSC for BC. In addition to the regional FSC Standard, the National Boreal FCS Standard is also applicable in the BC. Requirements of the FSC regional standard for forest management are fairly liberal, and in general they only exceed the legal requirements in some aspects, partly due to strict provincial legislation in public forestry. This standard sets the most specific and (in part) stringent requirements for wildlife and species management, but sets more discretional guidelines for the participatory process and chemical use. However, the role of First Nations is emphasized in the identification of HCVFs. The FSC regional standard also allows for forest conversion and clearcutting under specified conditions, but does not address plantations and climate change. The CSA standard has process requirements consistent with those of ISO 14001, and on-the-ground performance requirements related to national forest values and local objectives established with public participation. At the moment, the CSA Standard is the most common standard in BC, with 33.1 million ha of certified forests. By July of 2008, the two other standards, SFI and FSC, were utilized in 18.1 and 1.0 million ha, respectively.

Annexes 1-1 and 1-2 describe in detail the assessment results for the legislation and standards applied in British Columbia and Ontario in Canada.

6.2 The USA

6.2.1 Alabama

Private forests constitute 78% of the state's forest area and provide the majority of the harvested timber. In 2007, 8.5% of Alabama's private forest area was certified.

In general, federal legislation for private forestry is discretionary and procedural: agencies establish SFM and conservation support programs for private forestry, and provide guidance and technical support for forest owners. State-level legislation pertaining to forestry is also discretionary and procedural, requiring support programs for private forestry, e.g., the Best Management Practices Program. Generally, the majority of the federal environmental laws are enforced by the Environmental Protection Agency (EPA). For many environmental laws, the EPA has delegated enforcement to state authorities. The Alabama Forestry Commission is the organization responsible for the state's forestry programs and support activities. Enforcement may also occur through citizen suit actions.

The criteria of the SFI standard for clearcutting, forest risk and productivity management, and water quality management set non-discretionary requirements. For the other criteria, SFI provides mainly discretionary and procedural guidelines. SFI refers to existing Best Management Practices in water quality management. Wildlife management may be covered by participation in an external program. Training and research are especially highlighted in the SFI Standard.

6.2.2 Oregon

Of the land area of Oregon, 50% is classified as forestland. Even though only 35% of the forests is owned by private individuals, 80% of the harvested timber originates from private forests.

The federal legislation is discretionary and procedural: agencies establish SFM and conservation support programs for private forestry, and provide guidance and technical support for forest owners. Oregon State legislation establishes non-discretionary and performance requirements for regeneration, air and water quality, fire control, endangered species management, and visual quality. The Oregon State Administrative Rules exceed the standard requirements especially in fire management and wildlife management. In water quality management, both regulation and the SFI Standard rely on Best Forest Management Practices.

Generally, the majority of the federal environmental laws are enforced by the EPA. As in Alabama, the EPA has delegated the enforcement of many environmental laws to state authorities. State administrative rules on forestry (under the Oregon Forest Practices Act) are enforced by the Oregon Department of Forestry.

The SFI Standard criteria for the elements of clearcutting, forest risk and productivity management, and water quality management set non-discretionary requirements; for other elements criteria give mainly discretionary and procedural guidelines. The SFI refers to existing Best Management Practices in water quality management. In species management, the SFI Standard is clearly more demanding than the legislation, requiring specific support to species and biodiversity conservation. Training and research are especially highlighted in the SFI.

Annexes 2-1 and 2-2 describe in detail the assessment results for the legislation and standards applied in Alabama and Oregon in US.

6.3 Sweden

Swedish forest land area is 22.9 million ha, which is 66% of the country's land area. The most important owners of forested area are private individuals (50%), private companies (25%), and state owned companies (14%).

The forestry sector falls under the responsibility of the Ministry of Industry, Employment and Communication. Forest policy implementation is allocated to the Swedish Forest Agency, which enforces the forest and environmental legislation in forestry activities and provides services to private forestry. The Swedish EPA is responsible for environmental policy implementation. On a regional level, Regional Forestry Boards coordinate the control, monitoring, and improvement of activities; and guide the local Forestry Districts. All notifications of forest use are verified by the respective Regional Forestry Board.

In Sweden, the government policy objective is to implement forest management that provides high revenue, while maintaining environmental values in forests. The forest and environmental policies set the mandatory and voluntary targets for nature protection in forests. The key policy objective is to protect nature by law through nature reserves and national parks, and by voluntary protection in private forests. The environmental impact of small set-aside areas (key biotopes and others) in view of forest conservation is generally considered favorably in Sweden, but these areas' overall contribution to a healthier environment has been subject to debate.

The legislative framework is based on general acts that define the basic principles for the use and conservation of national resources, the Forestry Act, and the Environmental Code.

The Forest Agency enforces both main laws. The Forestry Act sets non-discretionary performance requirements for forest harvesting and regeneration processes. The Environmental Code gives merely discretionary orders for protection of the environment in

general, and actual specifications are given in European Commission (EC) Decrees and other regulations.

Regarding forest certification, the Swedish FSC Standard was among the first national standards endorsed by FSC. Endorsement took place in 1998, and the standard was further amended in 2000. The Swedish FSC Board has approved a revised standard version of 2006, but the international FSC Council has not yet accredited the standard.

Sweden also has a PEFC-approved forest management scheme. The major forest industry companies have applied for both FSC and PEFC certificates for their forest management.

The FSC Standard utilized in Sweden includes both discretionary and non-discretionary components, with mostly performance-oriented criteria. The standard requirements go beyond the legal requirements, especially in the provisions for participatory processes in forest management and in target levels for deciduous trees and mountain forests. The standard integrates the concept of HCVFs into the existing management framework. It also includes habitats already set aside for their biodiversity characteristics and mountain forests under restricted use. The standard does not address emerging issues, e.g., climate change.

Annex 3 describes in detail the assessment results for the legislation and the FSC standard applied in Sweden.

6.4 Finland

86.5% of the total land area of Finland, 22.9 million ha, is covered by forests. Forests used primarily for timber production cover 17.9 million ha. The largest portion of the forested area is owned by private individuals (51%). Other land owners of note are the state (35%) and private forest companies (8%).

Legislation for forestry provides forest managers with a framework for SFM. Non-discretionary performance-based rules set explicit requirements for key operations, such as harvesting intensity, regeneration, and protection of the most valuable areas. Procedural requirements guide planning and enforcement. The legislation sets general, discretionary guidelines for broad issues (e.g., water or biodiversity protection), and specifies provisions in complementary laws and regulations. Financial incentives to private forest owners guide forest management toward the desired direction. The legal framework is supportive and addresses only the elements that are necessary to regulate Finnish forestry. In general, law enforcement is appropriate in view of the high level of compliance with forestry and environmental legislation.

In the late 1990s, the forestry sector adopted a voluntary forest certification system that was subsequently endorsed by the PEFC Council. Currently, about 96% (ca. 22 million ha) of production-oriented forest and scrubland is certified for conformance to the FFCS standard. Summaries of the certification reports are public. The national FSC forest management standard has been under development for years, but has not yet been fully endorsed by the international FSC organization. By now, the FSC certification has been implemented in a very limited forest area, about 10 000 ha, based on an interim standard.

Typically the standard focuses on the elements not fully regulated by legislation, and/or where a forest manager is encouraged to strive voluntarily for better performance. However, the standard also relies on the legal requirements in some aspects (e.g., wildlife habitats). The standard sets mostly non-discretionary performance requirements which are readily assessable. Criteria for complex social aspects (e.g., safeguarding the Samí culture and reindeer husbandry) require a procedure without further discretionary specifications.

Annex 4 describes in detail the assessment results for the legislation and the PEFC standard applied in Finland.

6.5 Russia: Leningrad Region

Boreal and temperate forests cover approximately 50% of the land area in Russia. The boreal forests are in the northern and subarctic regions. They make up about 60% of the world's boreal forests, and contain more than 55% of the world's conifers. All forests in Russia are owned by the Federal Government, but according to the new Forest Code, the regions may regulate the use of forest resources.

The new, January 2007 Federal Forest Code allocates more independence to regional governments in the issuance of forest management regulations and in tenure and use rights. Private lease holders also have the responsibility to ensure regeneration and infrastructure development in the area. The new Forest Code lacks practical regulations for its implementation, resulting in that it cannot be fully implemented or enforced. The Forest Code sets mostly procedural and non-discretionary requirements, and technical regulations make these into mandatory and categorically non-discretionary performance requirements. Rules tend to regulate in detail any forest operation.

The analyzed Interim FSC Standard (Smartwood) is mostly performance based, and includes discretionary guidelines and non-discretionary requirements. The standard has partly differing requirements for small and large-scale forest operations. In practice, compliance with the standard ensures legal compliance, exceeding the legal requirements in many ways.

Annex 5 describes in detail the assessment results for the legislation and the FSC standard applied in Leningrad Region in Russia.

6.6 Germany: Bavaria

About 30% of land area in the State of Bavaria is forest land. Of this, 58% is private forests, 30% is owned by the State of Bavaria, 10% is owned by corporations, and 2% is owned by the German Republic.

Since 1975, all forests in Germany must be managed according to the Federal Forest Act, which also provides a framework for legislation at the Bavarian State level. The Bavarian Forest Law came into effect on July 22, 2005, setting the legislative framework for forest use and management in Bavaria. Supportive legislation includes other provincial acts such as the Forest Property Improvement Act, the Plant Conservation Act, the Federal Nature Conservation Act, and the Bavarian Game Act. The level of legal compliance is high in German forestry.

The German PEFC Scheme is based on regional forest certification. The scheme's criteria, guidelines, and indicators provide tools for compiling data on the quality of forests in the region. The regional-level applicant prepares a sustainability manual that specifies the requirements at the management-unit level. The standard requirements are discretionary and procedural, and the regional sustainability manual specifies the requirements for practical-level implementation. By September 2008, 75% of Bavarian State forestland area was certified by PEFC.

Annex 6 describes in detail the assessment results for the legislation and the PEFC standard applied in the state of Bavaria in Germany.

6.7 Poland

Polish forests cover 9 million ha (30%) of the country's land area. The majority (78.4%) of the forest area is owned by the state and managed by the Polish forest enterprise State Forests. Privately owned forests in Poland account for 1.5 million ha, and are managed by nearly 1.5 million owners.

Poland's model of sustainable, multi-functional forest management is based on The National Environmental Policy, The National Forest Policy, and forest-related legislation; i.e., the Forest Act of September 1991, the Act on Forest Multiplication Material of June 2001, and the Hunting Act. The National Forest Policy is fully consistent with the Forestry Strategy of the EU and also complies with the provisions of Conventions and international agreements on nature conservation, including the Convention on Biodiversity. In Poland, SFM is conducted in accordance with a forest management plan, which is developed for each forest district for 10 years. A nature conservation program prepared for the forest district is an integral part of the plan.

The legislation that determines the framework for forestry is comprehensive. For most topics reviewed in this study, the legal requirements are in line with or exceed the requirements of the Polish FSC Standard. The legal framework provides strict, non-discretionary performance-based instructions on forest management and conservation. The authority responsible for the management is State Forests, which is also technically responsible for the supervision of private forests and their management planning. State Treasury forests are supervised by the ministry responsible for the natural environment, and other forests are supervised by district and province governors. The province governor may entrust his/her supervisory tasks to the State Forests regional director, and the district governor's tasks may be delegated to the State Forests' inspector.

The main intention of the Polish FCS standard is to maintain and improve forest ecosystems, and its components are in line with the legislative framework. The criteria set discretionary, performance-based requirements that are specified in mainly non-discretionary, performance-based indicators. The main additional value of the Polish Standard is not in its complementation of the comprehensive legislation, but in its third-party auditing requirements. Indeed, State Forests has a remarkable role in both management and supervisory tasks.

Annex 7 describes in detail the assessment results for the legislation and the FSC standard applied in Poland.

6.8 Australia, New South Wales

In New South Wales, forest cover 34% of the total land area of 27 million ha. In Australia and NSW, the majority of forests are public, but may be leased to private managers. The rest of the forests are owned by a heterogeneous group, which includes large-scale investors and small landholders. In NSW, forestry is carried out on public leasehold lands (9.5 million ha) and on private lands (8.5 million ha). Aboriginal ownership and user rights are addressed in the legislation, but there are still some unresolved ownership claims and disputes. 20% (about 300 000 ha) of forest plantations in Australia are in New South Wales (NSW).

Commonwealth laws set only a general framework for the legislation, which is mainly established at the state level. Depending on the ownership, slightly different legislation is applied. Compliance with the complex legislation is ensured in agreements and plans established for the forest management areas. Binding agreements and plans ensure conformity with Codes of Practices of the State; e.g., in forest management, Codes of Practices are specific to each territory of the State, in order to ensure that practices are

consistent with ecologically SFM. Consistency between the activities and the plans is audited regularly by the relevant authority.

The NSW Department of Natural Resources and Department of Environment and Climate Change NSW are chiefly responsible for forest management related issues. In general, the level of compliance in forestry related legislation in Australia and New South Wales is high. In Australia, the public also participates actively in the follow-up of forest activities.

The researched standard, the Australian Forestry Standard, is applied to all forests in the country. Rather general requirements are specified through management system requirements and in separate guidelines developed for plantation forests, as well as for large- and small – forest owners. The standard requirements are in line with the State legislation, but as the standard is applied in the entire diverse country, the State legislation gives more specific requirements than does the standard.

Annex 8 describes in detail the assessment results for the legislation and the PEFC endorsed standard applied in New South Wales, Australia.

6.9 Brazil, Amazonian Basin

Brazil has approximately 470 million ha of forests, which add up to about 57% of the total territory. Of these forests, 87% are primary. The use of forests in Brazil may be classified as follows: production (5.5%); protection (17.8%); conservation (8.1%); social services (23.8%); and multipurpose (44.8%). Brazil represents 5% of the global productive forest plantations (5 384 000 ha). In comparison to the plantation segment, a relatively limited proportion of natural forests has been certified, even though Brazil is simultaneously the world's largest producer and consumer of tropical timber felled from the natural forests.

Forestry related legislation in Brazil may be considered advanced, and most sets of rulings are non-discretionary, giving rise to a multitude of laws and administrative guidelines on rule implementation. The environment is addressed in the 1988 Constitution, which includes comprehensive legislation that supports the sustainable use and preservation of forests located in the national territory. The Federal government is primarily responsible for Brazil's regulatory structure affecting forest management, but nothing impedes the States from defining stricter rules.

The Terra Firme Standard is applicable in the entire Amazon watershed area, which covers seven Brazilian States. The standard sets comprehensive performance and procedural requirements for almost all aspects of SFM. It exceeds the legal requirements for restrictions on forest conversion, GMOs, chemical use, biodiversity management, and public participation and training.

Annex 9 describes in detail the assessment results for the legislation and the FSC standard applied in Amazonia in Brazil.

Annex 1/1

ONTARIO, CANADA

Legislation
FSC Standard:

- Standard for boreal forests - National Boreal Standard (2004)

PEFC Standard:

- Canadian Standards Association (CSA) Z809-02
- Canadian Standards Association (CSA) Draft standard Z809
- SFI 2005-2009

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1 SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FORESTRY MANAGEMENT (SFM)

Forests cover 66% of Ontario's land area, and the total forest area is approximately 71.2 million hectares. Ontario's vast forest area is characterized by a diversity of ecosystems. Forest types range from the temperate deciduous forests of southern Ontario, to the mixed forests of the Great Lakes-St. Lawrence region; to the conifer-dominated boreal forests of the north. Productive forests cover 80% of the forested area (56.8 million ha in total). About 90% of Ontario's forests are public forests, i.e. Crown forests. The provincial government, under the Ontario Ministry of Natural Resources (MNR), has the responsibility to manage Crown forests. Half of the Crown forest area (49%, 34.8 million ha) is Crown land under commercial management (i.e., Area of Undertaking). However, parks and protected areas account for 12.4% of these areas.

Only 11% of forestland hectares (7.6 mill. ha out of 70.4 mill. ha) are privately owned, and these are located mainly in the southern part of Ontario. Although rules for Crown forest stewardship do not apply to private lands, the Ontario's government encourages private land stewardship through information and incentives, in accordance with applicable laws. The landowner makes the ultimate decision about how private lands are managed.

Ontario has a long tradition of logging, wood product manufacturing, and paper manufacturing. Forest industry companies and other operators gain access to timber resources and forest manage forests with a Sustainable Forest License (SFL). Licenses for larger areas are issued for 20 years and renewed every five years based on the results of independent reviews, where companies must demonstrate compliance with provincial forest legislation. SFL holders are also required to develop long-term forest management plans.

The Policy Framework for Sustainable Forests, approved by the Cabinet in 1993, defines the overall context for forest management in Ontario. The framework provides the broad principles for sustainable management of forests in the Province. The Crown Forest Sustainability Act (CFSA) is the centrepiece of that regulatory framework, and it defines the key procedures for Crown forest management. The CFSA is legally binding on provincial government agencies, including Ontario's Ministry of Natural Resources. It regulates issuance of SFLs and other use rights, management operations, revenue generation (taxation, etc.), and enforcement procedures. It designates several manuals that specify forest management regulations, such as the Forest Management Planning Manual (FMPM), Forest Information Manual (FIM), Forest Operations and Silviculture Manual (FOSM), and Scaling Manual. Other pieces of legislation, such as the provincial Endangered Species Act, the Public Lands Act and federal legislation on environment, (Species at Risk Act (SARA), Fisheries Act and Constitution Act), complement the CFSA.

On April 1, 2004, Ontario's Ministry of Natural Resources (MNR) announced its intention to require that all Sustainable Forest Licence (SFL) holders be certified to an accepted performance standard by the end of 2007. Three forest certification standards are used in Ontario: (1) the national sustainable forest management standard of the Canadian Standards Association (CSA); (2) the Forest Stewardship Council (FSC) standard; and (3) the Sustainable Forestry Initiative (SFI) standard.

Currently 85% of the area licensed under SFLs is certified, i.e., 26.3 million ha out of total 30.9 million ha. FSC certificates cover 11.2 million ha (42.6%), CSA certificates cover 7.7 million ha (29.3%), and SFI certificates cover 8.1 million ha (31%). About 0.7 million ha are certified with FSC and CSA, and included in the areas of respective certification schemes.

1.1 Harvesting Level

Legislation: The Crown Forest Sustainability Act (CFSA) defines harvesting level planning, operations, management and administration.

The CFSA requires conformity with the following manuals:

1. *The Forest Management Planning Manual (1996, 2004);*
2. *The Forest Information Manual (2001, 2007);*
3. *The Forest Operations and Silviculture Manual (1995, 2000); and*
4. *The Scaling Manual (1995, 2000, 2007).*

The Forest Management Planning Manual (2004) provides direction for all aspects of forest management planning for management units designated under the CFSA. The Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario (MNR-71 as amended by MNR 71/2 in 2006) specifies the requirements of the Forest Management Planning Manual and provides guidance on the preparation, review, and approval of forest management plans.

The Forest Management Planning Manual directs the determination of harvest level through strategic analysis, using decision support systems. This open and consultative process involves carrying out a forest inventory of forest resources in the area, classifying forests, developing a base model, conducting scoping analyses, developing a management strategy, and producing long-term management directives.

The Forest Operations and Silviculture Manual (2000) includes various guidelines and regulations for the preparation and implementation of forest management plans and related management operations.

The Scaling Manual (2007) provides standard rules for the determination of harvested quantities in Crown forests. It also describes the minimum standards that must be followed on all forest operations unless otherwise described in an approved Forest Management Plan.

Ontario's forest management practices are governed by an array of legally binding manuals that outline silvicultural practices and methods to enhance or protect wildlife habitat, aesthetics, watersheds and other values. The Ministry of Natural Resources (MNR), in consultation with other interested parties, produces mandatory **forest management guides** for use by forest management planning teams in the development of directives for operations. These guides are regularly reviewed and updated.

In addition to the following of an applicable forest management plan, forestry operations must be implemented according to a work schedule approved by the MNR.

Forest management plans are required in legislation. Licenses/plans are to be approved by the supervising Ministry; hence, there is legally approved guidance for forestry practices and provisions for harvesting.
Standards: The FSC National Boreal Standard sets discretionary requirements based on the legislation. These requirements do not offer any specific guidance pertaining to the definition of harvesting levels in forest management plans.

The Sustainable Forestry Initiative (SFI) 2005-2009 Standard requires detailed inventory, analysis, and documentation of resources and harvesting operations. Also, harvesting should be done according to the management plans, which are based on the information gathered in inventories. Harvesting level planning must be based on appropriate growth-and-yield models. The legislation in Ontario is comprehensive and fairly strict, with the result that SFI criteria rely mainly on legislation, but emphasize documentation of practices and commitment to principles of sustainable forestry.

CSA -02 does not specifically set requirements for harvesting levels, but as a management system standard, it requires that an organization comply with regulations restricting harvesting levels and define its own performance requirements, including harvesting targets. The standard does not set mandatory performance requirements per se, but legislation defines the procedures to be implemented in the determination of the harvesting level.

The CSA -08 draft is fundamentally built on the current CSA -02 elements and indicators, complementing them with a number of specific core indicators requesting data for instance on achieved level of harvesting in view of the sustainable harvesting level. The indicators require locally developed target levels and are tied directly back to the CSA element (sub-criterion). CSA Standards (02 and 08) include challenging requirements for both the management system and public participation, as both versions contain criteria that lead to an increase of performance requirements in practical standard implementation.

All four standards rely mainly on the legislated requirements and procedures for the determination of harvesting levels.

1.2 Reforestation Management

Legislation:

Sustainable forest licenses, established under Section 26 of the CFSA, require license holders to regenerate all areas harvested, excluding roads, landings, and slash piles. Sustainable Forest License holders must ensure that areas harvested are renewed according to the silvicultural standards to ensure the long-term health of Crown forests. The following manuals and legislation provide guidance for this.

> **The Forest Management Planning Manual (2004)** requires the identification of areas and preparation of silvicultural ground rules for reforestation by a registered professional forester, using the applicable silviculture guides, local knowledge, and experience of the planning team. Areas for renewal and tending operations shall be identified and portrayed on the operations maps for each of the two five-year terms. The areas will include: (1) all of the areas selected for harvest; (2) areas previously harvested during the term of the current or previous forest management plan(s) and not yet renewed; (3) areas of natural disturbances which require renewal; and (4) areas which require tending
>
> The Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario (MNR-71 as amended in 2006) specifies the requirements of the Forest Management Planning Manual relative to silviculture ground rules (Condition 16), silviculture treatments of special public interest (Condition 17), and silvicultural effectiveness monitoring (Condition 29). This declaration also provides guidance on the preparation, review, and approval of forest management plans.
> **The Forest Operations and Silviculture Manual (2000)** includes various guidelines and instructions which a resource manager must follow during the preparation and implementation of forest management plans.

Silvicultural guides provide current scientific and technical information for use in developing forest management plans. Ontario has silvicultural guides for the Boreal Forest and the Great Lakes-St. Lawrence Forest. These guides contain ecological and management interpretations for forest management activities.

The CFSA defines the requirement for the forest renewal trust to provide reimbursement of silvicultural expenses. It also provides for the forestry futures trust.

Legislation and related mandatory guides set the requirements for reforestation. Reforestation planning and implementation is monitored by MNR-authorized forest managers. The interpretation for Ontario's reforestation management legislation is compulsory and performance-based.

Standards: In the FSC National Boreal Standard, the subject of reforestation management is not addressed.

According to the SFI Standard, all management units must be designated for either artificial or natural regeneration, and reforestation must take place within set timelines. Furthermore, clear criteria must be established to be able to: (1) determine the success rate of reforestation activities; (2) judge whether regeneration has been adequate; (3) take appropriate actions to correct understocked areas; and (4) achieve acceptable species composition and stocking rates for both artificial and natural regeneration. Use of exotic species should be kept to a minimum, and species used must pose only a minimal risk. The SFI requirements for reforestation management are mandatory and performance-based. Additionally, the SFI Standard sets up requirements for a monitoring system.

CSA -02 requires maintenance of ecosystem processes and conditions but does not specifically require regeneration of harvested sites. Legislation requires regeneration, and CSA -02 demands compliance with the laws. The CSA -02 requirement is discretional and process- based.

CSA -08 additionally gives guidance for prompt reforestation and includes a core indicator for the measurement of reforestation success.

On performance requirements in reforestation management, the four standards rely on the legislation.

1.3 Clearcutting

Legislation: CFSA defines management, planning, operations, and identification procedures for clearcutting areas. The Forest Management Planning Manual (1996, 2004) guides various aspects of clearcutting in Ontario. Declaration Order MNR-71 regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario specifies the requirements of the Forest Management Planning Manual regarding clearcut size (Condition 15 (d)), provincial level reporting of clearcut size (Condition 32 (b)), and emulation of natural disturbance patterns (Condition 39). The maximum clearcutting area is defined in the forest management plan, and if it exceeds 260 ha, a silvicultural or biological rationale shall be developed. Clearcuts must follow the guidance given in the Forest Management Guide for Natural Disturbance Pattern Emulation.

Standards: In the FSC National Boreal Standard, clearcutting is not addressed.

The SFI Standard gives general guidelines to manage the shape, size and quality of clearcut areas. The average size of clearcut areas should not exceed 120 acres (49 ha), which must be proved with documentation of harvesting operations. In addition, the program participants shall adopt a green-up approach or alternative methods that provide for visual quality of clearcut areas.

In CSA -02 the subject is not addressed.

The CSA -08 draft standard recognizes that large-scale disturbances such as clearcutting have a significant impact on waterbodies and conservation of biological diversity, which should be taken under consideration when setting the performance targets for the defined forest area during the participatory planning process. Clearcutting is also included as a mandatory discussion item for public advisory groups that assist with the assignment of local non-core indicators and targets for all indicators. CSA - 08 does not restrict clearcutting as such, but it does require the retention of trees within the harvest area.

All standards allow clearcutting and rely mostly on legislated detailed specifications. SFI places the most conditions on clearcutting, by limiting the area more than other standards or normative regulations do.

1.4 Forest Conversion

Legislation: The CFSA requires a plan and long-term site-specific management for the forest stands. License holders do not have a mandate to convert forests to other purposes based on their own decision.

Standards: The FSC National Boreal Standard forbids the conversion of forest to non-forest land.

The SFI Standard does not address forest conversion.

CSA -02 requires protection of forestlands from deforestation or conversion to non-forests, and requires the maintenance of both forest ecosystem productivity and productive capacity.

CSA -08 sets up additional performance indicators to measure additions and deletions to the forest area by cause and by impact on long-term harvest levels. It also includes a mandatory discussion item regarding forest fragmentation and forests loss.

FSC and CSA -02 and -08 Standards generally prohibit the conversion of forests to non-forest uses, but do not address, for example, conversion to plantation forests. SFI does not address the issue. However, management license as well as the forest management plan rules derived from regulations at forest management unit level fully regulates the possibilities to do any conversion in a forest area.

1.5 Plantations

Legislation: The practice of large-scale intensive, monoculture plantations, often based on exotic species, does not occur on public lands in the province, and thus is not addressed in the forestry legislation. There is no legislation of plantations[1] in Ontario.

Standards: The FSC National Boreal Standard sets the limit for land converted to plantation.
In the SFI Standard, the issue is not addressed.

CSA -02 does not specifically address plantation establishment. The standard does require conservation of ecosystem, species and genetic diversity; and prefers regeneration with native species, which sets the emphasis on traditional regeneration of native forests.

[1] In this context 'plantations' are defined as large-scale, intensively managed forest plantations, often monocultures. Normal regeneration of native forest by planting is not being defined as a plantation.

In CSA -08, the plantation establishment is not specifically addressed either. The standard requires conservation of the ecosystem, species, and genetic diversity; and recommends regeneration with native species, placing the emphasis on traditional regeneration of native forests. The CSA -08 draft states that plantation issues must be discussed in the assignment of values, objectives, indicators, and targets related to criterion 1 on biodiversity protection, but the current draft does not contain any restrictions on plantation establishment.

The FSC Standard sets restrictions on the amount of plantation forests on forest land previously covered with native forest. Other standards are not specific on the issue.

1.6 Forest risk and productivity management (fire, insect, disease)

Legislation: The CFSA identifies principles of sustainable forest management and defines requirements for forest management licence holders, which include prompt salvage of damaged forest resources, and identify requirements for forest protection. The Forest Fire Prevention Act and Forest Management Planning Manual identify strategic and operational considerations for the prevention of forest fires. The manual requires insect infestation control and programs to be developed for the areas where infestations are detected. The interpretation for Ontario's forest risk and productivity management legislation is mandatory and procedural.

Standards: The FSC National Boreal Standard offers discretional and procedural information as a baseline for the state-level standards.

According to SFI, "Forest management practices shall protect and maintain forest and soil productivity by soil compaction, erosion and disturbance, and by retention of vigorous trees during partial harvesting."

CSA-02 sets quite discretionary requirements to conserve ecosystem productivity by maintaining health and vitality of ecosystem processes and conditions.

The respective requirements in CSA -08 are also discretional, providing for the conservation of ecosystem productivity by maintaining health and vitality of ecosystem processes and conditions. CSA -08 does not include any more specific indicators that would require data collection and monitoring of risks and forest health. CSA -08 does include a core indicator that requires measurement of the proportion of watershed prejudiced from recent stand replacing, thus providing broad information on watershed health. It also contains mandatory discussion items around the topics of climate change impacts and adaptation, trends in natural- and human- caused disturbances, and healthy watersheds.

Legislation sets the strictest provisions for ecosystem health management. The standards do not set additional requirements.

1.7 Illegal logging

Legislation: Forest operations shall not be conducted in a Crown forest except in accordance with an applicable forest management plan and an applicable work schedule approved by the Minister (sec. 42). Forest resources shall not be removed from the place of harvesting unless the resources have been measured and counted by a licensed scaler (sec. 45). There are a number of provisions for associated charges related to non-compliance with these provisions.

Inspection of records and auditing of legal compliance are the practical procedures used to discourage illegal logging activities. Forest Management Plans are to be approved by the MNR. Annual Reports, particularly Enhanced Annual Reports, are also required to be reviewed by MNR. Compliance inspections are required as outlined in the Forest Compliance Handbook.

Procedures to prevent illegal logging are consistent, mandatory, and performance based.

Standards: The FSC National Boreal Standard requires a system for documenting and reporting illegal activities, but does not provide any performance-based guidance.

The SFI Standard relies on legislation and enforcement procedures to prevent illegal operations, but in addition, the program participant must assess and minimize the risk that their procurement program could acquire material from illegal logging.

CSA -02 and CSA -08 Standards set requirements for a forest management system, whereby a core requirement is to ensure compliance with legislation and normative regulations. A management system requires systematic identification of legal requirements, their informed implementation, and monitoring of the level of compliance. Such an approach is demanding and leads to an outcome that goes beyond the level normally required in enforcement.

Legislation sets mandatory provisions that prohibit illegal logging. FSC, CSA -02 and CSA- 08 standards are the most stringent in requiring and monitoring legal compliance; SFI extends the monitoring responsibility to the suppliers.

1.8 Wildlife Habitat Management

Legislation: According to the Federal Species at Risk Act (2002), the local authority may establish codes of practice, national standards, or guidelines with respect to the protection of critical habitat. The habitats of individuals of species listed as endangered or threatened shall not be destroyed. Ontario's Endangered Species Act (2007) complements the Federal Act and requires protection of habitat of the species identified as regionally endangered, threatened or extirpated (SARA list). The MNR's policy is to apply an ecosystem-based approach to wildlife management and support forest management approaches that have the minimum adverse impact on wildlife populations on a provincial scale.The Crown Forest Sustainability Act (CFSA) compels that the requirements regarding wildlife management be specified in the Forest Management Planning Manual. The manual requires that indicators be developed related to the areas of habitats of forest-dependent provincially and locally featured species and species at risk.

In addition, The Forest Operations and Silviculture Manual includes various guidelines and rules which a resource manager must consider during the preparation and implementation of forest management plans. Consideration must be given to "provincially featured species" when developing wildlife habitat management objectives for forest management plans and operational prescriptions. Provincially featured species are moose, white-tailed deer, pine marten and pileated woodpecker, along with threatened and endangered species. Consideration is also to be given to "locally featured species". All habitat guidelines referred to in this manual must be considered during forest management planning and forest operations.

Ontario's current approach to wildlife habitat management in forestry is to give special consideration to key species in forest management planning and operations. Ontario uses several guides for managing fish and wildlife habitat. These guides provide managers with scientific and technical direction for the design of forest operations, including tree cutting, regeneration, and protection. They ensure the protection of critical habitat and an appropriate diversity of forest age classes. They also protect other vegetation that is important to the animals' life cycles.

Ontario has habitat management guides for the following species[2]:

- marten
- pileated woodpecker
- moose
- white-tailed deer
- woodland caribou
- herons
- bald eagles, golden eagles & peregrine falcons
- osprey, hawks, nesting accipiters & buteos
- waterfowl
- bats
- fish
- furbearers

Standards: FSC National Boreal Standard describes an impact assessment methodology for wildlife habitat management and preparation of respective plans. Habitats of species at risk are identified by field surveys or other means and are delineated on maps. The FSC requirements are still discretional and offer no performance-based guidance on wildlife management.

An SFI Program participant is obliged to collect biodiversity data and data on critically imperilled species and communities through a forest inventory process, mapping, or participation in external programs. He or she must then incorporate the data on forest management planning to conserve biodiversity. (See also Sec 1.9 on Species management.)

CSA -02 criteria or related elements do not address wildlife management, but do require maintenance of the variety of communities and ecosystems. However, the description of criterion 1 on biodiversity conservation calls for certified organizations to be responsible for species' protection. The requirements are soft as they are stated in a conditional form, not as mandatory standard requirements.

CSA -08 sets up a suite of performance indicators to: (1) identify an ecosystem area by type; (2) measure forest areas by type and age; (3) measure degree of within-stand structural retention (4) determine the degree of habitat for focal species; and (5) measure the level of downed woody debris. CSA -08 includes proposals, comparable to CSA -02, for those certified to assess wildlife populations and significant habitats. The requests are, however, stated as conditional provisions [3]. Finally, the draft standard includes mandatory discussion items on the maintenance of populations and communities over time, and on the participation in government programs that serve to protect threatened and endangered species.

All standards provide for the management of critical habitats for at-risk species and include a course filter approach to managing habitat for other species by providing for stand-level habitat elements. SFI and CSA -08 require that wildlife management be considered in the planning stage.

[2] *Source: Ontario's Forest Management Guides: http://www.mnr.gov.on.ca/en/Business/Forests/2ColumnSubPage/STEL02_164533.html)*

[3] Note that e.g., PEFC requires that national standards explicitly state the mandatory requirements, conditional provisions are not considered as a requirement.

1.9 Species Management (endangered)

Legislation: According to the Federal Species at Risk Act (SARA) and Endangered Species Act of Ontario (ESA) no person may kill, harm, harass, capture or take an individual of a wildlife species that is listed as endangered, threatened, or extirpated.

Ontario legislation on species management is mandatory and performance-based.

Standards: The FSC National Boreal Standard requires that the management plan cover a list of the species at risk. The diversity of these species and viability of any native species are to be maintained through all forestry activities.

According to SFI criterion 4.1., forest managers shall have programs to promote and conserve biological biodiversity (species, wildlife habitats, ecological or natural community types, old growth forests, threatened and endangered species) at stand and landscape levels. These plans should be based on assessments made, and findings should be incorporated into planning and management activities. However, indicator 4.1.5. states the caveat "where practical and when consistent with management objectives"; therefore, there is considerable freedom in the application of this criterion. SFI Program participants shall develop and implement criteria for retention of stand-level wildlife habitat elements (e.g. snags, mast trees, down woody debris, den trees, nest trees). Use of prescribed burning as a method to increase biodiversity is also encouraged. Furthermore, chemical use in forestry may not harm threatened and endangered species.

CSA -02 requires the maintaining and ensuring of habitats to protect native species and preserve genetic diversity.

CSA -08 sets up measures to monitor the degree of habitat protection, availability of suitable habitat for selected focal species, and proportion of regeneration of native species.

The standards imply that identification of endangered species and their protection should be considered in the management plan. FSC and SFI are the most specific in their requirements regarding species identification in the defined forest area and the development of procedures for their protection (SFI). CSA -02 requires biodiversity protection and provides recommendations for achieving that objective through species inventories and monitoring. CSA -08 requires inventory data, thus implying that such systems must be in place. The difference between the standards originates from their approaches: FSC and SFI define the actual performance requirement, whereas CSA defines elements by which an organization must define specific performance objectives to be implemented and monitored.

In practice, all the standards comply with legislation on species protection or they go slightly beyond the legislation by requiring systematic, up-to-date inventory and monitoring.

1.10 Water Quality Management

Legislation: The Federal Fish Act states that no person shall carry on any work or undertaking that results in the harmful alteration, disruption, or destruction of fish habitats. The Forest Management Planning Manual sets indicators, and requires thresholds for work operations affecting water bodies.

Specific guides related to water quality management include the Code of Practice for Timber Management Operations in Riparian Areas, Environmental Guidelines for Access Roads and Water Crossings, Forest Management Guidelines for the Protection of the Physical Environment, and Timber Management Guidelines for the Protection of Fish Habitat.

Ontario legislation on water quality management is mandatory and establishes explicit legal procedures.

Standards: The FSC National Boreal Standard requires riparian reserve zones and employment of measures to avoid any harm to aquatic ecosystems, but no details are provided about the measures, their effectiveness, or their intensity.

A major part of water quality management is covered by SFI criterion 3.1. which obliges a program participant to meet or exceed legal regulations both on water quality and best management practices and in approved state water quality programs. SFI Criterion 3.2. requires a program participant to apply water protection measures. Related indicators require the identification and mapping of waterbodies, the establishment and implementation of programs, and plans to protect identified waterbodies.

CSA -02 requires maintaining soil and water quality and quantity. It relies on legal regulations and best practices of performance requirements.

CSA -08 includes the same management objective and sets up measures to indicate the level of soil disturbance and coarse woody debris as well as the proportion of watershed or water management areas with a recent stand-replacing disturbance. The indicators do not have specific target values and they only partly cover the scope of the sustainability element.

All four standards require measures to protect soil and water resources. The standards accept the baseline defined in laws but require prompt implementation of adequate protective measures, without specifying what these should be. The CSA system with its solid management system requirements ensures that the detailed objectives and measures are planned and implemented.

1.11 Old-growth Management, High Conservation Value Forests (HCVC), Special Sites

Legislation: The Forest Management Planning Manual requires designation in the operational area for old-growth management, high conservation value forests (HCVF), and special sites. In addition, the Environmental Assessment Declaration Order requires reporting on the quantity and distribution of old-growth ecosystems. Investigation and policy development are also required.

The Old Growth Policy for Ontario's Crown forests provides provincial regulations for the identification and conservation of old-growth conditions and values for major tree species. This policy directs how MNR will ensure that old-growth conditions and values remain present to conserve biological diversity at levels that maintain or restore ecological processes, while allowing for sustainable development now and in the future. The policy directs that old-growth conditions will be identified using the age-of-onset and duration periods defined in the report *Old Growth Forest Definitions* for Ontario.

The Ministry of Natural Resources (MNR), in consultation with the public, the forest industry, and other interested parties, produces forest management guides. These guides are regularly reviewed and updated per a Declaration Order from MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario Condition 38. They include the Forest management Guide for Cultural Heritage Values and the Management Guidelines for Forestry and Resource-based Tourism. The former addresses five types of cultural heritage values, related legislation, appropriate measures to protect the values, data gathering, and sensitivity issues. The latter describes a range of practices, tools, and techniques that should be considered when developing forest management measures to protect resource-based tourism values.

Ontario legislation on old-growth management, HCVF, and special sites is mandatory and procedural.

Standards: The FSC National Boreal Standard requires consideration of old growth management, high conservation value forests, and special sites during the planning phase.

SFI Standard Criterion 6.1. obligates a program participant to identify, map and protect sites with special value. International wood procurement should also take into account and promote the protection of biodiversity hotspots and major tropical wilderness areas.

CSA -02 requires identifying and respecting protected areas and sites of special biological significance. This requirement is rather discretionary.

However, CSA -08 proposes that an organization develop procedures to identify sites, and sets up measures to indicate the proportion of those sites. CSA -08 includes mandatory discussion items for old-growth-forest attributes, for local and regional protected areas, and for integrated landscape management.

In both SFI and CSA Standards, old-growth forests are included as sites of special biological significance. Neither of the standards specifically requires conservation of old-growth forests beyond the regulatory requirements. FSC sets a general requirement to consider these sites, but does not explicitly require their protection. Therefore, legislation sets the baseline for the performance level in all four standards.

1.12 Restrictions on the Use of Gene-Manipulated Organisms (GMOs)

Legislation: GMOs are not addressed in forestry related legislation.

Ontario's Biodiversity Strategy refers to the use of gene-manipulated organisms (GMOs).

Note that rules define the accepted origin of seed and plant material used in forest regeneration or plantation establishment.

Standards: The FSC National Boreal Standard forbids the use of gene-manipulated organisms.

SFI Criterion 2.5. states that "a program participant using gene manipulated planting stock shall use sound scientific methods and follow all applicable laws and international protocols." This should be materialized in a special program, including research, testing, and evaluation of the material.

The GMO issue is not addressed in CSA -02 standard.

Draft CSA -08 requests that the issue be discussed during the development of the elements under criterion 1, and element 1.3 requires that reforestation programs be free of genetically modified organisms (GMOs).

Use of GMOs is forbidden in the FSC Boreal Standard and in the February 2009 version of the CSA-08 Standard. The CSA-02 and SFI Standards do not address the issue. Performance level is defined in common legislation regulating the matter.

1.13 Management of Chemical Use in Forestry

Legislation: The Pesticides Act specifies requirements for use of pesticides in Ontario. In addition, the Forest Management Planning Manual requires annual reporting and specifies planning requirements of pesticide use and the area treated. The Forest Operations and Silvicultural Manual identifies legislative and operational requirements for aerial spraying in Ontario.

Forest Management Directives and Procedures (under development) contains procedures FOR 06 01 05, FOR 06 01 06, and FOR 06 01 01, which identify the requirements for planning, operations, and experimental use of herbicides and pesticides.

Existing Ontario legislation on chemical use in forestry is binding and procedural.

Standards: The FSC National Boreal Standard specifically forbids the use of most toxic chemicals in forestry use (according to World Health Organization's (WHO) classification).

According to the SFI Standard, chemical use is allowed but should be minimized. Only the least-toxic and narrowest spectrum pesticides are allowed. Integrated pest management should be favoured whenever possible. Also, legislation, label instruction, and Best Management Practices must be followed, and application must be supervised by state-trained and certified applicators.

In CSA -02, management of chemicals in forestry is not addressed.

In the CSA -08 Standard, there is a mandatory discussion item on silviculture regimes and tools, which includes discussion of pesticide use and integrated pest management.

SFI requires chemical minimization of chemical us, other standards set only restrictions on the chemicals used. CSA -08 brings the issue to the stakeholder discussion which may result in additional restrictions.

1.14 Climate Change, Carbon Management

Legislation: Climate change and carbon management are not addressed in forestry related legislation.

Ontario has its own Action Plan on Climate Change. According to this, the commitment to respond to climate change is described in the MNR's strategic plan entitled "Our Sustainable Future" (MNR 2005). In the strategic plan, the MNR commits to "…adapt to climate change." The MNR also has a strategic plan to address climate change that outlines how it is working to:

1. Understand and project the impacts of climate change on Ontario's natural resources and ecosystems;
2. Develop tools and techniques that help lessen the impacts of climate change;
3. Help Ontarians adapt to climate change.

Note that Ontario has no legislation on climate change or carbon management. The above-mentioned strategic plan is non-legally binding guidance to plan operations.

Standards: In the FSC National Boreal Standard, the subject is not addressed.

In SFI, climate change and carbon management are not addressed.

CSA -02 requires maintaining the processes that take carbon from the atmosphere and store it in forest ecosystems.

CSA -08 sets up measures to estimate the net carbon uptake. It also includes a mandatory discussion item on carbon emissions from fossil fuels used in forest operations.

The CSA -08 standard is the most up-to-date. It requires rough monitoring of the impact of forest management on the carbon sequestration potential of forests. None of the standards

sets specific targets for carbon uptake, apart from the general requirement to maintain a productive forest cover.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: In Ontarian legislation, aboriginal and treaty rights are recognized and affirmed. The CFSA specifically states that "this Act does not abrogate, derogate from or add to any aboriginal or treaty right that is recognized and affirmed by section 35 of the Constitution Act, 1982. The existing treaties with native people shall be respected and they shall have access to the same rights as anyone else in the state. Local citizens' committees shall be established to advise the Minister on the preparation and implementation of forest management plans."

The FMPM requires that "Opportunities for ongoing participation in the preparation of the forest management plan by interested and affected persons and organizations, and by the general public, are provided through a formal public consultation process (Part A, Section 3.3). Formal public consultation opportunities will be provided at five stages in Phase I planning and three stages in Phase II planning. In addition, members of the public can consult directly with representatives from the planning team and the local citizens committee during the preparation of the forest management plan."

The FMPM also indicates that "The MNR District Manager will contact each Aboriginal community at least six months prior to the commencement of the formal public consultation process for the preparation of the forest management plan to discuss the opportunities to be involved in the planning and implementation of the forest management plan. The MNR District Manager will contact each Aboriginal community to offer an opportunity for a representative of the community to participate on the planning team."

Ontario legislation on public participation is mandatory and procedural.

Standards: The FSC National Boreal Standard sets several requirements regarding the participatory process, but hardly any of them are mandatory and performance based.

In addition to taxes, SFI Program participants are supposed to provide in-kind support or funding for forest research to improve the health, productivity, and management of forest resources. Furthermore, they must develop or use state, provincial, or regional analyses in support of their sustainable forestry programs; in other words, participate in the development or use of regeneration assessments, growth-and-drain assessments, BMP implementation and compliance, and biodiversity conservation information for family owners. They should also promote the application of principles of sustainable forest management by supporting groups that promote sustainable forestry, such as the SFI Implementation Committee. Support should be given also to the mechanisms for public outreach, education, and involvement related to forest management. For example, support might be given by providing periodic educational opportunities promoting sustainable forestry, or by providing recreation opportunities for the public, where consistent with forest management objectives. A program participant must also establish a process to reserve and respond to public inquiries and to support the SFI Implementation Committee by addressing concerns about cases of non-compliance with the SFI Standard.
CSA sets extensive requirements for the participatory process under criterion 5. They require a structured participatory process for forest management planning of public forests, a provision of diverse opportunities to derive benefits from forests, and a provision to support local community economies (CSA -02).

In addition, CSA -08 sets up measures to indicate the level of investment in initiatives and training, as well as the level of employment and participation of native people and other groups. While indicators are good tools to assess the progress in the level of participation, in this case it is difficult to gain any performance-based information from them.

The FSC Standard requires a participatory planning process, whereas the CSA Standards describe elements and procedures that should be implemented. CSA -08 specifies monitoring requirements that cover part of the scope defined for public participation. The SFI standard is the most discretional in its provisions for stakeholder participation in forest management planning.

Prescriptions for forest management planning in public forests set the basis and adequate performance level for participatory process. The standards go beyond the regulations when applied in private forestry.

1.16 Training and Outreach

Legislation: The Professional Foresters Act (2000) introduces a provision for services carried out by forestry professionals, such as planning, evaluation, auditing, and inventories. Professional foresters are required to have the knowledge, training, and experience equivalent to set standards. The Act also identifies the Ontario Professional Foresters Association and its objective to regulate the practice of professional forestry and to govern its members by promoting and increasing the knowledge, skill and proficiency of its members and public. The Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario (MNR-71as amended by MNR 71/2) also includes condition 46, which states that "MNR shall ensure that comprehensive knowledge and technical training programs are maintained, so that the knowledge of those persons involved in the planning and implementation of forest management activities is continually upgraded."

Training in the application of The Forest Operations and Silviculture Manual and The Forest Management Planning Manual is offered when necessary. The Forest Operations and Silviculture Manual also identify qualifications for persons engaged in forest operations.

Ontario legislation regarding training and outreach is obligatory and procedural.

Standards: The FSC National Boreal Standard requires forest management companies to have a system that keeps staff and others up-to-date with new regulations, developments, and training programs.

SFI Program participants procuring wood shall have a program to provide landowners information on sustainable forest management (including: (1) Best Management Practices, (2) reforestation; (3) visual quality management; and (4) conservation of critical wildlife habitat elements, threatened and endangered species, and critically imperilled and imperilled species and communities).. SFI Program participants are required to organize appropriate training for their staff and contractors on the SFI Standard and related issues as well. They must also support SFI Implementation Committees to establish criteria and identify delivery mechanisms for wood producers' training courses addressing sustainable forest management, related legal regulations, and other relevant issues.

CSA -02 requires that an organization shall establish and maintain procedures to ensure its personnel's awareness of importance and requirements of SFM. CSA -08 additionally calls for identification of training needs and measures to meet these needs.

All four standards require an awareness of the criteria for sustainable management, and their implementation in practice. SFI extends the training need specifically to cover timber producers and contractors.

Annex 1/2

BRITISH COLUMBIA, CANADA

Legislation
FSC Standard:

- Regional Forest Management Certification Standard for British Columbia (2005)
- Standard for boreal forests - National Boreal Standard (2004)

PEFC Standard:

- Canadian Standards Association (CSA) Z809-02
- Canadian Standards Association (CSA) Draft standard Z809
- SFI 2005-2009

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1. SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT (SFM)[1]

The British Columbian total land area is 95 million hectares. About two thirds of total land area (59 million hectares) is comprised of forests. British Columbian forests include a wide range of distinct climatic zones, and a variety of ecosystems. More than 14% of the province's land base is in protected areas, and more than 40% of the province's forests are considered old-growth.

British Columbia (BC) is Canada's leading supplier of construction wood and value-added wood products, and one of the world's largest exporters of wood fibre. The annual cut for industrial wood is one per cent of its forest area.

Public forests account for 95% of woodlands in British Columbia, and forest activities on public land must adhere to specific forestry legislation. The British Columbia Ministry of Forests and Range (MoFR) is the main government agency responsible for forest stewardship. The objective of the British Columbia government is to manage the land according to the public interest, all the while balancing environmental, economic and social issues.

The introduction of the British Columbian forest legislation took place in 1910 and in the Forest Act of 1912, whereby new timber tenures were introduced. Several amendments were adopted to develop the legislative and regulatory system. In response to widespread demands to improve forest practices, the Forest Practices Code of British Columbia Act came into force in 1995. The Code was replaced in 2004 by the Forest and Range Practices Act (FRPA), which defined objectives for forest management. Numerous acts and regulations support FRPA, such as the Forest Planning and Practices Regulation (FPPR). Complimentary legislation includes the Forest Act and Foresters Act of BC, along with federal legislation such as the Constitution Act (CA), Species at Risk Act (SARA) and Fisheries Act.

Tenure rights for public forests are issued under the Forest Act. Private forest operators granted tenure right for forest land are the vehicle to develop the sector, and they generate public revenues through the payment of stumpage. Forest licenses issued include long-term area-based or volume-based licenses. In addition, short-term timber sales licenses may be issued to facilitate market-based pricing and value-added opportunities. Tenure holders must provide required plans, and they must be in compliance with the planning and operational requirements established by the provincial government.

For major forest tenure holders, the Forest and Range Practices Act (2004) requires two levels of plans. The first is the forest stewardship plan (FSP), which is approved by the MoFR. The FSP identifies forest development units within which development can occur, and must provide measurable results or verifiable strategies consistent with government objectives for various forest values. The

[1] Compatibility of British Columbian standards (FSC National Boreal Standard (2004), FSC British Columbia (2005), Canada/US SFIS 2005-2009, Canada CSA Z809-02, Canada CSA Z809-08.) with the SFM elements Compatibility of British Columbian legislation with the SFM elements.

FSP has a 5-year term that may be extended to 10 years. Other requirements include consultation with First Nations and providing an opportunity for review and comment by the public and other resource users. The second plan required is a site plan that identifies intended roads, cutblocks and FSP strategies for the site. The site plans are not approved by government but must be available to the public on request.

In July 2008, the area of forests certified according to recognized standards increased to 52 million ha (65% of the province, excluding protected areas and areas converted for agricultural, urban or other development). Three forest certification standards are used in British Columbia: The National Sustainable forest Management Standard of the Canadian Standards Association (CSA), the Forest Stewardship Council (FSC) Standard, and the Sustainable Forestry Initiative (SFI) Standard.

In 1995, The Canadian Council of Forest Ministers (CCFM) developed a framework of criteria and indicators to assess and promote progress towards sustainable forest management at the national level. The CCFM's criteria and indicators were the basis for the Canadian Standards Association's (CSA) forest certification system published in 1996 and revised in 2002. CSA's Z809-08 will be the update for the Sustainable Forest Management once it has been finalized and approved. The CSA standard contains process requirements consistent with those of ISO 14001, and on-the-ground performance requirements related to national forest values and local objectives established with public participation. In July 2008, British Columbia had almost 33.1 million hectares certified to CSA standards.

The FSC Regional Standard for BC is widely supported by environmental NGOs and First Nations. The regional FSC Standard for BC and the FSC National Boreal Standard are both applicable in BC, and include detailed process and performance requirements. By July 2008, British Columbia had 1.0 million hectares certified by FSC.

The SFI Standard was endorsed by the PEFC in December 2005. Certification under this standard is widely recognized and sought after in the U.S.A., which is BC's main market. By July 2008, British Columbia had about 18.1 million hectares certified by SFI.

Compliance
The Ministry of Forests and Range is responsible for the enforcement of forestry related legislation in British Columbia. Officials trained in compliance and enforcement (C&E) verification conduct more than 16,000 inspections a year to assess compliance with forest laws, which together with the forest management planning and licensing systems set a sound basis for a good compliance level. Additional information regarding compliance is available at www.for.gov.bc.ca/hen.

1.1 Harvesting Level

Legislation: The Allowable Annual Cut (AAC) is regionally determined by the BC's chief forester every five years for Crown land areas and licensed areas managed by private companies. Determination of the AAC is carried out by strategic supply analysis that utilizes current inventory data, validated management practices, and comprehensive decision support systems. Each area planned for harvesting must have an approved forest stewardship plan that provides a practical prescription on harvesting levels and other related issues. A license holder must inform authorities in advance of the planned harvest.

Standards: The FSC Standard for BC requires that the harvesting level be adapted to the normative projected long term harvest rates (Annual Allowable Cut), and may exceed this level in a single year only by a pre-determined amount. The harvesting level must be defined in the forest management plan, it must be based on reliable inventory data on forest resources, and it should be in line with the management strategies and objectives. The FSC Standard does not go beyond legislation in setting overall regulations for the harvesting levels.

The Sustainable Forestry Initiative (SFI) 2005-2009 Standard requires detailed inventory, as well as analysis and documentation of resources and harvesting operations. Also, harvesting should be done according to the management plans, which are based on the information gathered in inventories. Harvesting level planning has to be based on appropriate growth-and-yield models. SFI has similar requirements to the FSC Standard for BC, but in addition, it requires the use of appropriate methods of harvesting, constant documentation on practices, and assurance of the suppliers' principles of sustainable forestry.

CSA -02 does not specifically set requirements for harvesting levels, but as a management system standard, it requires that an organization comply with regulations restricting harvesting levels and define its own performance requirements, including harvesting targets. The standard does not set mandatory performance requirements per se, but legislation defines the procedures to be implemented in the determination of the harvesting level.

The CSA -08 draft is fundamentally built on the current CSA -02 elements and indicators, complementing them with a number of specific core indicators requesting data for instance on achieved level of harvesting in view of the sustainable harvesting level. The indicators require locally developed target levels and are tied directly back to the CSA element (sub-criterion). CSA Standards (02 and 08) include challenging requirements for both the management system and public participation, as both versions contain criteria that lead to an increase of performance requirements in practical standard implementation.

All four standards rely mainly on the legislated requirements and procedures for the determination of harvesting levels.

1.2 Reforestation Management

Legislation: Regeneration (establishment of acceptable trees and stocking levels and of free growing stand) shall be implemented with ecologically suited native seeds/seedlings on harvested areas within defined timelines. The legislation is mandatory and performance-based.

Standards: FSC BC Standard strongly recommends natural regeneration whenever possible. It further requires the use seeds and plants of local provenances if artificial regeneration is used. The standard text does not impose any obligation to regenerate harvested areas that would exceed the legislation.

According to the SFI Standard, all management units must be designated for either artificial or natural regeneration, and reforestation must take place within set timelines. Furthermore, clear criteria must be established to be able to: (1) determine the success rate of reforestation activities; (2) judge whether regeneration has been adequate; (3) take appropriate actions to correct understocked areas; and (4) achieve acceptable species composition and stocking rates for both artificial and natural regeneration. Use of exotic species should be kept to a minimum, and species used must pose only a minimal risk. The SFI requirements for reforestation management are mandatory and performance-based. Additionally, the SFI Standard sets up requirements for a monitoring system.

CSA -02 requires maintenance of ecosystem processes and conditions but does not specifically require regeneration of harvested sites. Legislation requires regeneration, and CSA-02 demands compliance with the laws. The requirement is discretional and process- based.

CSA -08 additionally gives guidance for prompt reforestation and includes a core indicator for the measurement of reforestation success.

On performance requirements in reforestation management, the four standards rely on the legislation.

1.3 Clearcutting

Legislation: British Columbia has restrictions on cutblock size (40 or 60 hectare limits depending on location). Regulations manage the timing of harvest if it is to occur adjacent to a previously harvested area (green-up) or in scenic areas (must meet visual quality objectives). Harvest prescriptions must be prepared by registered forest professionals, who are bound by a Code of Ethics. The Code of Ethics requires that harvest prescriptions be based on sound ecological principles and that professional foresters only practise in areas where they are competent; hence, decisions on harvest methods are discretionary and procedural. Prescriptions for wildlife tree retention area and cutting of riparian zones are mandatory and performance-based.

Standards: The FSC Standard requires the retention of trees in large or wide clear-cut areas, and higher retention levels in reserve areas (dynamic reserves). The standard does not substantially exceed regulations.

The SFI Standard gives general guidelines to manage the shape, size and quality of clearcut areas. The average size of clearcut areas should not exceed 120 acres (49 ha), which must be proved with documentation of harvesting operations. In addition, the program participants shall adopt a green-up approach or alternative methods that provide for visual quality of clearcut areas.

In CSA -02 the subject is not addressed.

The CSA -08 draft standard recognizes that large-scale disturbances such as clearcutting have a significant impact on waterbodies and conservation of biological diversity, which should be taken into consideration when setting the performance targets for the defined forest area during the participatory planning process. Clearcutting is also included as a mandatory discussion item for public advisory groups that assist with the assignment of local non-core indicators and targets for all indicators. CSA -08 does not restrict clearcutting as such, but it does require the retention of trees within the harvest area.

All standards allow clearcutting and rely mostly on legislation for detailed conditions. SFI places the most conditions on clearcutting, but generally does not go beyond regulations.

1.4 Forest Conversion

Legislation: Forest tenure holders have no authorization or ability to convert forest land to other purposes. The provincial government does have the discretion to convert land to other purposes (e.g., urban development) where it has been deemed to be in the best social, economic and environmental interest of the public. Legislation does require maintenance of the productive capacity of soils and protection of waterbodies, and thus does not allow intentional conversion activities that have adverse impacts on soil and waterbodies.

Standards: The FSC standard allows the conversion of native forests to plantations or other uses under defined conditions:

a) The conversion
   - the conversion does not exceed 5% of the timber harvesting land base;
   - the conversion takes place on previously harvested poorly managed forest, or previously harvested well-managed natural forest, or in un-harvested, non old-growth forest, or if none of the previous areas are available, in old growth forest. (6.10.1).

b) High conservation value forests are not converted;

c) The conversion will enable clear, substantial, additional and long term conservation benefits for the management unit.

The FSC BC standard slightly exceeds the requirements of forest legislation, but it is not in line with FSC Principles aiming at the prohibition of any conversion of native forests for forestry objectives after 1994.

The SFI Standard does not address forest conversion.

CSA -02 requires protection of forestlands from deforestation or conversion to non-forests, and requires the maintenance of both forest ecosystem productivity and productive capacity.

CSA -08 sets up additional performance indicators to measure additions and deletions to the forest area by cause and by impact on long-term harvest levels. It also includes a mandatory discussion item regarding forest fragmentation and forests loss.

FSC and CSA 02 and 08 Standards generally prohibit the conversion of forests to non-forest uses, but do not address, for example, conversion to plantation forests. SFI does not address the issue. However, management license as well as the forest management plan rules derived from regulations at forest management unit level fully regulates the possibilities to do any conversion in a forest area.

1.5 Plantations[2]

Legislation: The practice of large-scale intensive, monoculture plantations, often based on exotic species, does not occur on public lands in the province, and thus is not addressed in the forestry legislation. All harvested areas must be reforested with native species ecologically suited to the site, with a specified level of stocking, and within a specified time period. Crown land reforestation does not meet the FAO definition of a plantation[3].

Standards: The FSC BC Standard requires that plantation forestry must consider social and environmental aspects. It should be limited to 10% of the harvesting land base and to 30% of a land base in a biogeoclimatic ecosystem. Excess conversion, if not the responsibility of the manager, can be compensated with site restoration. The standard sets limits on plantation development, which exceeds the statutes of forestry legislation. It should be noted that other state and municipal level regulations commonly address land use planning that may set additional restrictions on plantation development.

In the SFI Standard, the issue is not addressed.

CSA -02 does not specifically address plantation establishment. The standard does require conservation of ecosystem, species and genetic diversity; and prefers regeneration with native species, which sets the emphasis on traditional regeneration of native forests.

In CSA -08, the plantation establishment is not specifically addressed either. The standard requires conservation of the ecosystem, species, and genetic diversity; and recommends regeneration with native species, placing the emphasis on traditional regeneration of native forests. The CSA -08 draft states that plantation issues must be discussed in the assignment of values, objectives, indicators, and targets related to criterion 1 on biodiversity protection, but the current draft does not contain any restrictions on plantation establishment.

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2 Does not include regeneration planting. Focus on large scale intensive, monoculture plantations, often based on exotic species.

3 Plantation forest Forest/other wooded land of introduced species and in some cases native species, established through planting or seeding: 1. Includes all stands of introduced species established through planting or seeding, 2. May include areas of native species characterized by few species, even spacing and/or even-aged stands, 3. Plantation forest is a sub-set of planted forest. Source: *http://www.fao.org/forestry/media/7797/1/0/ (access date Feb 10, 2009*)

The FSC Standard sets restrictions on the amount of plantation forests and strongly encourages restoration of existing plantations. It potentially could limit establishment of new plantations (if practised). Other standards are not specific on the issue.

1.6 Forest Risk and Productivity Management (fire, insect, disease)

Legislation: Preventative measures to reduce the risk of forest fires are extensive (Wildfire Act and Regulation). Forest Tenure holders are obligated to stop work when the risk of fire is high, and they must have adequate personnel and equipment to extinguish fires occurring within the vicinity of operations. By law, A local authority may designate the area as a forest-health- emergency management area, and may implement procedures that mitigate health risks. Authorities are also designated to make regulations respecting seed and tree gene resources.

Standards: The FSC Standard for BC allows increases to the annual cut if there is a need to carry out sanitary harvesting after damage has occurred. The standard does not require mitigation of any damages and thus does not exceed the regulation.

According to SFI, "Forest management practices shall protect and maintain forest and soil productivity by soil compaction, erosion and disturbance, and by retention of vigorous trees during partial harvesting."

CSA-02 sets quite discretionary requirements to conserve ecosystem productivity by maintaining health and vitality of ecosystem processes and conditions.

The respective requirements in CSA -08 are also discretional, providing for the conservation of ecosystem productivity by maintaining health and vitality of ecosystem processes and conditions. CSA -08 does not include any more specific indicators that would require data collection and monitoring of risks and forest health. CSA -08 does include a core indicator that requires measurement of the proportion of watershed prejudiced from recent stand replacing, thus providing broad information on watershed health. It also contains mandatory discussion items around the topics of climate change impacts and adaptation, trends in natural- and human- caused disturbances, and healthy watersheds.

Legislation sets the strictest provisions for ecosystem health management. The standards do not set additional requirements.

1.7 Illegal Logging

Legislation: The Forest Act grants harvesting rights and provides for harvesting to occur only within specified areas and timelines. It further requires any wood that is harvested (private and Crown land) to be conspicuously marked prior to removal from the harvest site. In British Columbia, boundaries have to be ascertained before harvesting on private land next to the Crown land. The district manager must be notified before the beginning of the harvesting, which serves to increase harvesting transparency. The Ministry of Forests and Range has a specific Compliance and Enforcement team that monitors forest activities, including harvesting. About 16,000 inspections by trained officials occur annually.

Standards: The FSC Standard for BC requires reporting any encountered cases of illegal logging and sets basic requirements for the chain of custody. No measures to mitigate illegal logging are required by the standard. The legislation is more proactive in this respect.

The SFI Standard relies on legislation and enforcement procedures to prevent illegal operations, but in addition, the program participant must assess and minimize the risk that their procurement program could acquire material from illegal logging.

CSA -02 and CSA -08 Standards set requirements for a forest management system, whereby a core requirement is to ensure compliance with legislation and normative regulations. A management system requires systematic identification of legal requirements, their informed implementation, and monitoring of the level of compliance. Such an approach is demanding and leads to an outcome that goes beyond the level normally required in enforcement.

Legislation sets mandatory provisions that prohibit illegal logging. FSC, CSA -02 and CSA- 08 standards are the most stringent in requiring and monitoring legal compliance; SFI extends the monitoring responsibility to the suppliers.

1.8 Wildlife Habitat Management

Legislation: According to the Federal Species at Risk Act (2002), the local authority may establish codes of practice, national standards, or guidelines with respect to the protection of critical habitat. The habitats of individuals of species listed as endangered or threatened shall not be destroyed. In British Columbia, legislation to establish and protect wildlife areas is comprehensive. Wildlife management must preserve wildlife and biodiversity without unduly reducing the supply of timber from British Columbia's forests. All federally listed species at risk in addition to regionally important species are included as Identified Wildlife, and management plans must contain details on how sufficient habitat will be conserved (considering the amount of area needed, distribution of those areas, and necessary attributes for those areas). Any practices that result in damage to the environment are forbidden. Once wildlife habitat areas are defined for specific species, operations must follow the objectives and measures required, to ensure that the area supports the species. Once wildlife features are identified, no person shall destroy any part of it or render it ineffective.

Standards: The FSC Standard for BC describes procedures for wildlife and ecosystem inventories, as well as for potential establishment of wildlife reserves. It states that “The natural variability shall be maintained and a network of protected reserves established when conducting forestry operations where species at risk are present.” The FSC requirement on environmental impact assessment, which includes wildlife management and a landscape-level approach in ecological variability, goes beyond legislation.

An SFI Program participant is obliged to collect biodiversity data and data on critically imperilled species and communities through a forest inventory process, mapping, or participation in external programs. He or she must then incorporate the data on forest management planning to conserve biodiversity. (See also Sec 1.9 on Species management.)

CSA -02 criteria or related elements do not address wildlife management, but do require maintenance of the variety of communities and ecosystems. However, the description of criterion 1 on biodiversity conservation calls for certified organizations to be responsible for species’ protection. The requirements are soft as they are stated in a conditional form, not as mandatory standard requirements.

CSA -08 sets up a suite of performance indicators to: (1) identify an ecosystem area by type; (2) measure forest areas by type and age; (3) measure degree of within-stand structural retention (4) determine the degree of habitat for focal species; and (5) measure the level of downed woody debris. CSA -08 includes proposals, comparable to CSA -02, for those certified to assess wildlife populations and significant habitats. The requests are, however, stated as conditional provisions [4]. Finally, the draft standard includes mandatory discussion items on the maintenance of populations and communities over time, and on the participation in government programs that serve to protect threatened and endangered species.

[4] Note that e.g., PEFC requires that national standards explicitly state the mandatory requirements, conditional provisions are not considered as a requirement.

All standards provide for the management of critical habitats for at-risk species and include a course filter approach to managing habitat for other species by providing for stand-level habitat elements. SFI and CSA -08 require that wildlife management be considered in the planning stage.

1.9 Species Management (endangered, etc.)

Legislation: According to the Federal Species at Risk Act (SARA) no person may kill, harm, harass, capture or take an individual of a wildlife species that is listed as endangered, threatened, or extirpated. British Columbia includes all federally listed species on its list of Identified Wildlife (which also includes other plant and animal species of regional importance). Forest tenure holders are required to conserve sufficient habitat necessary for the survival of listed species. According to British Columbian legislation, practices to prevent the spread of invasive plants have to be carried out. Local authorities are also designated to make regulations respecting species management.

Standards: The FSC Standard for BC describes procedures for making inventories of species and an environmental risk assessment. Performance based requirements are set for the habitat of the listed species. Training and cooperation with government authorities to prevent the harming, harassing, capturing or taking of listed species is also required.

According to SFI criterion 4.1., forest managers shall have programs to promote and conserve biological biodiversity (species, wildlife habitats, ecological or natural community types, old growth forests, threatened and endangered species) at stand and landscape levels. These plans should be based on assessments made, and findings should be incorporated into planning and management activities. However, indicator 4.1.5. states the caveat “where practical and when consistent with management objectives”; therefore, there is considerable freedom in the application of this criterion. SFI Program participants shall develop and implement criteria for retention of stand-level wildlife habitat elements (e.g. snags, mast trees, down woody debris, den trees, nest trees). Use of prescribed burning as a method to increase biodiversity is also encouraged. Furthermore, chemical use in forestry may not harm threatened and endangered species.

CSA -02 requires the maintaining and ensuring of habitats to protect native species and preserve genetic diversity.

CSA -08 sets up measures to monitor the degree of habitat protection, availability of suitable habitat for selected focal species, and proportion of regeneration of native species.

The standards imply that identification of endangered species and their protection should be considered in the management plan. FSC and SFI are the most specific in their requirements regarding species identification in the defined forest area and the development of procedures for their protection (SFI). CSA -02 requires biodiversity protection and provides recommendations for achieving that objective through species inventories and monitoring. CSA -08 requires inventory data, thus implying that such systems must be in place. The difference between the standards originates from their approaches: FSC and SFI define the actual performance requirement, whereas CSA defines elements by which an organization must define specific performance objectives to be implemented and monitored.

In practice, all the standards comply with legislation on species protection or they go slightly beyond the legislation by requiring systematic, up-to-date inventory and monitoring.

1.10 Water Quality Management

Legislation: *Federal* legislation on water quality management sets objectives to protect water bodies and avoid any ecological or physical deterioration of them under the condition that the protective measures do not unduly reduce harvesting possibilities. The Federal Fisheries Act stipulates that "no person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat." According to BC legislation, the conservation of the water quality, fish habitat, wildlife habitat and biodiversity associated with those riparian areas will be carried out. The width of the reserve zone on each side of the water body is defined in detail for each riparian class. Silvicultural restrictions are clearly defined. Local authorities may also regulate water quality management.

Standards: The FSC Standard for BC offers detailed performance-based guidance on riparian reserve zones. In addition, it requires impact assessments of different practices on ecosystems. The standard requires taking measures to avoid any harm to aquatic ecosystems, but details about the measures, their effectiveness, and intensity are not offered. The standards do not go substantially beyond the legal requirements.

A major part of water quality management is covered by SFI criterion 3.1. which obliges a program participant to meet or exceed legal regulations both on water quality and best management practices and in approved state water quality programs. SFI Criterion 3.2. requires a program participant to apply water protection measures. Related indicators require the identification and mapping of waterbodies, the establishment and implementation of programs, and plans to protect identified waterbodies.

CSA -02 requires maintaining soil and water quality and quantity. It relies on legal regulations and best practices of performance requirements.

CSA -08 includes the same management objective and sets up measures to indicate the level of soil disturbance and coarse woody debris as well as the proportion of watershed or water management areas with a recent stand-replacing disturbance. The indicators do not have specific target values and they only partly cover the scope of the sustainability element.

All four standards require measures to protect soil and water resources. The standards accept the baseline defined in laws but require prompt implementation of adequate protective measures, without specifying what these should be. The CSA system with its solid management system requirements ensures that the detailed objectives and measures are planned and implemented.

1.11 Old-Growth Management, High Conservation Value Forests (HCVF), Special Sites

Legislation: BC has over 14% of its land base in protected areas, and over 40% of its forests are considered old growth. Outside of the protected areas, BC legislation requires the identification of old-growth management areas in a forest stewardship plan. Cultural heritage is also considered in the management. Wildlife management areas and critical habitats for endangered species are included in HCVF areas.

Standards: The FSC Standard for BC requires restoring or maintaining these sites within the management unit. In addition, it requires assessment to determine the presence of High Conservation Value Forests. On the other hand, the standard does not explicitly prohibit conversion of old- growth forests to plantations if they are not identified as HCVF.

SFI Standard Criterion 6.1. obligates a program participant to identify, map and protect sites with special value. International wood procurement should also take into account and promote the protection of biodiversity hotspots and major tropical wilderness areas.

CSA -02 requires identifying and respecting protected areas and sites of special biological significance. This requirement is rather discretionary.

However, CSA -08 proposes that an organization develop procedures to identify sites, and sets up measures to indicate the proportion of those sites. CSA -08 includes mandatory discussion items for old-growth-forest attributes, for local and regional protected areas, and for integrated landscape management.

In both SFI and CSA Standards, old-growth forests are included as sites of special biological significance. Neither of the standards specifically requires conservation of old-growth forests beyond the regulatory requirements. FSC sets a general requirement to consider these sites, but does not explicitly require their protection. Therefore, legislation sets the baseline for the performance level in all four standards.

1.12 Restrictions on the Use of Gene-Manipulated Organisms (GMOs)

Legislation: All tree seeds used for reforestation on Crown land must be registered with the Tree Improvement Branch of the Ministry of Forests. The Branch has ensured that no genetically modified tree seed has been registered or used in operational reforestation. Thus, the use of gene-manipulated organisms does not need to be explicitly addressed in forestry-related legislation, as it is fully controlled through the regulations on regeneration material (requiring registered seed).

Standards: The FSC Standard for BC does not allow the use of GMOs.

SFI Criterion 2.5. states that “a program participant using gene manipulated planting stock shall use sound scientific methods and follow all applicable laws and international protocols.” This should be materialized in a special program, including research, testing, and evaluation of the material.

The GMO issue is not addressed in CSA -02 Standard.

Draft CSA -08 requests that the issue be discussed during the development of the elements under criterion 1, and element 1.3 requires that reforestation programs be free of genetically modified organisms (GMOs).

Use of GMOs is forbidden in the FSC Standard for BC and in the February 2009 version of the CSA-08 Standard. The CSA 02 and SFI Standards do not address the issue. Performance level is defined in common legislation regulating the matter.

1.13 Management of Chemical Use in Forestry

Legislation: Federal legislation (the Pest Control Products Act) regulates the approval of pesticides for sale in Canada. BC legislation (Integrated Pest Management Act (IPMA)) regulates the transport, storage, disposal and application of pesticides. The IPMA requires that pesticides not be used where they are likely to cause an unreasonable adverse affect to human health or the environment. The IPMA further requires that pesticide application be carried out within a broader framework of an integrated pest management plan. BC legislation also defines certain circumstances where fertilizer for the purpose of carrying out a silvicultural treatment must not be applied

Standards: The FSC Standard for BC stresses that when possible, non-chemical alternatives should be used.

According to the SFI Standard, chemical use is allowed but should be minimized. Only the least-toxic and narrowest spectrum pesticides are allowed. Integrated pest management should be favoured whenever possible. Also, legislation, label instruction, and Best Management Practices must be followed, and application must be supervised by state-trained and certified applicators.

In CSA -02, management of chemicals in forestry is not addressed.

In the CSA -08 Standard, there is a mandatory discussion item on silviculture regimes and tools, which includes discussion of pesticide use and integrated pest management

Only the FSC BC standard gives a general provision to minimize chemical use in forestry. A list of approved chemicals and other performance requirements are defined by legislative framework.

1.14 Climate Change, Carbon Management

Legislation: British Columbia has the Carbon Tax Act and its associated regulation, but these do not address climate change issues and carbon management in forests. The Government of British Columbia also has The Climate Action Plan, which addresses a specific strategy for the forestry sector to ensure coordinated, effective planning and implementation of adaptation and mitigation measures[5].

Standards: The FSC Standard for BC requests the inclusion of (discretionary) information into the management plan about the environmental costs of greenhouse gases, and about how these should be taken into account throughout all management activities.

In SFI, climate change and carbon management are not addressed.

CSA -02 requires maintaining the processes that take carbon from the atmosphere and store it in forest ecosystems.

CSA -08 sets up measures to estimate the net carbon uptake. It also includes a mandatory discussion item on carbon emissions from fossil fuels used in forest operations.

The CSA -08 Standard is the most up-to-date. It requires rough monitoring of the impact of forest management on the carbon sequestration potential of forests. None of the standards sets specific targets for carbon uptake, apart from the general requirement to maintain a productive forest cover.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: The Constitution requires that indigenous people have the same rights as anyone else and that existing aboriginal title and rights and treaty rights are respected.

According to BC legislation, the forest stewardship plan (FSP - required by all forest tenure holders prior to any harvesting activity) has to be publicly advertised and made available for public review and comment. The forest tenure holder is then obliged to indicate how they have resolved or plan to resolve any public concerns prior to submission to government for FSP approval. Government then approves the FSP or sends it back to the tenure holder to better resolve public concerns, and the board must deal with the complaints.

[5] *http://www.gov.bc.ca/premier/attachments/climate_action_plan.pdf*

BC legislation on public participation is mandatory and procedural.

Standards: The FSC Standard for BC emphasizes the involvement of first nations in forest management planning, but the requirements do not substantially exceed the normative treaties defining the rights of first nations.

In addition to taxes, SFI Program participants are supposed to provide in-kind support or funding for forest research to improve the health, productivity, and management of forest resources. Furthermore, they must develop or use state, provincial, or regional analyses in support of their sustainable forestry programs; in other words, participate in the development or use of regeneration assessments, growth-and-drain assessments, BMP implementation and compliance, and biodiversity conservation information for family owners. They should also promote the application of principles of sustainable forest management by supporting groups that promote sustainable forestry, such as the SFI Implementation Committee. Support should be given also to the mechanisms for public outreach, education, and involvement related to forest management. For example, support might be given by providing periodic educational opportunities promoting sustainable forestry, or by providing recreation opportunities for the public, where consistent with forest management objectives. A program participant must also establish a process to reserve and respond to public inquiries and to support the SFI Implementation Committee by addressing concerns about cases of non-compliance with the SFI Standard.

CSA sets extensive requirements for the participatory process under criterion 5. They require a structured participatory process for forest management planning of public forests, a provision of diverse opportunities to derive benefits from forests, and a provision to support local community economies (CSA -02).

In addition, CSA -08 sets up measures to indicate the level of investment in initiatives and training, as well as the level of employment and participation of native people and other groups. While indicators are good tools to assess the progress in the level of participation, in this case it is difficult to gain any performance-based information from them.

The FSC Standard requires a participatory planning process, emphasizing the involvement of the first nation. The CSA Standards describe elements and procedures that should be implemented. CSA -08 specifies monitoring requirements that cover part of the scope defined for public participation. The SFI standard is the most discretional in its provisions for stakeholder participation in forest management planning.

Prescriptions for forest management planning in public forests set the basis and adequate performance level for the participatory process. The standards go beyond the regulations when applied in private forestry.

1.16 Training and Outreach

Legislation: In BC legislation, forestry is a recognized profession; hence, business restrictions and requirements must be applied. Forestry professionals are guided by a code of ethics that requires the professional to be competent in his/her specific field of forestry. Legislation includes training/ competence targets or obligations by specifying a required level of expertise to conduct various duties. It also demands certain levels of forest fire and safety training in operational activities.

BC legislation on training and outreach is compulsory and procedural.

Standards: FSC National Boreal Standard requires forest management companies to have a system that keeps staff and others up-to-date with new regulations, developments, and training programs. The FSC Standard for BC is not as specific with its requirement of only adequate training.

SFI Program participants procuring wood shall have a program to provide landowners information on sustainable forest management (including: (1)Best Management Practices, (2) reforestation; (3) visual quality management; and (4) conservation of critical wildlife habitat elements, threatened and endangered species, and critically imperilled and imperilled species and communities). SFI Program participants are required to organize appropriate training for their staff and contractors on the SFI Standard and related issues as well. They must also support SFI Implementation Committees to establish criteria and identify delivery mechanisms for wood producers' training courses addressing sustainable forest management, related legal regulations, and other relevant issues.

CSA -02 requires that an organization shall establish and maintain procedures to ensure its personnel's awareness of importance and requirements of SFM. CSA -08 additionally calls for identification of training needs and measures to meet these needs.

All four standards require an awareness of the criteria for sustainable management, and their implementation in practice. SFI extends the training need specifically to cover timber producers and contractors.

Annex 2/1

ALABAMA, U.S.A.

Legislation
PEFC Standard: SFIS 2005-2009

1. SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT (SFM)

In Alabama, commercial forestland covers 22.5 million acres (9.1 million ha). Out of this area, 78% is owned by private non-industrial landowners, and 72% of timber harvested comes from these lands. For the purposes of this study, the emphasis will be on the legislation concerning private forests, as the priority function of federal and state forests is increasingly recreational and conservational.

In general, U.S. federal legislation empowers administrative agencies, such as the Environmental Protection Agency (EPA) or Department of Agriculture to develop and administer regulations. Federal-level regulation directly concerning forest management on private lands is practically non-existent, but certain parts of the Clean Water Act and Endangered Species Act are applied to private forestry. This federal legislation obligates agencies to establish programs to support and promote sustainable management practices and conservation of private forestlands, and to provide guidance and services for the development and implementation of sustainable forest management. Forestlands with special value and of public interest are mainly federally held and are part of the National Forest System.

The state legislation only obligates authorities to provide support for private forest owners in sustainable forest activities. In general, laws provide very few restrictions for private forest owners, and such laws are mainly focused on fire prevention. Forest owners are encouraged to acknowledge and comply with Best Management Practices and other guidelines issued by supportive programs, such as the Best Management Practices, National Stewardship, TREASURE Forest, Tree Farm, and Forest Legacy Programs. When a forest owner joins such a program, he or she commits to complying with certain management practices before he or she may receive financial support from program funds. As a result, in 2007 certified Stewardship Forests[1] covered 1.91 million acres (774 000 ha). A two-year random monitoring survey on Best Management Practices revealed an overall compliance rate of 98.1% in all forest areas.

Enforcement and Compliance

Regarding enforcement, the federal Environmental Protection Agency (EPA) is charged with primary enforcement authority for most federal environmental laws. Some federal environmental provisions are under the jurisdiction of other federal agencies (wetlands regulation is under Section 404 of the Clean Water Act, for example, and is enforced by the Army Corps of Engineers; and the Fish and Wildlife Service enforces the Endangered Species Act). For many environmental laws, the EPA has delegated primary enforcement authority to the state. In fact, one study estimates that up to 80% of enforcement actions for federal environmental laws are undertaken by state authorities. When the state environmental laws cover areas where there is no equivalent federal law, state agencies have full authority to enforce these laws.

[1] Based on the National Stewardship Program, Alabama Stewardship Programme is a multiple-use forest management assistance program available to private forest landowners. It is designed to increase public awareness about wise forest use and management.

1.1 Harvesting Level

Legislation: Federal legislation is only applied to federal agencies for conducting renewable resource assessment and establishing supportive programs aimed at sustainable forest management (e.g., the Forest Stewardship Program).
Standard: The Sustainable Forestry Initiative (SFI) 2005-2009 Standard requires detailed inventory, analysis, and documentation of resources and harvesting operations. Also, harvesting should be done according to a management plan, which is to be based on the information gathered in inventories. Harvesting planning must be based on appropriate growth-and-yield models.

In Alabama, due to almost non-existent regulations for harvesting in private forests, the SFI Standard requirement for forest management planning and growth-and-yield-model-based harvesting is considerably more demanding than is the legislation.

1.2 Reforestation Management

Legislation: Federal legislation is only supportive, and does not impose any obligations on a private forest owner. Sustainable forest management programs are to be established to support reforestation.

Standard: According to the SFI Standard, all management units must be designated for either artificial or natural regeneration, and reforestation must take place within set timelines. Furthermore, clear criteria must be established to be able to: (1) determine the success rate of reforestation activities; (2) judge whether regeneration has been adequate; (3) take appropriate actions to correct understocked areas; and (4) achieve acceptable species composition and stocking rates for both artificial and natural regeneration. Use of exotic species should be kept to a minimum, and species used must pose only a minimal risk.

In the absence of the legislative requirements for reforestation management, the SFI Standard requirements of designated regeneration and corrective actions for understocked areas are the only tools for reforestation management in private forests.

1.3 Clearcutting

Legislation: Clearcutting is covered neither by federal nor state legislation.

Standard: The SFI Standard gives general guidelines to manage the shape, size and quality of clearcut areas. The average size of clearcut areas should not exceed 120 acres (49 ha), which must be proved with documentation of harvesting operations. In addition, the program participants shall adopt “a green-up approach”, in other words limit clear-cutting of adjacent patches, or alternative methods that provide for visual quality of clearcut areas.

Again, the SFI Standard compensates for the lack of legislation pertaining to private forestry. It gives general guidelines for clearcutting and limits the average size of clearcut areas.

1.4 Forest Conversion

Forest conversion is neither regulated by legislation nor limited by the SFI standard.

1.5 Plantations

Legislation: There are no federal or state laws that regulate the conversion of natural forests into plantations.

Note that the Federal Forest Stewardship Program provides financial and technical support to eligible participant landowners planning to convert non-forest lands (e.g. unproductive farm land) into plantations.

Standard: The SFI Standard does not mention forest plantations in its criteria and indicators.

1.6 Forest Risk and Productivity Management (fire, insect, disease)

Legislation: Due to the significant threat wildfires pose to U.S. forests, including forests in Alabama, fire prevention, control and management are thoroughly covered by federal and state legislation. Generally, fire prevention and control are the duty of the Alabama Forestry Commission. Legislation describes programs to enhance cooperation between different authorities, to allocate the necessary resources, and to provide sources of financing for wildfire prevention and control. Alabama state legislation encourages the use of prescribed burnings as a management practice, and regulation requires an authority's approval for setting a fire. Furthermore, a special fund has been established on the basis of state legislation to support forest productivity management.

Insect and disease control is not emphasized as much as wildfire management in federal legislation, but it is stated that an authority (Alabama Forestry Commission) has the duty to conduct surveys to detect and appraise insect infestations and disease and to establish a monitoring system. Furthermore, the authority determines and carries out the measures necessary to prevent, retard, control, or suppress insect infestations and disease conditions affecting trees. The administration (Alabama Forestry Commission) is obliged to provide technical information, advice, and related assistance on healthy forest management and to control the use of chemicals applied for pesticide application.

Standard: According to the FSI Standard, forest management practices shall protect and maintain forest and soil productivity by soil compaction, erosion and disturbance, and by retention of vigorous trees during partial harvesting.

Legislation requires authorities to take responsibility for fire, insect and disease management. The SFI Standard addresses the issue indirectly by requiring forest management practices that maintain and protect forest and soil productivity.

1.7 Illegal Logging

Legislation: The Code of Alabama criminalizes unauthorized cutting, removal, transportation, etc., of timber or other forest products.

Standard: The SFI Standard relies on legislation and enforcement procedures to prevent illegal operations, but in addition, the program participant must assess and minimize the risk that their procurement program could acquire material from illegal logging.

Illegal logging is criminalized in Alabama legislation and in addition, the SFI Standard requires that wood procurement not include wood from illegal sources.

1.8 Wildlife Management

Legislation: The federal Endangered Species Act protects specified species. On private lands, wildlife management is supported by a special program.

Standard: An SFI Program participant is obliged to collect biodiversity data on critically imperilled species and communities through a forest inventory process, mapping, or participation in external programs. He or she must then incorporate the data on forest management planning to conserve biodiversity.

Legislation sets no obligations for wildlife management, whereas the Standard requires wildlife to be included in forest inventory and management planning.

1.9 Species Management (endangered, etc.)

Legislation: The federal Endangered Species Act protects specified species. On private lands biodiversity conservation is supported by Stewardship Assistance Programme.

Standard: According to SFI criterion 4.1., forest managers shall have programs to promote and conserve biological biodiversity (species, wildlife habitats, ecological or natural community types, old growth forests, threatened and endangered species) at stand and landscape levels. These plans should be based on assessments made, and findings should be incorporated into planning and management activities. However, indicator 4.1.5. states the caveat "where practical and when consistent with management objectives"; therefore, there is considerable freedom in the application of this criterion. SFI Program participants shall develop and implement criteria for retention of stand-level wildlife habitat elements (e.g. snags, mast trees, down woody debris, den trees, nest trees). Use of prescribed burning as a method to increase biodiversity is also encouraged. Furthermore, chemical use in forestry may not harm threatened and endangered species.

Endangered species are protected by the legislation, but the SFI Standard goes further by requiring the program participant to include endangered species in forest inventories and management plans. The standard also requires special programs for their protection.

1.10 Water Quality Management

Legislation: The federal Clean Water Act obligates authorities (Alabama Department of Environmental Management) to identify any non-point pollution sources (in silviculture) and sets forth procedures and methods (including land use requirements) to control to the extent possible such sources. The discharge of dredge or fill material from normal silvicultural activities (e.g., timber management) is not prohibited under this Act (with some exceptions). Control of nonpoint source pollution depends on the use of Best Management Practices, as well as the participation in a number of other voluntary incentive programs.

The TMDL (Total Maximum Daily Load) for non-point pollution sources (e.g., from silvicultural activities) set by the Environmental Protection Agency is not even included in the regulatory framework of Alabama State, but the Nonpoint Source Program uses a voluntary approach to address this source of pollution. The program relies on: (1) Best Management Practices; (2) education and outreach; (3) technology transfer; (4) monitoring and assessments; and (5) resource assistance, using a balanced state-wide and watershed focused restoration approach. Local partnerships and citizen input are primary implementation components.

Standard: A major part of water quality management is covered by SFI criterion 3.1. which obliges a program participant to meet or exceed legal regulations on water quality and on best management practices, as well as approved state water quality programs. SFI Criterion 3.2. requires a program

participant to apply water protection measures. Related indicators require the identification and mapping of waterbodies, the establishment and implementation of programs, and plans to protect identified waterbodies.

Alabama has no obligatory requirements on water quality management in its legislation; therefore, the SFI Standard adds considerably to the legal requirements by requiring the program participant to comply with the Best Management Practices of EPA, to identify waterbodies, and to formulate a plan to protect them.

1.11 Old-growth Management, High Conservation Value Forests (HCVF), Special Sites

Legislation: The federal National Historic Preservation Act promotes and encourages preservation of non-federally owned prehistoric and historic resources by special programs that support private preservation measures. The Federal Forest Legacy Program has been established to protect environmentally important forest areas, to promote forest land protection, and to protect important scenic, cultural, fish, wildlife, and recreational resources; riparian areas; and other ecological values. The Healthy Forest Reserve Program has been established for the purposes of restoring and enhancing forest ecosystems, promoting the recovery of threatened and endangered species; improving biodiversity; and enhancing carbon sequestration.

Standard: SFI Standard Criterion 6.1. obligates a program participant to identify, map and protect sites with special value. International wood procurement should also take into account and promote the protection of biodiversity hotspots and major tropical wilderness areas.

As federal legislation has no requirements on the subject, the SFI Standard requirement on mapping and protection of special value sites compensates. Furthermore, protection of special sites must be taken into account during wood procurement.

1.12 Restrictions on the Use of GMOs

Legislation: Use of GMOs is covered by the reviewed legislation.

Note that the National Environmental Policy Act has provisions for GMOs in the form of an environmental impact statement requirement, but this does not have major effect on forest management so long as commercial and tested species are used.

Standard: SFI Criterion 2.5. states that “a program participant using gene manipulated planting stock shall use sound scientific methods and follow all applicable laws and international protocols.” This should be materialized in a special program, including research, testing, and evaluation of the material.

The Standard relies on applicable and very general laws and international protocols in this matter.

1.13 Management of chemical use in forestry

Legislation: The Federal Insecticide, Fungicide, and Rodenticide Act requires that chemical use comply with the label instructions. Furthermore, the act obligates the Act Administrator to prescribe standards for the certification of applicators of pesticides, but in practice this certification means completing a registration form.. It may additionally require that the certification applicant has completed a certified training, but no examination is required. At a state level, chemical use in forestry is again covered by non-regulatory Best Management Practices.

Standard: According to the SFI Standard, chemical use is allowed but should be minimized. Only the least-toxic and narrowest spectrum pesticides are allowed. Integrated pest management should be favoured whenever possible. Also, legislation, label instruction, and Best Management Practices must be followed, and application must be supervised by state-trained and certified applicators.

Federal legislation provides very general guidelines on chemical use. The SFI Standard adds the requirement to follow Best Management Practices.

1.14 Climate Change, Carbon Management

Legislation: The federal Clean Air Act requires the relevant authorities to carry out inventories of methane emissions from biogenic sources (including forests) as well as inventories of the changes in methane emissions that may occur as a result of climate change. Study reports should also include proposal of measures to mitigate the potential increase of methane emissions due to climate change. The healthy forests program, established on the basis of federal legislation, supports the restoration of forest reserves and the enhancement of forest ecosystems to boost carbon sequestration among other things. The reviewed state legislation does not mention climate change or related issues.

Standard: There is no mention of climate change related issues in the SFI Standard.

Federal legislation recognizes climate change and carbon issues at a rather general level; the SFI Standard does not contain any provisions in this matter.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: This topic is not covered by the reviewed legislation applied to private forestry.

Standard:
In addition to taxes, SFI Program participants are supposed to provide in-kind support or funding for forest research to improve the health, productivity, and management of forest resources. Furthermore, they must develop or use state, provincial, or regional analyses in support of their sustainable forestry programs; in other words, participate in the development or use of regeneration assessments, growth-and-drain assessments, BMP implementation and compliance, and biodiversity conservation information for family owners. They should also promote the application of principles of sustainable forest management by supporting groups that promote sustainable forestry, such as the SFI Implementation Committee. Support should be given also to the mechanisms for public outreach, education, and involvement related to forest management. For example, support might be given by providing periodic educational opportunities promoting sustainable forestry, or by providing recreation opportunities for the public, where consistent with forest management objectives. A program participant must also establish a process to reserve and respond to public inquiries and to support the SFI Implementation Committee by addressing concerns about cases of non-compliance with the SFI Standard.

The legislation does not impose any requirements in this matter, but the SFI Standard calls for program participants to contribute towards promoting healthy forests and community involvement, by donating money and in-kind support.

1.16 Training and Outreach

Legislation: Programs supporting forestry established on the basis of the federal legislation include training components for the public and forest owners. Authorities are also obligated to provide training for certification, e.g., training for chemical applicators.

Standard: SFI Program participants procuring wood "shall have a program to provide landowners information on sustainable forest management" (including: (1) Best Management Practices, (2) reforestation; (3) visual quality management; and (4) conservation of critical wildlife habitat elements, threatened and endangered species, and critically imperilled and imperilled species and communities).. SFI Program participants are required to organize appropriate training for their staff and contractors on the SFI Standard and related issues as well. They must also support SFI Implementation Committees to establish criteria and identify delivery mechanisms for wood producers' training courses addressing sustainable forest management, related legal regulations, and other relevant issues.

No obligations are imposed in the legislation for training and outreach, but supportive forestry programs contain training components. The SFI Standard sets specific requirements for training on various topics to be provided to different stakeholder groups.

Annex 2/2

OREGON, U.S.A.

Legislation
PEFC Standard: SFIS 2005-2009

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1. SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ISSUES OF SUSTAINABLE FORESTRY MANAGEMENT (SFM)

About 50% of Oregon is forestland. The major share (59%) is federal forestland, and state-owned forests comprise 3% of forest lands. The rest (35%) of the forests are privately owned. Harvesting on federal lands declined dramatically in the 1990s; therefore, currently more than 80% of the timber harvested in Oregon comes from private forest lands. Because forestry production is concentrated on private lands, and because SFI certified forests in Oregon are on private lands as well, for the purposes of this study the focus for reviewing the legislation will be on legislation affecting private forestry. Legislation covering the National Forest System management is not included in the review, as the priority function of federal and state forests is increasingly recreational and conservational.

In general, U.S. federal legislation empowers administrative agencies, such as the Environmental Protection Agency (EPA) or Department of Agriculture to develop and administer regulations. Federal-level regulation directly concerning forest management on private lands is practically non-existent, but certain parts of the Clean Water Act and Endangered Species Act are applied to private forestry. This federal legislation obligates agencies to establish programs to support and promote sustainable management practices and conservation of private forestlands, and to provide guidance and services for the development and implementation of sustainable forest management. Forestlands with special value and of public interest are mainly federally held and are part of the National Forest System.

However, although the federal legislation sets only very limited requirements or restrictions for private forestland owners, Oregon state legislation provides precise and strict rules for forest management. As forestry is the main industry in Oregon, the state regulations are aimed at protecting the state's forests which are the major source of income. In fact, in many issues, such as in fire management and wildlife management, the Oregon State Administrative Rules exceed the SFI Standard requirements or provide more precise instructions than does the standard. In water quality management, both regulation and the SFI standard rely on Best Forest Management Practices. In species management, the Standard is clearly is more exacting than Oregon legislation, as it requires specific measures for species and biodiversity conservation.

The Oregon Department of Forestry is the state agency led by the State Forester and responsible for Oregon forest regulation, fire management, forest protection, forest advisory services for private forest owners and management of state owned forest. The Private & Community Forests Program staff of the Department of Forestry regulates forest operations on nearly 12 million acres of non-federal forestland. The staff guides forest landowners and operators on how to conduct forest operations and activities, so that they may be in compliance with the Forest Practices Act (FPA) administrative rules. FPA rules apply to (1) harvesting; (2) reforestation; (3) road construction and repair; (4) slash disposal (treetops, branches, brush and tree limbs left on the ground after a logging operation); (5) chemical use; and (6) stream, lake and wetland protection. Sensitive resource sites, such as bird nesting and roosting locations, and threatened and endangered species sites, are also protected under the rules. FPA rules are not static: as new knowledge is obtained, the rules change accordingly. The Forest Practices Act in Oregon is responsive to changing environmental and social needs.

Enforcement and Compliance

Regarding enforcement, the federal Environmental Protection Agency (EPA) is charged with primary enforcement authority for most federal environmental laws. Some federal environmental provisions are under the jurisdiction of other federal agencies (wetlands regulation is under Section 404 of the Clean

Water Act, for example, and is enforced by the Army Corps of Engineers; and the Fish and Wildlife Service enforces the Endangered Species Act). For many environmental laws, the EPA has delegated primary enforcement authority to the state. In fact, one study estimates that up to 80% of enforcement actions for federal environmental laws are undertaken by state authorities. When the state environmental laws cover areas where there is no equivalent federal law, state agencies have full authority to enforce these laws.

1.1 Harvesting Level

Legislation: There is no federal legislation regarding harvest levels. Federal legislation is only applied to federal agencies for conducting renewable resource assessment and establishing supportive programs aimed at sustainable forest management (e.g., the Forest Stewardship Program). State level regulation limits the maximum size of the harvested are to 120 acres. Regulation also sets conditions on the location of a harvestable area: harvesting should not occur in adjacent areas within a short period. Exceptions can be made on State Forester's approval.

Standard: The Sustainable Forestry Initiative (SFI) 2005-2009 Standard requires detailed inventory, analysis, and documentation of resources and harvesting operations. Also, harvesting should be done according to a management plan, which is to be based on the information gathered in inventories. Harvesting planning must be based on appropriate growth-and-yield models.

Compared to Oregon State regulation, the SFI Standard is slightly more demanding as it requires harvesting to be based on inventory, forest management planning and growth-and-yield modeling. Both legislation and the Standard set an limit of 120 acres for the maximum area to be harvested.

1.2 Reforestation Management

Legislation: Federal legislation is only supportive, and does not impose any obligations on a private forest owner. Sustainable forest management programs are to be established to support reforestation. The Oregon Forest Practices Act sets precise time limits for reforestation. Reforestation activities must commence within 12 months from harvest, and within 5 years there should be a healthy "free-to-grow" stand on the site. In case that natural regeneration is applied in reforestation the time limits may be adjusted on State Forester's approval.

Oregon Administrative Rules give detailed description of forestlands suitable for reforestation, stocking standards for each site quality class, natural reforestation methods, time allowed for reforestation, and acceptable species, including exotic species. In general, reforestation rules are applied to any site where annual wood production is at least 20 cubic feet per acre, and stocking is reduced below the applicable productivity-based stocking standards. In cases where non-native species are planned to be used in reforestation, approval from a State Forester is needed, and species used must be well known and ecologically suitable.

Standard: The SFI Standard sets similar requirements for reforestation to the ones stated in the Oregon Forest Practices Act, but without exact figures, since the standard is applied in various ecological conditions. All management units must be designated for either artificial or natural regeneration, and reforestation must take place within set timelines. Furthermore, clear criteria must be established to be able to: (1) determine the success rate of reforestation activities; (2) judge whether regeneration has been adequate; (3) take appropriate actions to correct understocked areas; and (4) achieve acceptable species composition and stocking rates for both artificial and natural regeneration. Use of exotic species should be kept to a minimum, and species used must pose only a minimal risk.

The requirements supplied in legislation and in the SFI Standard strive for the same objectives, but the legislation requirements are more demanding with their precise time limits and exact figures for acceptable reforestation results.

1.3 Clearcutting

Legislation: The Oregon Forest Practices Act limits the maximum size of the harvested area for clearcuts. In general, the clearcut area shall not exceed 120 acres. Exceptions can be made if certain conditions are fulfilled, but only upon approval of a State Forester. In cases where required stocking of seedlings, saplings, poles and/or trees is left on the site, the size of the harvesting area is not limited.

Standard: The SFI Standard gives general guidelines to manage the shape, size and quality of clearcut areas. The average size of clearcut areas should not exceed 120 acres (49 ha), which must be proved with documentation of harvesting operations. In addition, the program participants shall adopt "a green-up approach", in other words limit clear-cutting of adjacent patches, or alternative methods that provide for visual quality of clearcut areas.

The Oregon State legislation and SFI Standard have similar general regulations for clearcutting.

1.4 Forest Conversion

Neither federal/state legislation nor the SFI Standard limits forest conversions.

1.5 Plantations

Legislation: There are no federal or state laws that regulate the conversion of natural forests into plantations.

Note that the Federal Forest Stewardship Program provides financial and technical support to eligible participant landowners planning to convert non-forest lands (e.g. unproductive farm land) into plantations.

Also, the Oregon Forest Practices Act encourages afforestation by relaxing the general requirements set for forest management during the first rotation. Oregon Administrative Rules also describe the Forest Resource Trust Program, which shall provide financing to establish healthy forest stands on underproductive forestland, among other things.

Standard: The SFI Standard does not mention forest plantations in its criteria and indicators.

1.6 Forest Risk and Productivity Management (fire, insect, disease)

Legislation: Due to the significant threat wildfires are to U.S. forests, including Oregon forests, fire prevention, control, and management are thoroughly covered by legislation. Generally, fire prevention and control are the duty of the Oregon Department of Forestry, and legislation describes programs to enhance cooperation between different authorities, to allocate the necessary resources, and to provide sources of financing for wildfire prevention and control.

Insect and disease control is not emphasized as much as wildfire management in federal legislation, but it is stated that an authority has the duty to conduct surveys to detect and appraise insect infestations and disease and to establish a monitoring system. Furthermore, the authority determines and carries out the measures necessary to prevent, retard, control, or suppress insect infestations and

disease conditions affecting trees. The administration is obliged to provide technical information, advice, and related assistance on healthy forest management and to control the use of chemicals applied for pesticide application. The authority/administration meaning in this case State Forest Departments.

The Oregon State Administrative Rules provide for a detailed forest protection plan to be prepared by the landowner and approved by the Oregon Board of Forestry.

According to the FSI Standard, forest management practices shall protect and maintain forest and soil productivity by soil compaction, erosion and disturbance, and by retention of vigorous trees during partial harvesting.

Legislation requires authorities to take responsibility for fire, insect and disease management. The SFI Standard addresses the issue indirectly by requiring forest management practices that maintain and protect forest and soil productivity.

1.7 Illegal Logging

Legislation: The Oregon Forest Practices Act criminalizes the harming, injuring or cutting of trees without permission.

Standard: The SFI Standard relies on legislation and enforcement procedures to prevent illegal operations, but in addition, the program participant must assess and minimize the risk that their procurement program could acquire material from illegal logging.

Illegal logging is criminalized in Oregonian legislation and in addition, the SFI Standard requires that wood procurement not include wood from illegal sources.

1.8 Wildlife Habitat Management

Legislation: The Oregon Forest Practices Act gives precise instructions to leave snags and downed logs in harvesting areas, and to leave green trees near certain streams to maintain wildlife, nutrient cycling, and moisture retention. The act also gives instructions for several named species' resource site management (nesting, roosting, foraging etc. sites).

Standard: An SFI Program participant is obliged to collect biodiversity data on critically imperilled species and communities through a forest inventory process, mapping, or participation in external programs. He or she must then incorporate the data on forest management planning to conserve biodiversity.

Both Oregon legislation and the SFI Standard provide for Wildlife habitat management. The legislation gives detailed instructions for the management of certain species, and the standard requires imperilled species to be included in forest inventory and management planning.

1.9 Species Management (endangered, etc.)

Legislation: Federal legislation criminalizes any harming of endangered species in the Endangered Species Act. The Oregon Forest Practices Act gives instructions for several named species' resource site management (nesting, roosting, foraging etc. sites).

Standard: According to SFI criterion 4.1., forest managers shall have programs to promote and conserve biological biodiversity (species, wildlife habitats, ecological or natural community types, old growth forests, threatened and endangered species) at stand and landscape levels. These plans

should be based on assessments made, and findings should be incorporated into planning and management activities. However, indicator 4.1.5. states the caveat "where practical and when consistent with management objectives"; therefore, there is considerable freedom in the application of this criterion. SFI Program participants shall develop and implement criteria for retention of stand-level wildlife habitat elements (e.g. snags, mast trees, down woody debris, den trees, nest trees). Use of prescribed burning as a method to increase biodiversity is also encouraged. Furthermore, chemical use in forestry may not harm threatened and endangered species.

Endangered species are protected by the legislation, but the SFI Standard goes further by requiring the program participant to include endangered species in forest inventories and management plans. The standard also requires special programs for their protection.

1.10 Water Quality Management

Legislation: The federal Clean Water Act obligates authorities (Oregon Department of Environmental Quality (DEQ)) to identify any non-point pollution sources (in silviculture) and sets forth procedures and methods (including land use requirements) to control to the extent possible such sources. The discharge of dredge or fill material from normal silvicultural activities (e.g., timber management) is not prohibited under this Act (with some exceptions). Control of nonpoint source pollution depends on the use of Best Management Practices, as well as the participation in a number of other voluntary incentive programs.

The Oregon State Forest Practices Act provides for forest operations to comply with air and water pollution control rules and standards of the Environmental Quality Commission. Also noted in the Forestry Practices Act are Best Management Practices consisting of forest practices rules adopted to prevent or reduce pollution of waters of the state. This act gives a State Forester the authorization to require additional green trees and snags to be left adjacent to streams in certain conditions.

The Oregon Administrative Rules give exact instruction for the type and amount of vegetation retention (buffer zones), protective measures in chemical use, and acceptable practices in harvesting and site preparation nearby streams.

Standard: A major part of water quality management is covered by SFI criterion 3.1 which obliges a program participant to meet or exceed legal regulations on water quality and on Best Management Practices developed under the U.S. Environmental Protection Agency as well as approved state water quality programs. SFI Criterion 3.2 requires a program participant to apply water protection measures, either based on BMPs or where regulations or BMPs do not exist, use of experts to identify appropriate protection measures.

Oregon state legislation gives precise guidelines for protections of water bodies. The SFI Standard does not have additional requirements because it requires compliance with EPA Best Management Practices adopted by Oregon legislation.

1.11 Old-growth Management, High Conservation Value Forests (HVVF), Special Sites

Legislation: The federal National Historic Preservation Act promotes and encourages preservation of non-federally owned prehistoric and historic resources by special programs that support private preservation measures. The Federal Forest Legacy Program has been established to protect environmentally important forest areas, to promote forest land protection, and to protect important scenic, cultural, fish, wildlife, and recreational resources; riparian areas; and other ecological values. The Healthy Forest Reserve Program has been established for the purposes of restoring and enhancing forest ecosystems, promoting the recovery of threatened and endangered species; improving biodiversity; and enhancing carbon sequestration.

The State Forest Practices Act protects state scenic highways and visually sensitive corridors, and limits operations allowed alongside them. The Oregon Administrative Rules require identification and protection/special management practices of special resource sites of named species.

Standard: SFI Standard Criterion 6.1. obligates a program participant to identify, map and protect sites with special value. International wood procurement should also take into account and promote the protection of biodiversity hotspots and major tropical wilderness areas.

The legislative framework has only limited requirements on special sites, mainly targeted to maintain the visual quality along scenic highways; old growth is not addressed specifically. Similarly, the standard contains a general requirement to identify and protect special sites.

1.12 Restrictions on the Use of Gene-Manipulated Organisms (GMOs)

Legislation: Use of GMOs is not covered by the reviewed legislation.

Note that the National Environmental Policy Act has provisions for GMOs in the form of an environmental impact statement requirement, but this does not have major effect on forest management so long as commercial and tested species are used.

Standard: SFI Criterion 2.5. states that "a program participant using gene manipulated planting stock shall use sound scientific methods and follow all applicable laws and international protocols". This should be materialized in a special program, including research, testing, and evaluation of the material.

The Standard relies on applicable, very general laws and international protocols in this matter.

1.13 Management of Chemical Use in Forestry

Legislation: The Federal Insecticide, Fungicide, and Rodenticide Act requires that chemical use comply with the label instructions. Furthermore, the act obligates the Act Administrator to prescribe standards for the certification of applicators of pesticides, but in practice this certification means completing a registration form. It may additionally require that the certification applicant has completed a certified training, but no examination is required. Oregon State Administrative Rules give precise instructions for protective measures to be applied for chemical use and encourage integrated pest management.

Standard: According to the SFI Standard, chemical use is allowed but should be minimized. Only the least-toxic and narrowest spectrum pesticides are allowed. Integrated pest management should be favoured whenever possible. Also, legislation, label instruction, and Best Management Practices must be followed, and application must be supervised by state-trained and certified applicators.

Oregonian legislation gives precise instructions for chemical use and encourages integrated pest management. The SFI Standard relies on the federal and state legislation.

1.14 Climate Change, Carbon Management

Legislation: The federal Clean Air Act requires the relevant authorities to carry out inventories of methane emissions from biogenic sources (including forests) as well as inventories of the changes in methane emissions that may occur as a result of climate change. Study reports should also include proposal of measures to mitigate the potential increase of methane emissions due to climate change. The healthy forests program, established on the basis of federal legislation, supports the restoration of

forest reserves and the enhancement of forest ecosystems to boost carbon sequestration among other things.

Oregon Administrative Rules recognize carbon offsets from the rules that establish the Forest Resource Trust, which state that the Board of Forestry retains ownership of and is the exclusive agent for marketing carbon offsets from forest stands established with Trust funding.

In the absence of federal action, many U.S. states are banding together to explore and employ greenhouse gas-reducing policies. Oregon participates in the following:

- West Coast Governors' Global Warming Initiative
- Western Governors' Association (WGA): Clean and Diversified Energy Initiative
- Western Regional Climate Action Initiative

In addition, The Governor's Advisory Group on Global Warming in Oregon developed the "Oregon Strategy for Greenhouse Gas Emissions" in 2004. It has several goals for actions to address climate change. The guidelines, though, are not binding legislation.

Standard: SFI Standard addresses neither climate change nor carbon management issues.

Oregon State legislation addresses climate change and sets general rules for carbon offset markets; the SFI Standard does not contain any provisions in this matter.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: Public participation in forest management planning is not included in the legislation covering private forestry.

Standard: In addition to taxes, SFI Program participants are supposed to provide in-kind support or funding for forest research to improve the health, productivity, and management of forest resources. Furthermore, they must develop or use state, provincial, or regional analyses in support of their sustainable forestry programs; in other words, participate in the development or use of regeneration assessments, growth-and-drain assessments, BMP implementation and compliance, and biodiversity conservation information for family owners. They should also promote the application of principles of sustainable forest management by supporting groups that promote sustainable forestry, such as the SFI Implementation Committee. Support should be given also to the mechanisms for public outreach, education, and involvement related to forest management. For example, support might be given by providing periodic educational opportunities promoting sustainable forestry, or by providing recreation opportunities for the public, where consistent with forest management objectives. A program participant must also establish a process to reserve and respond to public inquiries and to support the SFI Implementation Committee by addressing concerns about cases of non-compliance with the SFI Standard.

The legislation does not impose any requirements in this matter, but the SFI Standard calls for program participants to contribute towards promoting healthy forests and community involvement, by donating money and in-kind support.

1.16 Training and Outreach

Legislation: Programs supporting forestry established on the basis of the federal legislation include training components for the public and forest owners. Authorities are also obligated to provide training for certification, e.g., training for chemical applicators.

Standard: SFI Program participants procuring wood "shall have a program to provide landowners information on sustainable forest management" (including: (1) Best Management Practices, (2) reforestation; (3) visual quality management; and (4) conservation of critical wildlife habitat elements, threatened and endangered species, and critically imperilled and imperilled species and communities). SFI Program participants are required to organize appropriate training for their staff and contractors on the SFI Standard and related issues as well. They must also support SFI Implementation Committees to establish criteria and identify delivery mechanisms for wood producers' training courses addressing sustainable forest management, related legal regulations, and other relevant issues.

No obligations are imposed in the legislation for training and outreach, but supportive forestry programs contain training components. The SFI Standard sets specific requirements for training on various topics to be provided to different stakeholder groups.

Annex 3

SWEDEN

Legislation
FSC Standard: Swedish FSC Standard 2000

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1. SUMMARY OF LEGISLATIVE AND FSC STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT[1]

Swedish forest land area covers 22.9 million ha (66%) of the land area. Private individuals own 50% of forests, and private companies own 25%. State-owned companies manage 14% of forest land, while 3% is managed by government agencies for the sole purpose of protection. Other private organizations hold 6%, and public entities hold the remaining 1% of forest land[2]. In Sweden, the amount of industry-owned forests is the highest of the fiveNordic countries.

The forestry sector falls under the responsibility of the Ministry of Industry, Employment, and Communications. Forest policy implementation is assigned to the Swedish Forest Agency, which enforces the forest and environmental legislation in forestry activities, and provides services to private forestry. The Swedish Environmental Protection Agency is responsible for environmental policy implementation. At the regional level, Regional Forestry Boards coordinate the control, monitoring, and improvement of activities; and guide the local Forestry Districts. All notifications of forest use are verified by the respective Regional Forestry Board.

In Sweden, the government policy objective is to implement the kind of forest management that yields high revenues, all the while maintaining environmental values in forests. Forest and environmental policies set both mandatory and voluntary targets for nature protection in forests. The key policy objective is to protect nature by law through nature reserves and national parks, and by voluntary protection in private forests. The environmental impact of small set-aside areas (key biotopes and others) in view of forest conservation is generally considered favourably in Sweden, but these areas' overall contribution to a healthier environment has been subject to debate.

The legislative framework is based on general acts that define the basic principles for the use and conservation of natural resources. Specifications are given in complementary decrees. Today two main laws guide forest management in Sweden: (1) the Forestry Act (SFS) 1979:429, of which the latest amendments of 2006 establish the basic requirements for forest management; and (2) the Environmental Code 1998:808, of which the latest amendments of 2008 cover nature protection.

The Environmental Code covers the use of natural resources from waters to agricultural fields and forests. It includes general provisions for the management of natural resources that have significant implications for forest management. For example, the concept of key biotopes, their inventory, and management procedures are not included in the Forestry Act, but do apply to forestry through the Environmental Code. The Swedish Forest Agency controls adherence to the Forestry Act, the Environmental Code, and the Act on Cultural Remains 1988:950.

Certification

Regarding forest certification, the Swedish FSC standard (Standard) was among the first national standards endorsed by FSC. The endorsement took place in 1998, and the standard was further amended in 2000. The Swedish FSC Board has approved a revised standard version of 2006, but the international FSC Council has not yet accredited the standard.

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[1] Table 12.1 Compatibility of Swedish FSC standard with the SFM elements
Table 12.2 Compatibility of Swedish legislation with the SFM elements
[2] Source: Statistical Yearbook of Forestry 2008. Official Statistics of Sweden

Sweden also has a PEFC-approved forest management scheme, and some of the major forest industry companies have applied for both FSC and PEFC certificates for their forest management. For some data as the extent of certification.

Enforcement and Compliance

The level of illegal harvesting activities in Sweden is low, the main problems being some forest owners' failure to notify the proper authorities of their planned harvesting, as well as their failure to meet requirements regarding nature conservation, cultural heritage preservation, and reforestation in connection with harvesting.

The National Board of Forestry enforces the Forestry Act and the Environmental Code on issues related to forestry under the Act on Cultural Remains.

1.1 Harvesting Level

Legislation: The Forestry Act requires that forests shall carry out sustainable production without sacrificing biological diversity (Sec 1). Forestry operations are in practice allowed only on productive forest land where the annual growth exceeds 1 m^3/ha (Sec 2-3). The legislation sets regulations for forestry operations during different phases of stand development: regeneration felling, thinning, regeneration, etc., and they also require that silvicultural operations be carried out timely. Neither forestry operations nor infrastructure development is subsidized in Sweden. Public resources are allocated only to nature- protection programs.

According to the Forestry Act, forests shall provide a sustainable yield (Sec 1), and harvesting shall aim at regeneration or improvement of stands (Sec 10). Forest owners shall submit a forest use notification six weeks before the planned operation.

Almost no forest operations are allowed on unproductive forest land (growth <1 m^3/ha/a). A permit for harvesting is required in mountain forests, sites that are difficult to regenerate, and for any operations in biologically valuable habitats.

All forest owners should prepare a Conservation Document where the basic forest information and data on environmentally and culturally valuable sites are reported. Laws do not require a FMU-level forest management plan, and the voluntary plans are considered only as guiding documents that can be changed during their period of their validity. No specific provisions are given for non-wood forest products, except in the cases of game and fisheries, where respective legislation applies.

Environmental legislation is compiled under the Environmental Code, where selected parts apply to forest management and are enforced by the Swedish Forest Agency. On productive forest land, key biotopes (biologically valuable habitats), other habitats of protected species (as defined in the respective EU directives), and valuable broadleaved stands shall be set aside.

The Swedish Forest Agency may establish biotope protection areas for the most valuable biotopes that provide habitats for endangered species. Forest owners get compensation for the future value of their timber on these sites, but the area remains as private property. The most valuable biotopes are registered in the data bases of the County administration and the Swedish Forest Agency.

Standard: The FSC standard relies on legislation that requires sustainable and high production levels without compromising biodiversity protection. In addition, the Standard requires that major forest owners prepare landscape ecological plans for forest management.

Legislation controls the harvesting level through the provisions which prohibit final harvesting on non-mature stands and control the thinning densities in intermediate cutting. The FSC

standard only adds to these requirementsby requiring a landscape ecological plan from major forest owners, which in some cases may expand the area of restricted commercial use.

1.2 Reforestation Management

Legislation: The Forestry Act requires that harvested sites or degraded sites shall be regenerated within 3 years, and the new stand shall be satisfactory in density and composition. Forest owners are given the responsibility to plan and implement appropriate tending operations. The requirements strive for prompt and high quality regeneration.

Standard: The FSC standard matches the legislative requirements for prompt and good quality regeneration.

The legislation sets explicit requirements for the timely regeneration of harvested or degraded sites. The certification standard does not set additional provisions.

1.3 Clearcutting

Legislation: Legislation sets general rules on the size of regeneration felling areas: if the area of forest management units (FMU) >50 ha, the cuts shall not exceed half of the area of a FMU in one community; authorities may also set upper limits for annual harvested areas for large FMUs (> 1 000 ha).

In protected forests (e.g., mountain forests), additional restrictions apply.

Standard: The standard specifies the restrictions on clearcutting of mountain forests with biodiversity values (i.e., virgin and other valuable forests). Selective cutting should be used in forests with moist soils and in valuable broadleaved forests.

Clearcutting is allowed in forest stands where it does not imperil the future regeneration of the stand. Regulations set upper limits for clearcut areas and give restrictions on their implementation in biologically valuable ecosystems (e.g., special types, mountain forests). The FSC standard allows clearcutting but is generally more restrictive than the legislation.

1.4 Forest conversion

Legislation: Forest land may be converted to other uses if not protected by any national or municipal regulations.

Standard: The standard does not restrict conversion of forests to other uses, but it does restrict afforestation of open fields.

Forest land shall be regenerated and maintained under tree cover. However, forest land can be converted to other uses when justified with other regulations controlling land use (e.g., municipal plans and related rules). The FSC standard does not set additional requirements.

1.5 Plantations

Neither legislation nor the FSC standard sets specific provisions for plantations (large scale, often forests planted with exotic species).

Large-scale plantations are not addressed in legislation or the standard.

1.6 Forest risk and productivity management (fire, insect, diseases)

Legislation: The regulations on forest health focus on insect and fungal damages. Forest owners shall prevent damage and inform authorities on the occurrences of listed damage agents.

Standard: The Standard focuses on prevention of insect and game damage by application of appropriate silvicultural measures (e.g., appropriate provenance and species selection, sanitary fellings). The standard also emphasizes consideration of biotic and abiotic risks in all forest management.

The Standard requirements do not substantially exceed the performance level of the legislation. Both legislation and the FSC standard have a preventive approach to mitigating health risks.

1.7 Illegal logging

Legislation: Regulations and documentation of land titles are strict and consistent in Sweden. The selling of timber from another person's property is condemned under the Penal code, and inappropriate harvesting operations are monitored and reported by the Forest Agency. The Forest Agency shall be informed of planned harvesting operations prior to their commencement.

Forest authorities have good site-specific databases of biologically valuable sites, historical monuments, and cultural landscapes. If a planned harvesting area includes any of the special sites, forest owners must consult with authorities before operations take place.

Forest owners shall submit a forest use notification six weeks before the planned operation and have a Conservation Document where the basic forest information and data on environmentally and culturally valuable sites are reported.

Almost no forest operations are allowed on unproductive forest land (growth <1 m^3/ha/a). A permit for harvesting is required in mountain forests, sites that are difficult to regenerate, and for any operations in biologically valuable habitats.

The Forestry Act as such does not address the issue of illegal logging, but related regulations and control measures provide adequate means to effectively prevent illegal logging.

Standard: The Standard broadens the scope of the definition of illegal logging by including labour codes and agreements and by requiring demonstration of long-term tenure and use rights.

The forestry and environmental legislation, its implementation, and enforcement procedures are well defined, which minimizes the likelihood for illegal logging in the country. The FSC standard enlarges the concept of illegal logging to also include labour and tenure rights, which are enforced by other authorities, thus increasing the audited performance requirements in certified forestry slightly beyond the legislated enforcement procedures for timber production. One should note, however, that labour legislation is strictly enforced in Sweden, resulting in that compliance with the law in certified or non-certified forestry is likely to be at the same level.

1.8 Wildlife Management

Legislation: Provisions to protect valuable habitats and restrict hunting and fishing are the main approaches to protecting wildlife in Sweden. Sweden adheres to European Union Directives to protect bird-species and valuable habitats. Authorities issue management directives for the individual

protected areas. County administration and the National Board of Forestry register valuable habitats important for species protection or for biotope protection.

Standard: The standard agrees with the approach that wildlife may best be protected by being provided with suitable habitat. The standard lists areas where forestry operations should not be carried out. Additionally, it provides for general requirements of protection of all unevenly aged, multi-layered natural forests with an abundance of dead trees, requirements that most likely impose restrictions on some forests not already classified and registered as key-habitats. The standard also restricts operations on certain species-rich habitats during the nesting and reproduction season.

EU law provides for the establishment of biotope protection areas on valuable sites where forest management is prohibited or restricted. The FSC approach requires protection of existing sites and restoration of potential sites for wildlife and species management, and gives threshold values for the set aside areas. The Standard requirements exceed the legal ones.

1.9 Species Treatment (endangered, etc.)

Legislation: The Forest Agency registers the habitats of endangered species and requires their protection. The harming of individuals of these species is punishable.

Standard: The standard specifies the nesting and mating places and habitats of endangered species should be maintained at the level that ensures appropriate living conditions for the species.

The legal and Standard requirements to protect the listed endangered species are at the same level, but the FSC standard requires active measures to create suitable habitats for these species and the exceeds the legal requirements in this respect.

1.10 Water Quality Management

Legislation: The Environmental Code sets general provisions for soil and water conservation. It specifies that the use of chemicals and fertilizers shall be discussed with authorities, e.g., the Swedish Forest Agency, prior to their use in the field. The basic approach is that forest management shall not cause damage to water ecosystems.

Standard: The standard sets general provisions on the need to protect water resources and transition zones bordering waterways. The standard prohibits ditching of undrained lands and clearing of ditches on low productive peatlands.

The FSC standard provisions on water and soil protection are at an obligatory level. The FSC sets strict conditions for ditching, which is already controlled by regulations. There are no substantial additional requirements for certified forestry.

1.11 Old-growth Management, High Conservation Value Forests (HCVC), Special Sites

Legislation: The legislation does not address old-growth or HCV-forests. The valuable forest areas are included in permanent protection sites or in registered key biotopes.

Standard: The standard lists areas where forestry operations are not allowed. Most of them are typical of mountain forest areas. In addition, the standard requires a 5% set-aside area and the maintenance of broadleaved tree dominance on 5% of mesic and moist forests.

The approaches in old-growth and high conservation value forests in legislation and the FSC standard are different. Per the legislation, the most valuable sites are under protection or

restricted use, but the FSC requires that specified thresholds be reached for old-growth or HCVF under restrictive use. In practice, the restrictions apply mostly to mountain forests, which are under restrictive use already by regulations.

In practice, the FSC standard adds most likely to the areas to be classified as old-growth or HCVF in production forests, and thus it exceeds the legal requirements.

1.12 Restrictions on the Use of GMOs

Legislation: Restrictive national legislation that is harmonized with EU directives regulates the use of GMOs. In practice, the use of GMOs in forestry is restricted to experimental use that is allowed only under case-specific permission.

Standard: The standard explicitly prohibits the use of GMO regeneration materials, but does not weigh in on the use of other modified organisms.

Legislation allows research on GMOs, which is forbidden in FSC certified forests.

1.13 Management of Chemical Use in Forestry

Legislation: The Environmental Code requires that the use of chemicals in forests be discussed with local Forest Agency officials prior to use. Only registered chemicals may be used.

Standard: The Standard provides a general requirement to minimize chemical use, which is already required by regulations.

The legislation and the FSC standard set fully comparable performance requirements.

1.14 Climate Change, Carbon Management

Neither the legislation nor standard sets any provisions specifically aimed at the increase of carbon sequestration in forests or minimizing of emissions in forestry operations. However, on March 18, 2008, the government submitted a bill entitled 'A forest policy in line with the times' to the parliament. This bill stresses the role of the forest for the climate, the need for increased growth in forests and improved nature conservation in forest management, as well as the importance of a strong forest agency.

The government considers that forest policy should pay greater attention to climate change. Ongoing climate change means that there is an opportunity to produce more biomass in forests, but it also results in a greater need for biomass as we try to reduce our dependency on fossil fuels. The government considers that the potential to increase the growth of biomass in forests and thus to increase absorption of carbon dioxide should be realized.

Standard: The FSC standard does not address climate change.
Legislation includes preliminary approaches for the consideration of climate change issues in forestry. No specific requirements are yet stipulated.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: The Forestry Act requires that public interests shall be taken into consideration in forest management along with timber production and biodiversity conservation. Labour legislation is advanced in Sweden and well enforced. Procedures for collective bargaining labour agreements are

also well developed. Sweden has the 'Every Man's Right' (common) law on free access to forests, which is defined in the Environmental Code.

Standard: The Standard refers to the common law on free access to forests, which is the core principle that allows the traditional use of forests for recreation and collection of non-wood products (berries, mushrooms). It also emphasizes in general terms the need to respect the multiple-use of forests.

Regarding the rights of indigenous people and possibilities to practice reindeer herding, the standard does not exceed the legislation.

The Standard also sets a general provision to ensure the long-term well-being of workers and communities; indicators for how to measure compliance to this requirement are not specified.

The FSC standard requirements on participatory engagement in public forests and large private forests exceed the legal requirements. The FSC holds a veto right in acceptance of new methods for forestry.

1.16 Training and Outreach

Legislation: Forestry legislation does not address training or outreach. Authorities are responsible for providing education on forestry and the environment. There are regulations that persons dealing with hazardous substances (chemicals, etc.) shall be trained for the task.

In practice, forestry operators set the competence requirements for forestry workers, because with unqualified workers, the work competence would not meet the legal requirements.

Standard: The Standard requires that only workers with required competence be employed and that companies implement a personnel competence development plan. The provisions apply also to contractors and their employees.

The FSC standard is more specific, as it states competence requirements for forestry operators and assigns the responsibility of employing only competent staff. This requirement exceeds the legislation, but the standard does not at all address the availability of training. The latter is regulated by legislation.

Annex 4

FINLAND

Legislation
PEFC Standard: FFCS1002: 2003

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1. SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT (SFM)

The objective of Finnish forest policy is to ensure welfare of people founded on the use of forests and to preserve the diversity of forest nature. The tools of the forest policy are legislation, public funding and information. Sustainable forestry has several dimensions: economic, ecological, social and cultural. Their reconciliation is a great challenge to which forest policy needs to respond.

The main elements of Finnish forest policy are defined in the National Forest Program 2010, while the regional objectives are written down in the Regional Forest Program. The Forest Biodiversity Program for Southern Finland (METSO) supplements the National Forest Program in objectives concerning ecological sustainability. The long-term planning of forest policy is supported by the Future Forum on Forests (*www.mmm.fi*, access date May 28, 2008).

The state subsidizes forest management undertaken by private forest owners. The aim is to safeguard the continuous growth and health of Finnish forests. It is important to society that the productivity of forests be guaranteed also for the long term (*www.forest.fi/smyforest*, access date May 28, 2008).

The destruction of forests was prohibited in Finland by the very first Forest Act in 1886. Currently this prohibition means that within five years of the end of the rotation period, a new forest must be established to replace the one felled. It is also prohibited to start fellings for regeneration until the timber is sufficiently large. Regulations for nature management must also be observed. The average annual felling area in Finland is a generous two per cent of the forest area. About two thirds of this consists of thinnings, while the rest is comprised of regeneration harvest, i.e., final harvest. Out of all the trees growing in Finland, four fifths are the result of natural regeneration (*www.forest.fi/smyforest*, access date May 28, 2008).

Forest management planning is implemented at several integrated levels (see Figure 1.1.). The Ministry of Agriculture and Forestry (MAF) uses regulatory framework and incentives to guide the planning, so that the objectives set forward in national forest programs may be reached. Regional Forest programs interpret the national priorities within a regional context, and also provide input regarding regional interests to national forest policy-makers.

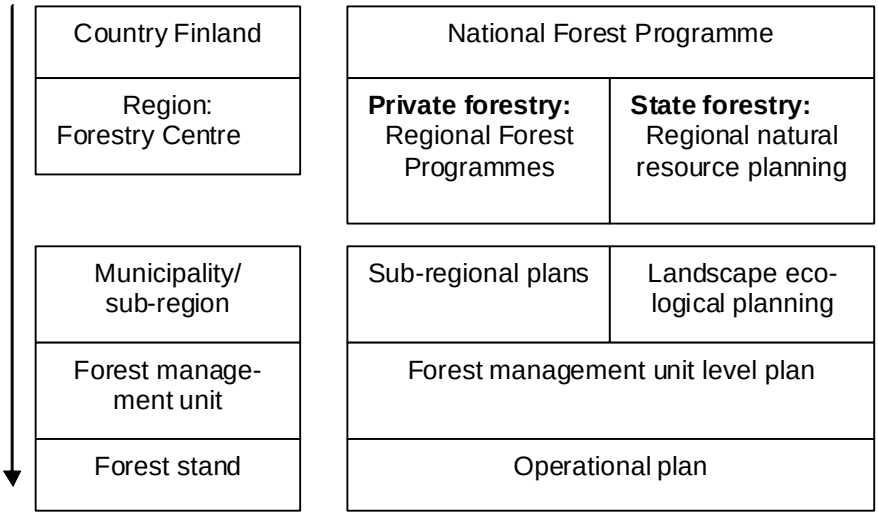
Currently the planning objective is to satisfy the multiple targets set for sustainable forest management and to integrate the different, sometimes partly conflicting desires into the management regime. The aim of silviculture is to maximise the yield of the most valuable roundwood in the forest (*www.forest.fi/smyforest*, access date May 28, 2008); however, the other needs of the forest owner and society at large must be taken into consideration.

In the private sector, sub-regional level forest management plans are consolidated from both the forest management unit (forest holding) level plans and the data gathered from National forest inventories. Sub-regional plans provide data for the calculation of potential sustainable harvesting levels.

State forestry makes landscape-ecological plans that allocate areas for timber production, wildlife management, species protection, watershed management etc for the sub-regional level. The plans are well integrated into the regional nature resource plans which are prepared in a participatory process with local stakeholders.

Detailed medium- and short-term planning is done at the forest management unit level, and for individual operations at the forest-stand level.

Figure 1.1 Levels of Forestry Planning



Traditionally, society's interest for continuous high timber production with minor adverse environmental or social impacts has also been the primary objective for most forest owners. Therefore, adherence to the government-laid rules and incentives has also benefited forest owners. Currently, the objectives are more diverse, and non-timber forest products/ services have significant economic values in some areas. Forest legislation and management guidelines have been updated to allow for alternative management regimes, but the basic principle that forest destruction is prohibited is applicable, regardless of the management objectives.

Forest ownership structure is quite fragmented in Finland, the average size of a private holding being 26 hectares (*www.metla.fi/metinfo/*access date May 28, 2008). At the regional level the age and development structure of forest stands is diverse.

The legislative system for forestry in Finland is not based on penalties; rather, the cooperation of forest owners is sought. Furthermore, the Finnish government introduced economic incentives in the 1960's to promote timber production in forests. As a result of many years of committed enforcement, the volume of the growing stock of timber has increased.

Certification

In the late 1990s, the forestry sector adopted a voluntary forest certification system that has since been endorsed by PEFC Council. Currently about 96% of production-oriented forest and scrubland is certified for conformity to the FFCS standard. Summaries of the certification reports are made public. FSC certification has been implemented in a very limited forest area of about 10 000 ha, and is based on an interim standard. The national FSC forest management standard has been under development for years, but has not yet been fully endorsed by the international FSC organization.

Enforcement and Compliance

Compliance with forestry and environmental legislation is good in general. Forest use notification provides information about the planned harvesting, and outlines the plans for forest regeneration. A nominated authority in the regional Forestry Centre is responsible for the enforcement of the forestry legislation. Forestry Centres do annually sampling-based monitoring to evaluate the level of compliance, and they perform a site-specific audit if nonconforming activities are suspected. Forestry Centres allocate forestry related subsidies and monitor for appropriate use. Conformity to regulations is a baseline requirement for subsidized activities.

Regional Environment Centres monitor for compliance with environmental legislation.

1.1 Harvesting Level

Legislation: Legislation sets the minimum size and density for intermediate and regeneration fellings. Stands that do not meet the limits shall not be harvested. At the FMU level, the stand characteristics before and after harvesting are the only criteria that restrict the harvesting levels in an FMU. However, in planned areas, areas under municipal plans, and in areas under restricted use (Natura 2000, Wilderness areas, etc.), specific rules may restrict harvesting.

Issuance of forest use declarations prior to the harvesting operation allow authorities to intervene if the harvesting plan and the future regeneration measures are not appropriate, or if the harvesting is planned for areas under restricted use.

Due to the preponderance of small private ownership and to the diversity of stand development classes, the current regulations allowing harvesting of any site that meets the maturity criteria is a well functioning approach that has not resulted in any excessive harvesting during the past 40 years. Large-scale forest owners, companies, and state forestry have an interest in ensuring long-term sustainable timber production that is supported by the existing legal framework.

Standard: The FFCS 1002-1:2003 standard requires that the allowable cut, as defined by the Finnish Forest Research Institute and stated in the Regional Forest Program, not be exceeded during a five-year period. The standard requires verification that the planned level has not been exceeded, and implies that measures to consult and guide forest owners should be put in place if there is a risk that an increasing share of forest owners are harvesting all the stands meeting the maturity criteria.

Currently, harvesting has generally been below the allowable harvesting levels, but changes in economic incentives (e.g., taxation, market prices) may change the situation.

Legislation does not set specific requirements for harvesting levels but defines a procedure that leads in practice to the desired outcome. The stand-level maturity criteria for harvesting are exact and performance-based. Authorities do sample-based verification of the forest use declarations and on the quality of intermediate and regeneration harvesting. The standard sets a specific requirement to adhere to the sustainable allowable harvesting level defined by regulations.

1.2 Reforestation Management

Legislation: The Forest Act requires prompt regeneration (within 5 years) and obliges the forest owner to inform authorities of the success of a viable seedling stand. The forest owner is responsible for the regeneration, regardless of the organization carrying out the harvesting. The first plan for regeneration must be presented when reporting on the harvesting operations.

Standard: The standard specifies that native tree species must be used in regeneration (exotics can be used for special purposes only), and it requires at the regional level that a specific proportion of the young stands needing tending shall be treated. The standard sets specific targets to reach the overall amount of viable seedling stands required by the legislation.

Legislation sets explicit performance criteria for establishing a new forest stand. Authorities carry out annual sample-based field verifications on the quality of reforestation.

The standard adds a regional target for reforestation that improves the adherence to the general legal requirement. The regional level requirement has a positive impact on the forest structure and development compared to the impact of a FMU-level provision, especially in the case where a number of certified FMUs remain low.

1.3 Clearcutting

Legislation: Legislation does not restrict the size of clearcutting. A diverse forest stand structure and small-scale private ownership limits the actual size of clearcut areas. State forestry and companies set guidelines for the maximum size of clearcut areas.

In private forests the clearcut size is 1.7 ha (Saarenmaa 2003, cf. Chashore 2004), and in state forests the average size is 2.9 ha, varying by region from 2.6 to 5.4 ha (Heinonen pers.com. 29.May 2008).

Standard: Clearcutting is not addressed.

1.4 Forest Conversion

Legislation: The Forest Act does not prevent forestry land from being adapted to other purposes, but it does prohibit any degradation of forests. Municipal plans restrict and/or guide conversion of forest land to building sites or other developed land uses.

Standard: Forest conversion is not addressed.

If the land is designated as forest land, it shall be regenerated according to forestry legislation. However, if regulations for land use planning allow its conversion (e.g., for infrastructure development), neither legislation nor certification supersedes this.

1.5 Plantations

Legislation: Legislation does not restrict the establishment of planted forests. Plant production material must meet the requirements laid down by the Act on Trade in Forest Reproductive Material (242/2002), and must pass the control of Plant Inspection Centre (currently operating under the Finnish Food Safety Authority). The regulations focus on quality, adaptability and safety of the material.

Standard: The standard sets an additional requirement to only use Finnish native tree species; any use of exotic species shall be reported.

The standard sets a clear provision that prohibits large scale plantations (large-scale) that include exotic species.

Such plantations do not exist in Finland, where the share of planted semi-natural forests is 0.5 million hectares; in other words, 3% of the total forest land.

1.6 Forest Risk and Productivity Management (fire, insect, disease)

Legislation: Regulations are most focused on the risks of insect damage. One act requires that all unbarked softwood logs be removed from forests before the hatching of the new bark beetle and other damaging insect populations. The law also gives authorities the mandate to order sanitary harvesting and prevention measures in case of epidemic diseases or other damage.

To protect forests from fire, authorities issue information on fire risk, and a high risk situation prohibits the use of any fire in forests. According to the national fire code, authorities have the right to order people to participate in putting out a forest fire.

Standard: The standard broadens the scope of aspects important to consider in maintaining forest health. It obliges forest owners to apply the recommended measures to protect against rootrot in pine and spruce forests in at risk regions, and it also emphasizes the need to maintain good natural resistance in forests through species selection (predominantly native species) and to avoid any damage to tree stands, such as while harvesting. The standard sets restrictions on the use of chemicals in the forest.

Legislation sets specified requirements to protect forests against high priority damage.

The standard sets additional requirements to preserve the health of forests and makes recommendations that are obligatory when applied in certified forestry.

1.7 Illegal Logging

Legislation: Intermediate or regeneration fellings are allowed only when trees in a stand have reached adequate size/density, as stipulated by the Forest Act and specified by Ministerial decrees of the Ministry of Agriculture and Forestry.

The forest owner must make a declaration of forest use prior to harvesting, which gives authorities the opportunity to intervene if they suspect any illegality in planned felling or regeneration in view of the forestry or environmental legislation.

Authorities verify compliance with harvesting levels in sample-based annual audits.

Records on forest ownership and tenure rights are settled and well recorded in Finland, so any accidental misuse is readily inspected and taken care of.

Labour legislation is strict and almost always well enforced in forestry operations.

Standard: The standard requires that owner of forests or cutting rights conform to all forestry, environmental, and labour legislation. It also obliges contractors to comply fully with the law. The standard requires employers to demonstrate their adherence to statutory obligations inter alia on working time, collective labour agreements, taxes and pension fees.

The standard adds to the legislation by requiring systematic evidence in auditing procedures of employers' adherence to statutory obligations.

1.8 Wildlife Habitat Management

Legislation: The Forestry Act and Environmental Act list the habitats of special biological importance. They shall be either protected or at the very least, the biological values shall not be harmed in any management activity. In general, larger protection areas contribute to the conservation of wildlife habitats. Legislation on hunting establishes measures for game management.

Standard: The standard requires that the conservation value of protected areas shall not be degraded. For protection of rare habitats, the standard requirements are line with the legal requirements, but also set additional provisions to protect special sites.

The legislation specifically addresses only habitats of endangered species. Wildlife habitat management is addressed with permanent protection areas and with preservation of valuable habitats. FFCS certification does not add to the requirements.

1.9 Species Management (endangered, etc.)

Legislation: The Nature Conservation Act lists species under protection, and together with the Forest Act, lists the biologically valuable habitats to be preserved. Environmental authorities may also designate as protected habitats of species requiring special protection. The penalty code applies in cases of destruction of an animal or plant of a protected species. Reproduction and nesting sites of these species shall also be preserved.

Standard: In general, the standard relies on legislation for the protection of threatened species, but it also requires the provision of such resources (e.g., burned and decaying wood) many rare species are dependent on. In this respect, the standard exceeds the legal requirements.

The law explicitly lists the protected species that shall not be destroyed, but it is more discretional on the protection of the habitats these species depend on. Only the habitats of a select number of species are protected based on case-by-case decisions made by the environmental authorities. The standard sets modest requirements to increase the habitat resources for endangered species.

1.10 Water Quality Management

Legislation: The Water Act prohibits deterioration or pollution of water sources and aquatic ecosystems. Regulations restrict chemical use alongside waterbodies. The practical application of the requirements is provided for in voluntary guidelines. Voluntary guidelines interpret the requirements for practical forest management practices.

Standard: The standard specifies water protection measures, which include buffer zones, water protection plans on draining, and restrictions on the use of chemicals.

The legislation is partly discretional, as it does not set specific measures to control individual forest operations. The standard requirements are mandatory performance requirements.

1.11 Old-growth Management, High Conservation Value Forests (HCVF), Special Sites

Legislation: The Most valuable old-growth forests are permanently protected under statutory protection areas or programs. The term HCVF (including social and economic aspects and defined in a participatory process) is not recognized in legislation, but stakeholders have participated in proposing sites for statutory protection. The Wilderness Act defines 12 areas that shall be maintained as unfragmented natural forest areas. Listed special sites are protected under the Nature Conservation Act or the Forest Act. Municipal plans can emphasize for instance the recreational value of a forest area, and thus restrict the management operations.

Standard: The standard relies largely on legislation in the protection of old-growth forests, HCVF, and special sites. However, it does require preservation of the most important characteristics of small sites comprised of old growth forests (about 1 ha), as well as some other habitat types.

Legislation ensures special site protection through both permanent protection sites and protection of the listed habitats (small sites). The Wilderness Act and municipal plans also partly address the social aspects of HCVF. On nature conservation of special sites, the standard requirements are only slightly above the legal level, but they are fairly explicit.

1.12 Restrictions on the Use of Gene- Modified Organisms (GMOs)

Legislation: The laws for bio safety do not allow the use of gene-modified trees in forest management.

Standard: The standard prohibits the use of gene-modified seed and plant material.

The legislation and standard are the same in that both forbid the use of GMOs in forest management.

1.13 Management of Chemical Use in Forestry

Legislation: Only chemicals to protect plants approved by the Plant Protection Agency (under Finnish Food Safety Authority (Evira)) may be used. Evira requires adequate guidelines for their use, storage, and end-use. Legislation also restricts also the use of chemicals alongside waterbodies and ground water areas.

Standard: The standard specifies that chemicals shall not be used in important ground water areas or in the buffer zones, and their use should be avoided whenever possible in forest management.

The legislation sets strict and explicit regulations on the use of chemicals. The standards set explicit requirements that allow for chemical use only in cases when other protective measures are not possible. The standards prohibit chemical use on sensitive or biologically important sites.

1.14 Climate Change, Carbon Management

Legislation: Although not addressed in view of forest management, The Ministry of Agriculture and Forestry has prepared a general Adaptation Strategy that contains very generic views on the role of forests in climate change.

Standard: Climate change and carbon management are not addressed in the standard.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: A participatory approach is the basis for forestry planning, although the forest management unit level plans need not include a participatory component. Stakeholders participate in forest policy planning at national and regional levels, and on a local level in the reindeer herding areas.

State forestry has a greater obligation to engage stakeholders in their planning processes than does the private sector.

Standard: The standard addresses only the need to integrate the interests of reindeer herding and Sami culture into the management of state forests in Sami homelands.

Apart from policy-level planning, participatory approaches are required only from state and municipal forestry. Both involve local communities (on a voluntary basis) during planning stages.

1.16 Training and Outreach

Legislation: Legislation requires that all decisions and documents issued by authorities be made public. This applies also to both the forest use declarations submitted prior to harvesting operations and the general data on forest resources.

Training and information dissemination is the responsibility of regional forestry centres and local forest management associations, which work in close cooperation with forest owners on all issues related to forestry and the timber trade.

Standard: The standard emphasizes the need for capacity building for forest owners, workers, and the public, especially for the younger generation. The standard sets explicit target levels for capacity building and outreach.

Legislative regulations define the provisions for training and outreach.

Annex 5

RUSSIA

Legislation
FSC Standard:
Smart Wood interim forest management evaluation standard for Leningrad and Novgorod oblasts

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1. SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT

Russia, the largest country in the world, covers an area of over 17 million km², and about half of it is comprised of woodlands. This 800 to 1000 million hectares of forest is equivalent in size to the whole of the United States, and contains approximately 22% of the world's total forests, with Brazil (16%), Canada (7%) and the United States (6%) following.

Russian has mainly boreal and temperate forests. The boreal forests are in northern and subarctic regions and make up about 60% of the world's boreal forests. They contain more than 55% of the world's conifer trees. The temperate forests are in Eastern and Southern Russia, and they have higher species diversity.

All forests in Russia are state owned and the Constitution of the Russian Federation determines administrative inter-relationships of the federal, regional (i.e., 'subject') and municipal levels, which reflect to the forest management planning and allocation of tenure and use rights to forests. The new Code, in force since January 2007, gives more decision-making power to regional authorities and provides new opportunities for collaboration between regional and local parties. One of the forest reform purposes is the foundation of state-owned enterprises for forest management.

Implementation of the new Forest Code would require revision of a number of detailed regulations guiding forest management at the different levels. Experts suggest that to implement the Code, more than 50 legal acts will have to be enacted, related to all of the important issues needing legislative regulations. The development of lower level regulations is delayed and the currently the old regulations apply. This results in inconsistent legislation which hampers the implementation of the intended purpose of the new Forest Code.

According to the government of the Russian Federation, the development and adoption of the new Forest Code were dictated by the necessity to reflect the social and economic changes that have taken place in the recent years in the forest legislation. The with the new Forest Code was to ensure coordinated and effective state management of forest use, preservation and regeneration; and to develop a favorable climate for the rational use of forest resources under conditions of economic growth. The new Forest Code is above all a set of regulations regarding land use and holding rights. The forest is viewed secondarily as a natural ecosystem and natural resource.

Despite the fact that forests belong to the Russian Federation, the responsibilities for forest management are delegated from the federal level to the regional level. The regional-level state forest management units (*lestnichestvo**)*** are the practical administrative units under which forest areas are leased to forestry companies.

The Russian Federation still maintains the mandate to outline the general forest management plans. According to article 85 of the Forest Code, the subjects of the Russian Federation shall develop a forest plan. The forest plan consists of:

a) characteristics of the forest are and its use;
b) an outline of the use, conservation, protection of forests and reforestation;
c) assessment of economic efficiency of forest management in the planning area.

The forest plan must include maps with demarcated borders showing the regional FMUs (*lesnichestvo*), forest parks, and zones of their planned development.

The forest plan is developed for a ten-year period.

Certification

In 2004, with the support of the World Bank, the Russian Federation started developing a National System of Forest Certification. The Federal Forest Agency has the highest interest among federal agencies for certification. The areas of the country most interested in certification are the Arkhangelsk region, Komi Republic, and more recently, the Krasnoyarsk, Kirov, Vologda and Kostroma regions. This is understandable, as these regions are all major exporters of wood and forest products, and therefore, the pressures for forest management certification are higher than elsewhere in Russia.

The Russian National Council of Forestry Certification (RNCFC), supported by forest administration, has developed a national forest certification scheme, called the Russian National Voluntary Forest Certification System (FCR). The FCR is endorsed by the PEFC (Programme for the Endorsement of Forest Certification Schemes) and first areas have been certified according to the Scheme. The majority of larger forest companies in Russia are well informed about certification. Despite the existence of the national forest certification scheme, most of the Russian certified forests are certified by Forest Stewardship Council (FSC) based on interim standards. As of February 12, 2008, there were 59 FSC forest management certificates for 19.85 million hectares in Russia; and 5 million hectares are currently in the process of FSC certification

Under the conditions where control is weakening over the implementation of cutting permits, the role certification plays concerning nature conservation, management, and chain-of-custody issues is becoming increasingly important. Environmental organizations were initiators of certification development, and these are now changing their focus from initiating certification to assessing its efficiency to enhance sustainable forest management in the field.

According to the Law of the Russian Federation on the Certification of Products and Services, (amendment of December 27, 1995, no. 211-FZ), certification could be mandatory or voluntary, because in Russia, forest certification is developing in both directions. However, the earlier initiative to develop a mandatory certification system has ceased out.

1.1 Harvesting Level

Legislation

A substantial part of the new Forest Code and federal laws are devoted to legal questions of wood harvesting. Since January 1, 2008 there have been three ways to access forest resources:

1. Lease agreements for forest parcels may be signed for 10-49 years (before the new Code - from 13 months to 49 years). After new agreements have been signed, the company will be responsible for all forestry operations on the forest parcels.
2. Sale –purchase contracts for forest stands. These agreements mean that a logger has the right to harvest one or more blocks during one year, and is not responsible for further reforestation.
3. Contracts for forestry operations in state forests outside of concessions (these contracts allow procurement of wood from intermediate or sanitary cuttings).

Access to forest resources is allocated as a result of a bidding process.

Harvesting levels (i.e., annual allowable cut (AAC)) are defined fairly conservatively, using various social and environmental factors that set the harvesting levels below the estimated production capacity of a forest. The AAC is estimated based on (i) forest category, that is protection forests, industrial forests and nature reserves and on (ii) site quality, (iii) stand age, (iv) development class, and (v) species composition. In practice, the harvesting level very seldom reaches the AAC level at the regional level due to insufficient logistics or other reasons. However, in areas close to processing plants, the level is usually reached.

Wood may be harvested in both productive and protected forests (Forest Code, sec 29 (2)). According to logging rules (Ministry of Natural Resources order #184 July 16, 2007), clear-cutting or selective cutting shall be applied in mature and over-mature forest stands. In protected forests (e.g., those protected for water protection purposes), selective cutting of mature and over-mature forest stands is allowed.

The Federal Forest Agency (*Rosleskhoz*) defines the mature age for final felling of forest stands for all forest districts of Russia (order # 37, February 19, 2008). This order has decreased the ages of final felling of forest stands for some forests. For example, for pine and spruce in productivity classes (bonitet class) III and higher, from the northern taiga to the mixed temperate forests in European Russia, the order sets a uniform age of final felling: 81 years for industrial (exploited) forests, and 101 years for protection forests. On the basis of this, some northern forests that were classified before as "premature" can be reclassified as "mature", and this may well lead to an increase in future harvesting levels.

Managers who lease forest areas shall produce forest development plans in compliance with Article 12 of the Forestry Code. The forest development project must contain data on (1) allowable species; (2) projected volumes of forest use; (3) measures on forest conservation, protection and regeneration; (4) objectives for forestry and forest-industrial infrastructure; and (5) on protection of animals and water objects (Ministry of Natural Resources Order # 77 April 6, 2007). However, there are no clear requirements in the law for the managers for implementation of measures related to preservation of biodiversity and to addressing social issues. However, often forest managers are obliged to provide e.g., firewood for local people.

Standard: the FSC Standard requires the demonstration of a clear evidence of long-term forest use rights to the land (e.g. land title, customary rights, or lease agreements):

Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits. The rate of harvest of forest products shall not exceed levels which can be permanently sustained.

Harvesting level quantities are dictated by regulations and normative plans. Deviation from these requires usually a special permission. This makes the consideration of any site specific condition (e.g., biological values) difficult because the planned volumes must be removed from the site regardless of the potential harm to the site. On the other hand, when a forest area is classified under a restricted harvesting regime, the harvesting levels remain low, although no biological, social, or timber production aspects justify this.

Regarding the harvesting level, the FSC standard relies on the regulation.

1.2 Reforestation Management

Legislation: According to the Forest Code (Sec-19 (2), unless the implementation of activities for regeneration of publicly- or municipally-owned forests is imposed on the persons who use the forests, the public authorities or local organizations shall place procurement orders for forest protection and regeneration operations through bidding processes.

Reforestation is carried out according to the reforestation plan**.**

As a rule, the reforestation plan is developed by the regional-level FMUs (i.e., *lesnichestvo*). But anyone who uses the forest can develop a reforestation plan and have it approved by the *lesnichestvo*. The reforestation plan is developed on the basis of forest development projects and forestry regulations. However, the final decision concerning methods of reforestation should be taken only after the *lesnichestvo* (regional FMUs) monitors forestry parcels after the cutting.

Reforestation usually takes place through natural regeneration after seed tree or strip harvesting where seed trees on the site or adjacent forest produce seeds for the new stand. Successful regeneration within a reasonable time often fails due to the poor quality of the seed trees or lack of site preparation for seed germination.

Standard: A company should mainly carry out natural reforestation through the conservation of undergrowth and soil mineralization, all the while taking into account the forest-growing conditions. Artificial reforestation is implemented on the parcels where natural reforestation is not successful. The company should possess the documents substantiating the necessity of carrying out the artificial reforestation.

The new forest code allocates the responsibility of reforestation to the forest user (license holder). In practice, natural regeneration is used almost exclusively, and currently the user shall carry out the necessary preparation measures according to the regeneration plan. In long-term lease contracts, the user shall also follow the success of the regeneration; in short-term contracts the measures are to be taken, but monitoring is not required. The FSC standard specifies that regeneration measures shall be documented, but does not set substantial additional requirements.

1.3 Clearcutting

Legislation: According to the Forest Code, clear-cutting is a removal of forest stands from their respective lands or parcels of land, with individual trees and shrubs (groups of trees and shrubs) left to grow to ensure regeneration of the forests.

In protected forests, clearcutting of forest stands shall be implemented only if selective cutting of forest stands fails to ensure a replacement of the forest stands which are losing their habitat-forming, water-conservation, sanitary, recreational, and other beneficial functions.

Within forest parcels made available for wood harvesting, clearcutting shall be allowed, but this is in line with the planned regeneration methods.

Standard: When favorable silvicultural and economic conditions prevail, a company may increase the amount of selective cutting. When clearcutting is carried out, key biotopes are to be saved as well as elements of forest ecosystems biodiversity.
Forest management plans define cutting methods, of which the most common is clearcutting of 40 to 50 meter wide strips of land. Currently, the law allows the leaving of retention trees on the site. In protected or recreational forests, clearcutting is strictly limited. The FSC Standard

strongly encourages the use of selective cutting whenever feasible, but it does not require significantly different actions than the regulations.

1.4 Forest Conversion

Legislation: According to current legislation, the transfer of forest fund land into land of a different category is possible only by a decision of the government of the Russian Federation. The Federal Law# 172 December 21, 2004 entitled «On the transfer of lands and land parcels from one category to another" covers in all cases the transfer of the forest fund land to other divisions.

Standard: The standard requires that there be no cases of unreasonable transfer of forest land into non-forested land or plantation-growing land on the territory of forest areas leased by a company, except in circumstances where conversion:

a) entails a very limited portion of the forest management unit; and
b) does not occur on high conservation value forest areas; and
c) will promote clear, substantial, additional, secure, or long-term conservational benefits across the forest management unit.

Legislation is strict on the conversion of land from forestry to other uses. The FSC standard explicitly rejects conversion and is more stringent than the legislation in this respect.

1.5 Plantations

Legislation: Forest plantations may be established on the forest land and on agricultural and other land categories. Forest parcels shall be leased out to citizens and legal persons for the establishment and use of forest plantations in accordance with the Forest Code and land legislation. It shall be permitted to cut and tap forest stands within forest plantations without limitations.

Standard: The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which may be used only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

The FSC Standard rejects the conversion of native forests into plantations and strongly encourages the use of native species in existing forest plantations. The Forest Code regulates plantation forestry, and the detailed management procedures are to be defined in a management plan.

1.6 Forest risk and productivity management (fire, insect, disease)

Legislation: Fire safety in forests shall be ensured through:

1) Making fire management arrangements in forests, including construction, reconstruction and maintenance of fire roads, landing grounds for planes and helicopters employed for the purposes of aerial forest protection operations, rides, and fire-breaks;
2) Installing systems and means for forest fire prevention and fire fighting, maintaining such systems and means, and providing stand-by stocks of fuel and lubricants for seasons of high fire danger;
3) Monitoring fire danger in forests;

4) Developing forest fire fighting plans;
5) Fighting forest fires;
6) Other measures to ensure fire safety in forests.

Forest pest management shall be aimed at detecting pernicious organisms in forests (i.e., plants, animals, and disease agents which can damage forests or forest resources under certain conditions), preventing them from spreading, and localizing and eradicating outbreaks of harmful organisms.

Standard: Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire, and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than on chemical pesticides and fertilizers.

The Forest Code and related regulations set specific measures to monitor and prevent damages to forests. The FSC standard relies on prevailing legislation on the issue.

1.7 Illegal logging

Legislation: The Forest Code and other regulation concerning forests neither contain the definition of illegal logging nor promote actions against illegal logging. On February 1, 2008, the Federal Forest Agency and the Ministry of Natural Resources of the Russian Federation recently approved a federal law entitled "Amendments to Legislative Acts of the Russian Federation with the Purpose of Preventing Illegal Logging and the Illegal Wood Trade". However, the country is still lacking the regulations to effectively implement the federal rules.

Standard: Forest and plantation management areas shall be protected from illegal harvesting, settlement, and other unauthorized activities.

The FSC Standard allocates the responsibility to control illegal logging leased area to the forest user and may demand enforcement. In that respect, preventing illegal activities can be more efficient at a local level if the level of cooperation with officials and their enforcement measures is good.

1.8 Wildlife Management

Legislation: According to the Forest Code, forest development based on an integrated approach shall include activities to protect wildlife and water bodies. When implementing forest management practices, the measures should be considered beforehand and carried out for conservation of habitat of animals and conditions of their reproduction, feeding, rest and migration, as well ensuring inviolability of protective parcels of territories and water areas (Federal Law # 52-FZ of April 24, 1995 on Wildlife, Sec 22*).*

Standard: Safeguards shall exist which protect rare, threatened, and endangered species; and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and uniqueness of the affected resources.

The legal requirements set a baseline for wildlife management that is not exceeded by the standard.

1.9 Species Management (endangered species etc.)

Legislation: A list of tree and shrub species which may not be harvested shall be established by the government of the Russian Federation.

Persons who inflict damage on forests shall compensate for it on own initiative or through judicial processes.

Standard: Certified companies should develop a program to map and conserve rare and endangered species of flora and fauna, as well as their habitats. The companies should appoint a person responsible for this work. Hunting and fishing on the territory of the leased parcels shall be controlled.

Legislation protects the listed protected species. The standard requires active mapping of potential occurrences of the species and their habitats. Due to the detailed operational requirements, the standard provisions exceed the legal ones.

1.10 Water quality management

Legislation: According to article 17 of the new Russian Forest Code, clearcutting in protection forests is allowed only in the cases when a stand is in danger of losing its environmental or other protective functions and it cannot be regenerated by selective cutting. Articles 103, 102, 105 and 106 set additional restrictions on clearcutting of protection forests.

According to article 65 of the new Russian Water code, water protection zones should be defined as follows.

- for rivers up to 10 km in length → 50 meters along each side;
- for rivers from 10 to 50 km in length → 100 meters along each side;
- for rivers more than 50 km in length → 200 meters along each side;
- for seas → 500 meters;
- for lakes of 50 hectares and more (if not with a peat bog, and except Baikal) and reservoirs → 50 meters, etc.

If a water protection zone has historically been larger than it is currently according to the new Water code, it is divided, according to Order # 498, into two parts: a new water protection zone (this is regulated by article 104 of the Forest code; clearcutting is not allowed at all) and a protective belt outside this zone (this is regulated by article 106 of the Forest code; clearcutting is allowed according to article 17).

Standard: The standard states that forest management and forest use in water-protection zones alongside the rivers and basins should correspond to forest and water codes.

Legislation ensures the adequate protection of larger water bodies. Small streams, brooks and springs are not specifically protected. The standard does not add to the legal requirements.

1.11 Old-growth management, High Conservation Value Forests (HCVF), Special sites

Legislation: The new Forest Code establishes a new classification of forests according to their economical, environmental, and social importance. Forests are thus divided into three categories – protection forests, industrial forests and nature reserves. Moreover, the Code includes an additional form of protection: the designation of protected forest areas, making it possible to preserve the most valuable forest areas within industrial forests. The logging restrictions in these areas apply to clearcutting in protected areas, forest parks, and urban forests.

Standard: The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation, attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available summaries of management plans.

Legislation requires of the protection of forests with conservation value. The law ensures protection of larger sites; small sites within industrial forests are usually not covered by legal protection. The standard ensures that conservation values are taken into consideration at the forest management unit level, including in industrial forests. For harvesting operations, the standard may set additional restrictions in consideration of conservation values.

1.12 Restrictions on the Use of Gene-Modified Organisms (GMOs)

Legislation: There are no regulations on the use of gene-manipulated organisms In the Forest Code and other forest legislation.

Standard: The use of genetically modified organisms shall be prohibited.

Forestry legislation does not address the use of GMOs. The standard explicitly prohibits their use.

1.13 Management of Chemical Use in Forestry

Legislation: The problem of chemical use in forestry concerns only protected forests.
Standard: Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. Chemicals, containers, liquid and solid non-organic wastes, including fuel and oil, shall be disposed of in an environmentally appropriate manner at off-site locations.

The FSC Standard restricts chemical use in all areas; legislation restricts them only in protection forests, e.g., those close to water bodies.

1.14 Climate Change, Carbon Management

Legislation: There are no references to climate change in forest laws. Russia, though, has opportunities to develop forestry projects under the Kyoto Protocol Joint Implementation Mechanism, which will probable lead to the development of specific legislation on the topic.

Standard: There is no direct requirement related to the climate in the standard. However, part 7.2 states that production decisions of the company should take into account changes of natural conditions, including climate.

Climate change and green house gas mitigation are not addressed in forestry related legislation or in the standard.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: The principles of citizen and public community participation in forest management have not been included in the new forest legislation.

Rural and forest area populations directly depend on the forest resources. The Forest Code does not either address the interests of the indigenous people of the Russian North, Siberia and Far East. In practice, indigenous people are allowed to harvest timber for their subsistence (FC Sec 30 (2)). Federal Law № 82 as of April 30, 1999, "On the Guarantees of the Local Indigenous People of the Russian Federation" does not provide a comprehensive protection of the living areas and traditions of the indigenous people in the Federation.

Standard: The standard requires involvement of public in the leasing forest land. It also requires that the obtained tenure rights should take into consideration local people's interests and include development of special procedures to safeguard these interests.

The standard requires that indigenous people have free and prioritized right for forest use for subsistence in their traditional residence areas. The standard also requires restrictions on forest harvesting in the areas which are in their use.

The Standard is more demanding on the requirements set for consultation with local people, but on the other hand, legislation sets various compensatory measures for local people. The standard requires implementation of a participatory approach in all planning, especially when stakeholders include indigenous communities.

1.16 Training and Outreach

Legislation: Regional-level FMUs (*lestnichestvo*) were established in 2008 to perform the state functions in forestry. The staff of the districts generally amounts to 40-45 people, and unfortunately, often the managers of the districts do not have the adequate professional knowledge or experience of the administrative functions necessary to fulfill their duties.

At present, neither forest universities nor forest colleges train students to be experts in forest administration, who would then later be able to make decisions for effective and sustainable forest land management.

Standard: Staff must have adequate education and qualifications which meet the requirements of the company, branch standards, and regulations. A program for upgrading the qualifications of the workers is to be available and implemented by the certified company.

The Standard sets more specific requirements for competence requirements of local forestry authorities than the legislation.

Annex 6

STATE OF BAVARIA, GERMANY

Legislation
PEFC Standard: PEFC Standards for Germany

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1 SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT (SFM)

Forests cover one third, or 2.5 million hectares of the State of Bavaria (Bavaria) land area. Out of these 2.5 million ha, approximately 58% of the forest land is private, 30% is owned by the State of Bavaria (Bavaria), 10% are corporate forests, and 2% is federally owned state forest[1].

In Germany, all forests must be managed according to the Federal Forest Act (1975), which also constitutes a framework for legislation at the Bavarian state-level. Bavarian Forest Law (Waldgesetz für Bayern, BayWaldG) came into effect on July 22, 2005, providing the legislative framework for forest use and management in Bavaria.

Bavarian Forest Law shall (Article 1, Paragraph 2 BayWaldG):

1. Maintain the forest area and increase the conditions for vitality
2. Sustain natural forest conditions which do not have remarkable economic impact on forestry
3. Secure and strengthen long-term conservation, health, and productivity of the forest
4. Secure and increase production of wood and other forest products through sustainable management of the forests
5. Enable and improve the public recreational possibilities of the forests
6. Maintain and increase biodiversity of the forests
7. Support and promote forest owners and facilities to achieve the set up goals
8. Compound the interests of the public and forest owners

Supportive legislation for Bavarian Forest Law (BayWaldG) comes from other provincial acts, such as the Forest Property Improvement Act, Plant Conservation Act, Federal Nature Conservation Act, and Bavarian Game Act. There is a forest management guidebook combining all of the relevant legislation for Bavarian forest owners to manage their forests entitled "*Waldgesetz und andere Rechtsvorschriften Wegweiser für den bayerischen Waldbesitzer*" [2].

The Bavarian Forest Law requires a forest operation plan and regulates its content, including presentation and evaluation of the use, protection, and recovery functions of the forests; and the significance of these to biodiversity. The goals and measures to achieve these functions shall be set up, as well as a plan for implementation.

Certification

The German PEFC (Program for the Endorsement of Forest Certification) scheme for the certification of sustainable forest management is based on the framework defined by the "PEFC Council Technical Document," which was adopted by the general assembly of PEFC on November 22, 2002. By September 2008, 75% of Bavarian State forestland area (1.9 million hectares) was certified to PEFC.
The German PEFC scheme is based on regional forest certification. Individual forest owners join the regional certification by presenting a self-commitment statement to the regional PEFC applicant. After

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1 *http://www.stmelf.bayern.de/agrarpolitik/daten_fakten/23576/agriculture_forestry2006_graphics.pdf*

2 *http://www.verwaltung.bayern.de/Anlage1728504/WegweiserfuerdenbayerischenWaldbesitzer-Rechtsvorschriften.pdf*
FAO. 2004. Forest legislation in Europe. Geneva Timber and Forest Discussion Paper 37. Josephine Bauer, Matleena Kniivilä, Franz Schmithüsen. Web source: *http://www.unece.org/trade/timber/docs/dp/dp-37.pdf.*

the regional PEFC applicant has approved the self-commitment statement, forest owners receive the logo-use rights without any need for further application for a chain of custody certificate.

Enforcement

The Forest Service, under the Bavarian State Ministry of Agriculture and Forestry, enforces forestry and forest related nature legislation. The level of compliance is high in German forestry, (which is characterized by a high level of private forest ownership).

1.1 Harvesting Level

Legislation: Forest management plans are to be made at the forest-stand level. Only after plans have been approved by forest management and administration may the harvesting take place. Legislation does not, per se, set a desired harvest level.

Standard: During timber harvesting, damages to stand and soil shall be avoided to the greatest possible extent. Only mature stands shall be harvested, and the utilization of the parts of a tree is strictly defined. Technical guidance regarding skid tracks is provided in detail.

Neither the legislation nor the PEFC Standard sets specific requirements for harvesting levels. The maturity level for harvesting is assessed based on stand age and development class. The goal is to achieve a high volume/ high value productivity.

1.2 Reforestation Management

Legislation: The German Federal Forest Act (1975), which constitutes a framework for legislation at the state level as well, requires that all forest owners reforest or supplement when natural stock regeneration is incomplete in clearcut forest areas or thinned-out forest stands, within a reasonable period of time. If a forest is converted to another use for a specified time period, authorities have to ensure that the area is duly reforested within a reasonable period of time. More detailed time limits for regeneration are provided in the Bavarian Forest Act, which also offers directional guidance on plants and seeds to be used in reforestation.

Legislation sets explicit performance criteria to establish a new forest stand. The requirements to select the species, plants and seeds for the reforestation area are discretional. Verification as to the quality of reforestation is not mandated by law.

Standard: The PEFC Standard requires that a permanent forest cover shall be maintained, and clearcut areas reforested. Plants, seeds and regeneration methods are set by the standard.

The standard sets in addition to the legislation requirements on regeneration method. In general the requirements for the reforestation are non-discretional and performance based. For plant and seed selection they are discretional and procedural and for the regeneration method non-discretional and procedural.

1.3 Clearcutting

Legislation: A forest operation plan is required. It is to be designed in accordance with the principles of sustainable development, which regulate clearcuttings. In principle, clearcuttings are to be avoided, and in the case of protected forests, special permission is required. After clearcutting, reforestation is required.

Standard: The standard requires that a permanent forest cover shall be maintained and clearcut areas reforested. Clearcutting shall be omitted in principle. A regenerated forest area is not considered to be a clearcut area.

Legislative requirements regulating clearcutting are mandatory. Maintaining the forest cover is also a mandatory, performance-based requirement. Clearcutting is allowed only if the area is regenerated afterwards.

1.4 Forest Conversion

Legislation: Where implementation of recreational services necessitates the clear-cutting of forest areas, forest law referring to conversion of forests might be applicable. According to §9 I BWaldG of the Bavarian Forest Law and the respective federal law, the conversion of forest areas is subject to approval by the forest authorities. However, application of this provision mainly depends on whether forest is being cleared in order to carry out another type of use. In each case, a judgement has to be made, taking into account the legal definition of forest areas, as to when a conversion may be realized.

Furthermore, §9 I BWaldG of the Bavarian Forest Law determines the minimum requirements for granting approval when a conversion of a forest is intended. But, as §9 I BWaldG of the Bavarian Forest Law is only a framework provision, state law has to also be taken into account to clarify the restrictions that might be imposed on a forest owner seeking a forest conversion permit.

Standard: A permanent forest cover shall be maintained. The PEFC Standard does not allow for conversion unless otherwise authorized by nature conservation and forest laws.

In principle, forest conversions are forbidden, but may be authorized under specific circumstances in legislation. Forest conversion is strictly restricted in both the legislation and the standard.

1.5 Plantations

Legislation: Afforestation of land area requires permission from the recognized authority.

Standard: Plantations are not addressed in the PEFC Standard.

Note: Large-scale plantation forestry is not relevant in German forestry; therefore, it is not addressed.

1.6 Forest Risk and Productivity Management (fire, insect, disease)

Legislation: Federal legislation orders the relevant authorities to report on and carry out measures on harmful insects or organisms. A government or district administration authority may order measures to fight against harmful insects.

Standard: Forests shall be managed towards a high-added value and economic success.

Legislation sets the adequate baseline for risk management.

1.7 Illegal Logging

Legislation: Enforcement for illegal logging is provided for in the legislation. Several forest and land use activities require licenses and/or prior permission, which helps to prevent illegal logging.

Standard: Illegal logging is not addressed in the PEFC Standard.

1.8 Wildlife Management

Legislation: According to the Bavarian Forest Law, one function of a forest is to provide and preserve habitat for biological diversity, which must be considered in forest management.

Legislation on hunting requires collaboration with forest authorities for game management planning. Wildlife habitats and conservation areas are to be set up through environmental compatibility assessments.

Standard: Forest management shall take special care of protected biotopes or habitats as well as of endangered tree and plant species. Forest owners should work towards collaborative game management planning.

Wildlife habitat has to be considered in stand management. However, the requirement offers no guidance. Legislation sets the adequate baseline for habitat management; the standard does not specifically add to it.

1.9 Species Management (endangered etc)

Legislation: A Plant Protection Agent must carefully assess possible areas for species' protection. According to the Federal Nature Conservation Act (2002), collection of endangered plants or animals is strictly forbidden.

Legislation is not clear as to how to address the identification of species' for protection, but after species have been designated as detected and protected, the protective guidelines are described in detail in the Nature Conservation Act.

Standard: Mixed stands and rare species shall be promoted, and their habitats are to be taken special care of in forest management. Dead wood, snags and cave trees shall be conserved as long as this does not lead to remarkable economic losses, risks to safety, or poor forest practices.

Providing for biological diversity is set in the standard, but no performance-base guidance is available. The standard adds slightly to the legal requirements on species management, by requiring enhancement of the resources many endangered species depend on.

1.10 Water Quality Management

Legislation: Water quality management is not prescribed in regulations on forest management. However, guidance on water quality management is provided in a statute concerning wildlife management, as it relates to the multiple functions of forests: protection, use, and recovery functions; as well as offering habitat for biological diversity. The forest floor and forest stands shall be treated carefully and use of fertilisers avoided.

Standard: For soil protection, forest clearcutting shall be omitted, and impairment to waterbodies in forests shall be avoided. Also, no new draining facilities shall be installed.
In the legislation, water quality management is to be considered in forest management, but no specific guidance is provided. The Legislation and the standard emphasize slightly different elements in water protection, but in general, the standard does not substantially add to the legal requirements.

1.11 Old-growth Management, High Conservation Value Forests (HCVF), Special Sites

Legislation: Biological diversity shall be maintained and increased where possible. Special sites are to be recognized and protected under legislation.

Standard: Management shall take special care of protected biotopes or habitats, as well as of endangered tree and plant species. Soil protection, as well as extraordinary historic, cultural, or religious areas, are all considered to be in the same protected category.

The standard adds somewhat to the legislation.

1.12 Restrictions on the Use of Gene-Modified Organisms (GMOs)

Legislation: GMOs are not addressed in the legislation.

Standard: The PEFC Standard prohibits the use of gene-modified seed and plant material.

1.13 Management of Chemical Use in Forestry

Legislation: Increasing productivity by use of fertilizers should be avoided whenever possible. The use of pesticides is not addressed in forestry legislation.

Standard: Procedures minimizing the use of chemicals in forestry shall be supported.

The PEFC Standard is more specific than the legislation for chemical use.

1.14 Climate Change, Carbon Management

Legislation: Climate change and carbon management are not addressed in the legislation.

Standard: Climate change and carbon management are not addressed in the PEFC Standard.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: Public participation, community involvement, and indigenous people are not addressed in the legislation.

Standard: In planning and decision making, the PEFC Standard does not oblige a manager to implement participatory procedures. The forest owner is primarily responsible for the management of the forest in a productive way, including with respect to the marketing of non-wood-products and services. However, the forest is open to all people for recreation purposes.

1.16 Training and Outreach

Legislation: Forest management agencies shall promote training for the private forest owners.

Standard: All employees in forestry shall have access to appropriate training as well as to further education.

Both the legislation and the PEFC Standard encourage capacity building of employees, although the standard is more specific on the issue.

Annex 7

POLAND

Legislation
FSC Standard: SmartWood Interim Standard for Poland September 2005

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1. SUMMARY OF LEGISLATIVE AND FSC STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT (SFM[1])

Polish forests cover 9 million hectares (30%) of the country's land area. The majority (78.4%) of the forest areas are state owned and managed by State Forests. Privately owned forests in Poland account for 1.5 million ha, and are managed by nearly 1.5 million owners. Due to the significance of forests to the economy as well as to the ecological conditions of the country, the purpose of the Polish forestry model is to ensure that the environmental, social, and economic functions of the forests are preserved and enhanced. A special strength of the Polish model is that State Forests is self-financed from the forest income.

Poland's model of sustainable, multi-functional forest management is based on The National Environmental Policy, The National Forest Policy, and the forest-related legislation; i.e., the Forest Act of September 1991, the Act on Forest Multiplication Material of June 2001, and the Hunting Act. The National Forest Policy is fully consistent with the Forestry Strategy of the European Union, and also complies with the provisions of Conventions and international agreements on nature conservation, including the Convention on Biodiversity. In Poland, sustainable forest management is conducted in accordance with a forest management plan, which is developed for each forest district for 10 years. An integral part of the plan is a nature conservation program prepared for the forest district. The legislation setting the normative framework for forestry is very comprehensive, so for most topics reviewed in this study, the requirements of the legislation are in line with or exceed the requirements set in the Polish FSC Standard. Taking into account the regulations given under the aforementioned acts, the normative framework gives strict instructions on forest management and conservation.

The Forest Act of 1991 determines the three basic functions of forests - productive, ecological and social - which are considered equal in significance. In amending the law in 1997, it was recognized that not only a forest stand but also the whole forest ecosystem should be the object of forest management and that further development should be oriented towards strengthening the ecological and social functions of forests (Szujecki, Paschalis 1997[2]). Regulation developed to complement the Act on Forest includes inter alia the Regulation No 30 on Promotional Forest Complexes, Regulation No 11 on Ecological Basis of Forest Economy, Instruction for Preparation of Nature Protection Program in Forest District, and Instruction of Forest Management.

Existing Polish law provides the rational foundation for the protection of a large amount of biological diversity. The key legislation of essential importance for biodiversity protection are: (1) the Act on the Protection and Management of the Environment; (2) the Act on Nature Protection; (3) the orders of the Minister of Environmental Protection, Natural Resources and Forestry on the protection of plant species and animal species; (4) the Act on Forests; (5) the Act on Protection of Agricultural and Forest Grounds; (6) the Act on Physical Development; (7) the Order of the Minister of Environmental Protection, Natural Resources and Forestry for determining the types of investments potentially hazardous to the environment and human health, and on environmental impact assessment; and (8) the Hunting Law.

The authority responsible for the management of public forests is State Forests. State Forests is also technically responsible for the supervision of private forests and their management planning. In

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1 Table 10.1 Compatibility of Polish FSC standard with the SFM elements
Table 10.2 Compatibility of Polish legislation with the SFM elements

2 Szujecki A., Paschalis P. 1997. Polish Forestry against the Background of European Forestry Policy. Conference organized by the Club de Bruxelles on 21-23 May 1997 p. 1-4

practice, approximately 30% of the 1.4 million private forest owners conduct forest management on their own, often without a proper forest management plan.

According to the Forest Act, silviculture in State Treasury owned forests is supervised by the Ministry responsible for natural environment, and in other forests by district and province governors. The province governor may entrust his supervision tasks to the State Forests regional director and the district governor to the State Forests' forest inspector.

Certification

State Forests in Poland was among the first to acquire FSC certification. Private forests have not yet been certified to a significant extent.

Enforcement and Compliance

State Forests employs the Forest Guard to control legal compliance and to detect activities harmful to forestry. When monitoring state forests, the Forest Guard has the rights and powers stipulated in separate regulations related to State Hunting Guards (poaching control), Nature Preservation Guards (implementation of nature preservation regulations) and State Fishing Guards (control of illegal fishing activities). The forest inspector and State Forests regional director cooperate with the head of the National Center for Criminal Information to the extent required for them to perform under the applicable legal regulations.

The Forest Guard has the jurisdiction to investigate and issue penalties comparable to that traditionally given to police.

Although compliance with the legislative framework regulating forestry in Poland is good in general, forest management as well as forest law enforcement are in the hands of the same organization: State Forests.

1.1 Harvesting Level

Legislation: The Act on Forests obligates the forest manager to maintain a forest's productive capacity by logging within limits that do not exceed the forest's production capacity, and by ensuring the possibilities for natural regeneration in harvesting operations. Legislation obligates State Forests to carry out inventories and monitoring of forest resources and the ecological condition of the forest. The harvesting level is based on forest management plans prepared on the basis of inventories. Legislation requires that each forest management unit have an approved management plan.

Standard: The implicit requirement of the FSC Standard is that the rate of harvest of forest products shall not exceed levels which can be permanently sustained. The sustainable level is set on the basis of the annual allowable cut (AAC), which in turn is based on conservative and well-documented estimates of growth and yield, and which is defined in the forest management plan. The standard also encourages harvesters to minimize waste in harvesting operations and to avoid damage caused by harvesting.

Legislation sets the provisions for defining and maintaining sustainable harvesting levels.

1.2 Reforestation Management

Legislation: The Act on Forest gives exact time limits for forest regeneration: reintroduction of forest vegetation must be done within two years of cutting, or five years after a natural disaster. Also, an unproductive stand must be replanted if necessary to fulfill the management plan objective.

Standard: According to the FSC Standard, forest management must preserve or enhance forest regeneration and succession capacity. In regeneration, natural regeneration is prioritized, and the goal is to create mixed stands.

The obligation to regenerate harvested or degraded forest land is imposed in legislation. The standard specifies that natural regeneration should be used.

1.3 Clearcutting

Legislation: The Act on Forests does not prohibit clearcutting or set any limits on the size of the harvest area, but in practice, the requirement to provide for the possibilities of biological restoration and the two-year regeneration time limit ensures that large areas cannot be clearcut at a time. The regulation concerning the State Forests Director (Regulation 11, Part II, 4.1.) further limits clearcutting operations to certain coniferous (alien) forests, stands of introduced species, or seed stands; or for sanitary purposes.

Standard: The Polish FSC Standard clearly sets limits to the maximum harvestable area of clear-cuts. The area shall not exceed of the size 3 hectares. Recurrence of cuts shall not take place before five years have elapsed.

The standard specifies the allowable clearcut size and sets requirements for planning of harvesting operations on landscape level. The standard exceeds the legislation in this respect.

1.4 Forest Conversion

Legislation: Upon approval by the relevant authority, forest conversion into arable land may be allowed for particularly justifiable needs, but in general, forest owners are obligated to maintain the forest cover.

Standard: The FSC Standard does not prevent land conversion but sets strict conditions for conversion: Only small areas may be converted with the support of stakeholders, and the conversion must benefit conservation in the long run. Natural and semi-natural non-forest areas on the forestland are to be maintained in natural conditions.

Forest conversion is allowed by law only if land-use planning and related regulations so justify it. The standard limits the converted area and advises against afforestation on traditionally open areas on forest land. The scope of the standard is slightly broader than the specific rules in legislation.

1.5 Plantations

Legislation: Afforestation is encouraged and subsidies may be applied to cover the costs. The National Afforestation Plan identifies the planned areas to be afforested. The legislation does not address large scale, intensive plantations.

Standard: Natural forest may not be converted to plantations, and the plantation establishment must promote the protection, restoration and conservation of natural forests. The scale and layout of plantations shall be consistent with natural forest vegetation in the landscape, and diversity in the composition of plantations is preferred. Native species are preferred, although exotic species may be carefully selected and monitored. Indeed, use of exotic species in forests is strictly controlled. Plantation managers shall also set aside a certain portion of their lands for natural vegetation. The FSC Standard also gives instructions for plantation management and provides measures to maintain the health and productivity of plantations and adjacent forests; as well as measures to protect waters.

Note: Here the term plantation includes regeneration through planting even on small areas. The FSC Standard restricts the establishment of plantations more than does the legislation.

1.6 Forest Risk and Productivity Management (fire, insect, disease)

Legislation: The forest owner/manager has the obligation to maintain the ecological balance and resistance of forest stands, and to take actions to prevent and control fire and harmful organisms. When pests are present, protective treatments are paid for by the Forest Inspectorate.

Standard: Forest productivity related issues are only considered in criterion 10.7 applied to plantation forestry (see above).

Legislation sets the baseline for forest risk management. The Polish FSC Standard does not directly address the issue.

1.7 Illegal Logging

Legislation: Wood harvested from the forest must be officially labelled or stamped.

Standard: According to the FSC Standard, a forest manager shall take all reasonable legal measures to prevent illegal usage of the forest area or natural resources, and illegal activities shall be reported. Property borders must be clearly identifiable, the forest manager must possess legal documents of ownership or rights to manage the forest area, and customary rights of the local population shall be respected.

Enforcement procedures to verify the legal origin of harvested timber are fairly consistent. The standard enlarges the scope of legality by obliging a certificate holder to control and prevent all potential illegal activity in the certified forest area. This approach thus adds to the legal requirements.

1.8 Wildlife Management

Legislation: According to the Act on Forests, the forest management plan needs to cover also wildlife management issues.

Standard: In general, the FSC Standard aims at preserving the forest environment to be as “natural” as possible. Natural elements of forest ecosystems increasing the biodiversity (old and hollow standing trees, trees with bird nests, snags, small-seeded areas, fruit species, etc.) are to remain present and shall not be eliminated as a result of forest activities.

The Legislation sets the general requirement to address wildlife management in a forest management unit, whereas the standard specifies measures that should be taken to improve the management. The standard requirements add slightly to the minimum interpretation of the legal provisions.

1.9 Species Management (endangered, etc.)

Legislation: Species management is an integrated part of forest management planning. Special bird conservation zones are protected on the basis of the legislation. The Act on Natura 2000 provides for the preparation of a nature conservation plan as a part of the overall forest management plan.

Standard: Poland has signed all significant international agreements on species conservation, and the standard requires that the obligations of these agreements be fulfilled. Medium- and large- forest management organizations must have sitemaps of rare plants, fungi, and animals within their forest area. Small-forest management organizations shall also be aware of and conserve the officially registered protected species in their forest area. Safeguards shall exist to protect rare, threatened and endangered species and their habitats and conservation zones; and protection areas shall be established appropriate to scale of the organization.

The legislation protects species by designating important habitats for protection. The Polish FSC Standard specifies the measures to be taken in the planning process to ensure an adequate protection level and thus adds to the legal requirements.

1.10 Water Quality Management

Legislation: The Act on Forests requires the preservation of the positive impact of forests on water. Furthermore, the act states as objectives the protection of surface and deep waters, the retention of catchments, and the protection of underground water reservoirs.

Standard: According to the FSC Standard, environmental assessment shall be an essential part of forest management planning, and measures to minimize negative environmental impacts of forest operations shall be followed in the field. Forest management organization shall have written guidelines for water resources protection.

The standard sets detailed provisions as to how to assess and manage water resources, and thus it contributes to the efficient implementation of related legislation. The standard provisions add to the legal requirements.

1.11 Old-growth Management, High Conservation Value Forests (HCVF), Special Sites

Legislation: Sites of special value may be given a Protective Forest status upon the minister's approval, or in the case of private forest, upon the governor's approval. The request is made by the general director, or for private areas by the district governor. Detailed principles of silviculture in Protective Forests will be determined by the minister responsible for environmental issues in a relevant ordinance. The Act on Natura 2000 provides for preparation of a nature conservation plan as a part of the forest management plan.

Standard: The Polish FSC Standard obligates the forest manager to identify and assess High Conservation Value sites and other special sites, such as bogs, in consultation with stakeholders. Natura 2000 and other protected areas are included on maps, and their condition is monitored. Forest management shall also protect representative samples of existing ecosystems within the landscape, as appropriate to the size of the forest management unit. Timber harvesting is not allowed in any of these protected areas. Drainage and peat extraction from naturally valuable peat bogs is prohibited according to the standard.
By law, valuable nature sites may be protected. The standard brings the identification of such sites and protection of the biological values to the forest management unit level, whereby less valuable areas may also be incorporated into special sites. The standard also extends the scope of valuable sites to peatlands, consequently restricting drainage of valuable bogs. The standard exceeds the provisions stated in forestry legislation.

1.12 Restrictions on the Use of Genetically-Modified Organisms (GMOs)

Legislation: The Polish Act on GMOs (2001) regulates the development and use of GMOs. Generally, use of GMOs is permissible, but an environmental assessment needs to be carried out before any GMO application or operation. The Act on Forest Reproductive Material prohibits use of a GMO if it is not included in "tested" category. The general spirit of the forest policies and supporting legislation favours native species, local provenances, and natural regeneration.

Standard: The standard completely prohibits the use of GMOs in forestry.

In practice the use of GMOs is not allowed in forestry. The standard also prevents any use for research purposes, but does not add substantially to the current normative regulations.

1.13 Management of Chemical Use in Forestry

Legislation: Only chemicals approved by the Ministry of Agriculture may enter the market. Chemicals that may cause any risk to environment or human health may be bought and applied only by certified persons.

Standard: Environmentally friendly methods are encouraged, and chemical use is strictly controlled under the FSC standard; i.e., the type of permitted chemicals is limited, and outside nurseries, chemicals can only be used upon a forest pathologist's approval. Furthermore, the standard obligates chemical applicators to adhere to applicable regulations and codes of best practice in all chemical use.

Chemicals may be used only under the license issued by an authorized expert. The legislation defines the safe performance requirements, which the standard also relies on.

1.14 Climate Change, Carbon Management

Legislation: Polish Climate Change Policy addresses specific objectives for forestry, but these are not integrated into the legislative framework.

Standard: Climate change related issues are not mentioned in the standard.

Neither legislation nor the standard sets specific requirements for forestry operations in combating climate change.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: According to the Act on Forest, the public and stakeholders must have the opportunity to comment on draft forest management plans. This specifically concerns private forest owners, as the forest management plan for private forests is made at the district governor's order.

Standard: According to the FSC standard, all interested and relevant stakeholders shall be encouraged and must have the right to be involved in forest management related planning. They should also have access to forest management plan documents, for example.

The Polish FSC Standard requirements on participation exceed the legislation.

1.16 Training and Outreach

Legislation: Training and Outreach are not addressed in the Act on Forests.

Standard: The Polish FSC standard provides that forest managers, supervisors, and workers have appropriate qualifications and will receive adequate training (e.g., in biodiversity issues) and supervision to ensure proper implementation of the management plan.

Forestry officials have specified competence requirements when on duty. The standard expands the competence requirements to all workers, and requires that competencies be updated on emerging issues, such as biodiversity. The standard adds to the legislative requirements.

Annex 8

AUSTRALIA

Legislation
PEFC Standard: AS 4708(Int) - The Australian Forestry Standard

1. SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ELEMENTS OF SUSTAINABLE FOREST MANAGEMENT (SFM[1])

Forests cover over 20% of Australian land area. The total forest area (according to the national definition for forests) is 164 million hectares, out of which over 1.5 million ha are plantations. According to estimates, during the last 200 years, forest area has declined from 40% to 20%, mainly due to the clearing of land for agriculture. In the State of New South Wales (NSW), the total forest cover is 27 million ha, which is 34% of the land area. Nearly 20% of Australia's plantation area is in New South Wales.

Plantation forests occupy an increasingly important role in Australia's forest sector. The National Plantation Strategy has set a goal to triple plantation area by 2020. Plantation management is guided by the National Plantation Principles, state-based codes of forest practice and accompanying state-level legislation, regulations, and ´Good Neighbourhood` protocols.

Although a major part of Australian native forests are publicly owned (75%), the private sector manages almost 72% of all native forested land, as 62% of publicly owned native forest is leased by the private sector, mainly for pastoral use. A significant public forest area may still have residual native title and land rights to be resolved. In New South Wales, a major portion (9.5 million ha) of forest area is on leasehold lands. 2.5 million ha are state multiple-use forests, and 4.5 million ha are nature conservation areas. Private forestlands cover 8.5 million ha.

Private forests provide 25% of the timber production in Australia, and 45% of priority ecosystems for conservation are located on private lands. Around 60% of plantations are under private ownership. Private owners are a heterogeneous group, varying from large-scale investors and industrial companies holding tens of thousands of hectares, to small landholders owning only a few hectares. Ownership is categorized as follows:

- *Lands with native title* (lands for which Indigenous people hold a title or common-law title recognizing the customary rights of Indigenous people);
- *State (multiple-use) forests, conservation reserves, and other Crown land* managed by a particular body or agency for a specified purpose;
- *Leasehold lands* (public lands managed by a variety of bodies/agencies that may be leased by a lease agreement. Lands under lease agreement are considered privately managed);
- *Private freehold land*.

In Australia, state (multiple-use) forests cover approximately 11.4 million ha available for timber production, although some of the area may be required for environmental protection under codes of practice. In practice, perhaps two thirds of the multiple use forests available for timber production are harvestable. It is estimated that less than one percent of the net area of forest available for timber production is harvested and regenerated each year. Traditional forestry and wood production is mainly carried out in state multiple-use forests and on private freehold lands.

The Commonwealth Government does not have direct role in forest management in Australia; instead it coordinates the national approach, ensures that Australia's international obligations are met, and that provisions of Commonwealth legislation are satisfied. One of these obligations is the Montreal

[1] Table 1.1 Compatibility of Australian AFS standard (PEFC endorsed) with the SFM elements.
Table 1.2 Compatibility of legislation Australian Commonwealth and New South Wales with the SFM elements.

Process, which entails a commitment to implement criteria and indicators for sustainable forest management.

State and territorial governments take primary responsibility for forest management, in view of their constitutional responsibility for land-use decisions as well as their ownership of large areas of forest. The states and territories have enacted legislation that allocates forestland tenures and specifies the administrative and operational framework and policies through which public and private forests are managed.

Enforcement

Several agencies are involved in enforcement and control of forestry related legislation. The major work is done by the NSW Department of Natural Resources, which is responsible for (1) the Native Vegetation Act; (2) the Native Title and Aboriginal Land Rights Acts; (3) the Plantations and Reafforestation Act; and (4) the Water Management Act. NSW Rural Fire Services is responsible for the governance of the Rural Fires Act. Activities established in the Environmental Planning and Assessment Act are carried out and enforced by the NSW Department of Planning. NSW Department of Environment and Conservation is responsible for the issues related directly to conservation, such as the Threatened Species Conservation Act. For private forest issues, the main responsibility falls to the NSW Department of Environment and Climate Change, which administrates the Private Native Forestry Code of Practice established under the Native Vegetation Act. The Code of Practice for private native forestry is a transitional arrangement until new legislation covering private native forests is developed. This new legislation will aim to promote the sustainable management of private native forests, while ensuring that the environmental values of those forests are maintained. More information on the development of the legislation will be available later in 2009.

In general, the level of compliance with the forestry related legislation is high in Australia and New South Wales. In Australia, the public also participates actively in the follow-up of forest activities. Furthermore, according to Transparency International, Australia is among the 10 least corrupt countries in the world.

It is now possible for police and other law enforcement agencies authorized under the Environment Protection and Biodiversity Conservation Act to pursue criminal offenses,that will in turn be prosecuted by the Commonwealth Director of Public Prosecutions or state prosecutors. Previously, offenses could only be dealt with via a civil penalty application in the Federal Court. This new power should provide greater insight into and deterrence of illegal activities, and has the potential to significantly improve the protection of biodiversity and heritage in Commonwealth reserves.

Activities and their compliance with the Property Vegetation Plan in private forests are audited by the Department of Environment and Climate Change (DECC). An audit of private native forestry operations is a planned activity involving staff from DECC and the landholder or their representative. Audits will be conducted by DECC PNF Officers. Depending on the recent forestry activities implemented, aspects to be examined may include the protection of environmental values, the retention of residual basal area, and regeneration.

The Commonwealth and states have negotiated a specific Regional Forest Agreement (RFA) for forest areas where commercial forestry is undertaken to achieve ecologically sustainable development and management of the forest estate. Establishment of the RFA system is based on the National Forest Policy Statement. RFAs have set the principles for forest management of the region for 20 years, and their progress is reviewed at least every five years. A specific aim is to establish a world-class conservation reserve system. Regional Forest Agreements include a requirement to develop and implement an environmental management system compatible with the relevant international standard (AS/NZS ISO 14001:2004) by forest and conservation management agencies on public lands. The improvement targets set for the RFAs in the agreements will assist remarkably in meeting the requirements of the Australian Forestry Standard.

Social, economic, and environmental factors are covered in forest management plans and their implementation. Forest management plans, based on extensive environmental and resource surveys and inventories, as well as on codes of forest practice, are a fundamental requirement of forest management in Australia on public lands, and are required under state legislation. Minimum acceptable practices and goals are set in Codes of Forest Practice and are often supplemented by certification standards. All relevant agencies involved in forest management and use of multiple-use forests have Codes of Forest Practice.

In New South Wales, a Code of Practice for plantation establishment and management operates across tenures, while harvesting of private native forest is guided by both the Native Vegetation Conservation Act (1997) and the Private Native Forestry Code of Practice (2007). The Private Native Forestry Code of Practice (the Code) sets minimum operating standards for harvesting in private native forests. Landholders need to obtain a Property Vegetation Plan (PVP) to carry out forestry operations on their land, and those operations need to be done in accordance with the Code. A Private Native Forestry Property Vegetation Plan (PNF PVP) is a legally binding agreement between a landowner and the Department of Environment and Climate Change (DECC). The Code of Practice establishes a regulatory framework for the sustainable management of such forests by ensuring that operations improve or maintain environmental outcomes.

The Code guides operators on private lands to ensure that practices are consistent with ecologically sustainable forest management. For example, the Code:

- specifies effective silvicultural practices in different forest ecosystems
- establishes minimum basal area thresholds and retention rates
- sets targets for regenerating or re-establishing forests
- requires forward planning and documentation of harvesting operations
- identifies important landscape features which may provide habitat for threatened species
- limits harvesting operations in areas that may affect soil stability, erosion or water quality, including the establishment of exclusion zones along watercourses
- requires protection of Aboriginal heritage features, such as scarred or carved trees and bora rings.

The Code also contains long-term provisions for:

- maintaining the forest structure
- protecting catchments by minimising soil erosion and reducing contamination of waterways
- protecting habitat and biodiversity values
- protecting Aboriginal and cultural heritage values.

In New South Wales, a mandatory environmental assessment is required for specified forestry activities, including harvesting and forest road construction. Harvest plans are also publicly available. The Environment Planning and Assessment Act (EPA Act) is the single most significant piece of legislation affecting forest operations, as it requires an environmental assessment and approval from government authorities for any activities having or potentially having a significant environmental effect. Activities described in a private native forestry property vegetation plan or in integrated forestry operations approvals (for public lands) are mainly exempted from the assessment. The Ministry for Climate Change, Environment and Water has certified that the Code satisfies the requirements of the Threatened Species Conservation Act of 1995. This means that operations carried out under a PVP will not need separate assessment and approval under the auspices of this act.

Australia's New South Wales also developed a mandatory scheme, called the NSW Greenhouse Gas Abatement Scheme (GGAS) (2005), to reduce greenhouse gas emissions. Retailers and large electricity customers in NSW and in the Australian Capital Territory (ACT) are required to meet mandatory intensity targets to reduce (or offset) the emissions of GHG arising from the production of electricity they supply or use. The offsetting portion can be done through forestry activities.

Plantation forestry is regulated by the Plantations and Reafforestation Act (1999 and the Plantations and Reafforestation (Code) Regulation (2001). The act promotes plantation establishment for timber resources on essentially cleared land, and provides a streamlined authorization process. The Code contains clear and comprehensive standards for establishment, management and harvesting operations on authorized plantations.

The Australian Forestry Standard (AFS) applies to any forests in Australia no matter what the ownership and whether or not forests are native or planted. AFS Standard requirements are developed on the basis of (1) the International Organization for Standardization (ISO); (2) the environmental management system (EMS) Standard AS/NSZ ISO 14001:2004; (3) the Montreal Process criteria and indicators for temperate and boreal forests; and (4) FSC and PEFC certification scheme requirements. The challenge of the AFS has been to develop a standard applicable to various forms of ownership (medium and large native forest ownership, medium and large scale plantation ownership and small native forest and plantation ownership), and applicable to different types of landowners and forest managers.. To facilitate interpretation of the standard, some supplements have been developed that give guidance to large, medium- and small-scale forest owners and managers; while other supplements address native and plantation forests. Also, the varying ecological conditions, state-level legislation and forest practices have forced the AFS Standard to remain at a certain level of generality. As a consequence, in New South Wales, the requirements given in the Private Native Forestry Code are in fact more specific than the standard requirements. On public lands, under the Regional Forest Agreement, the requirement to apply an environmental management system compatible with the AS/NZS ISO 14001:2004 standard leads to an equivalence of the legal and standard requirements, because the standard applied is the Australian Forestry Standard.

For the purposes of this study, despite the significance of the state regulation in New South Wales, the analysis of the legislation will be focused on the Commonwealth and state-level acts, leaving a detailed review of the forestry related regulation outside the scope of this study.

1.1 Harvesting Level

Legislation: Generally, New South Wales State legislation promotes ecologically sustainable forest management and a sustainable timber supply level. These topics must be covered in a Regional Forest Agreement, which is a contract between three ministries in relation to forest management. The basis of the RFA stems from the Commonwealth Regional Forest Agreements Act and the Forestry and National Park Estate Act. The Forest Agreement specifies sustainable yields and harvesting regimes to be applied in the region covered by the agreement. Regional Forest Agreements include a requirement to develop and implement an environmental management system compatible with the relevant international standard (AS/NZS ISO 14001:2004) on the part of forest and conservation management agencies on public lands.

The Native Vegetation Act encourages ecologically sustainable management of native vegetation, including forests, and obligates the (private) landowner to obtain a Property Vegetation Plan (PVP) to carry out forestry operations on their land. These operations need to be done in accordance with the Forestry Code.

Standard: The harvesting level must be based on forest management plan rationale, and the forest manager shall maintain the productive capacity of forests. The silvicultural and logging practices must not harm the long-term production capacity of the land and soil.

The AFS Standard and legislation are in line regarding harvesting level.

1.2 Reforestation Management

Legislation: The NSW Native Vegetation Act provides for the sustainable management of native vegetation and encourage the revegetation of land with appropriate native vegetation. State level regulation sets time limits and minimum stocking-levels for the revegetation. The Forestry and National Park Act refers to required approval for integrated forestry operation plans for forest management on public lands, including leasehold lands, which shall include a description of the silvicultural systems to be applied. Regional Forest Agreements established on the basis of the national Regional Forest Agreements Act and state Forestry and National Park Estate Act include a requirement for forest and conservation management agencies on public lands to develop and implement an environmental management system compatible with the relevant international standard (AS/NZS ISO 14001:2004).

Standard: First of all, the management plan shall define the silvicultural systems/practices to be applied in the forest management area. Native forests shall be regenerated with native species and species of local/equivalent locality provenances, taking into account practicability. Regeneration of native forests must be efficient and timely.

The standard and legislation are in line regarding reforestation management.

1.3 Clearcutting

Legislation: *The Native Vegetation Acts* (NSW) protects native forestlands from broad-scale clearing. The Private Native Forestry Code of Practice limits the size of the clearcut area. All clearcutting must be carried out in accordance with the Property Vegetation Plan or development consent granted by authorities.

Standard: The AFS Standard only refers to the selection of an appropriate silvicultural system.

Legislation is more demanding in clearcutting.

1.4 Forest Conversion

Legislation: *The Native Vegetation Act* (NSW) requires a Development Consent granted by government authorites in cases of land conversion.

Standard: Forest conversion is not addressed in the AFS Standard.

Forest Conversion is covered only by legislation.

1.5 Plantations

Legislation: Together with the Plantations and Reafforestation (Code) Regulation, the Plantation and Reafforestation Act promotes the establishment of plantations and reafforestation, provides a streamlined authorization process for plantation establishment, and sets guidelines for the management in line with the related legislation on native vegetation, threatened species, and fisheries. Native vegetation clearing for the establishment of a plantation is strictly limited. Unique or special wildlife values must be specially protected.

Standard: According to the AFS Standard, native forests shall not be converted to plantations, except under strictly defined circumstances. The potential risks the plantation (gene-manipulated) vegetation may cause to the native vegetation shall be evaluated and eliminated. Plantations shall be established

and regenerated effectively and timely, and the management system applied needs to meet the set performance targets.

The legislation and the standard are in line with regards to plantations.

1.6 Forest Risk and Productivity Management (fire, insect, disease)

Legislation: The Soil Conservation Act gives power to authorities to promote sustainable practices in land management and to control activities causing soil erosion or land degradation. The Noxious Weeds Act obligates authorities and land occupiers to control noxious weeds. The Rural Lands Protection Act gives government authorities power to give pest control orders to eradicate pests, or to confer power on officers to carry out pest eradication. The Rural Fires Act obligates authorities to cooperate in prevention of wildfires and in fire fighting, and gives them the power to require landowners/managers to carry out certain activities for the protection of the environment. According to this act, approval is needed for any lighting of fire, such as for land-clearance purposes.

Standard: Damage caused by forest operations must be limited to maintain forest health. Unplanned forest fires must be prevented and controlled. Forest ecosystem health shall be maintained and potential damaging agents identified and controlled to retain the damage within tolerable levels. Damaged-forest rehabilitation shall be facilitated.

In fire risk and productivity management, the legislation sets clear powers to governmental authorities and obligations to land occupiers; the AFS Standard is in line with the legislation.

1.7 Illegal Logging

Legislation: The New South Wales Forestry Act criminalizes unauthorized tree cutting and sets a penalty for unlawfully taking timber, products, or forest materials.

Standard: In reference to the land title and customary rights of indigenous people, the existing legal or customary uses of the forest shall be allowed to continue, or in cases where traditional uses threaten the achievement of the forest management performance criteria, the forest manager shall negotiate with the users. Appropriate action shall be taken to prevent unauthorized or illegal actions.

The AFS Standard adds to legislation in that indigenous people's customary rights should be allowed to continue.

1.8 Wildlife Management

Legislation: Wildlife issues are mainly covered by conservation and biodiversity-related legislation. The Plantations and Reafforestation Act obligates a plantation owner/manager to notify authorities about likely impact of plantation activities on unique or special wildlife values. (See also Section 1.9 on Species Management).

Standard: Wildlife is not separately mentioned in the AFS, but the biodiversity criteria cover wildlife management as well.

Legislation and the standard are in line regarding wildlife management.

1.9 Species Management (endangered, etc.)

Legislation: Biodiversity and conservation issues are the most highlighted topics in the Commonwealth's forest related legislation. In addition to the conservation area and reserve establishment, the Environment Protection and Biodiversity Conservation Act strengthens intergovernmental co-operation, and minimizes duplication through bilateral agreements between the Commonwealth and states. This act also provides for the intergovernmental accreditation of environmental assessment and approval processes; and adopts the Commonwealth environmental assessment and approval process that will ensure activities that are likely to have significant impacts on the environment are properly assessed. This act also promotes a partnership approach to environmental protection and biodiversity conservation through recognizing and promoting indigenous peoples' role in, and knowledge of, the conservation and ecologically sustainable use of biodiversity; and the involvement of the community in management planning. The Ministry's assessment and approval (Section 11) for actions having environmental effects applies only to forest areas, which are not covered by Regional Forest Agreements.

The New South Wales National Parks and Wildlife Act provides for the protection of native species and habitat, especially threatened species, through the application of agreed Conservation Protocols or Codes of Practice. This act declares as illegal the harming or gathering of threatened species, endangered populations, or endangered ecological communities. The damaging of critical or threatened –species, endangered-populations, or endangered-ecological communities' habitat is also illegal. The Threatened Species Conservation Act declares that regulations may prohibit certain actions on critical habitat - in practice, this act is considered in the Environmental Planning and Assessment Act (EPA), which requires an environmental assessment and approval for activities having potential impact on threatened species.

Standard: In the AFS Standard, forest management is supposed to maintain regional biodiversity. Biodiversity values shall be identified and assessed on the basis of existing relevant knowledge and forest planning instruments, and actions shall be taken to support the protection of biodiversity. Forest operations planning and management shall follow the existing regulation on management and conservation of threatened species. In native forests, fire (or other disturbance regimes) for instance is used to support the biodiversity values.

The legislation and the Standard are in line regarding species management.

1.10 Water Quality Management

Legislation: Commonwealth legislation has a minor impact on water quality management issues, mainly through the Environment Protection and Biodiversity Conservation Act, which regulates the activities undertaken in important areas. At any rate, the forest management areas are mainly covered by bilateral agreements, excluding these areas outside the scope of this act.

The New South Wales Catchment Authorities Act legislates catchments management planning done by the authorities. The authorities' duty is to assist landholders in furthering the objectives of the catchment action plan, and give them information about native vegetation. The Forestry Act authorizes authorities to undertake the silvicultural management of the catchment area of any water supply system under certain conditions. Protection of the Environment Operations Act provides for the protection of water quality from harvesting, through the application of an Environmental Protection License for logging-and-access road-construction activities. Similarly, the Fisheries Management Act requires the assessment and licensing of operations possibly having an impact on aquatic reserves, according to the process described in EPA Act. The Water Management Act integrates the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation, and its native flora and fauna. According to this act, authorities

shall formulate a management plan for a water management area, including in the plan a list of controlled activities (which may affect plantation establishment and irrigation on plantations).

Standard: The forest manager shall identify, assess, and protect soil and water values that can be adversely affected by forest operations. The adverse impacts for soil and water values and hydrological flows shall be minimized in forest operations, and water pollution and soil contamination shall be prevented or constrained.

Legislation and the AFS Standard are in line with regard to water quality management.

1.11 Old-growth Management, High Conservation Value Forests (HCVF), Special Sites

Legislation: The Commonwealth's Environment Protection and Biodiversity Conservation Act (1) provides for the protection of the environment; (2) promotes conservation and ecologically sustainable use of natural resources; (3) promotes conservation of biodiversity; and (4) provides for the protection and conservation of heritage values. In practice the implementation of the act in a forest management context requires also the application of the Environmental Planning and Assessment Act, with its assessment and approval processes described therein. The Commonwealth Native Title Act recognizes and protects sites with special value to indigenous peoples.

The Forestry Act of NSW gives the Ministry power to declare areas (on public lands) with special conservation value as "special management zones" or "flora reserve," or, according to the Wilderness Act, as "wilderness area," and the power to restrict activities undertaken in the area. The State Heritage Act protects lands and vegetation in the State Heritage Register or provides for an interim heritage status. The Fisheries Management Act excludes *protected* mangrove areas from any harvesting (commercial or otherwise). This act also refers to the Threatened Species Conservation Act for the protection of critical habitats, and the prohibiting/limiting effects of the declared critical habitat status.

Standard: AFS criterion (4.8) obligates the forest manager to protect and maintain the natural, cultural, social, recreational, religious, and spiritual heritage values of forestlands. These values shall be identified (in consultation with relevant Indigenous peoples) and taken into account in forest management planning and operations. Existing legal or traditional uses shall be allowed to continue.

The AFS Standard and legislation are in line, although the standard adds somewhat to legislation by requiring that indigenous customary rights shall be allowed to continue.

1.12 Restrictions on the Use of Gene-Modified Organisms (GMOs)

Legislation: GMO matters are regulated by a licensing system. Only registered GMOs may be used.

Standard: Use of GMOs must comply with the law and be in accordance with the ecological risk management strategy.

The AFS Standard relies on the legislation regarding GMOs.

1.13 Management of Chemical Use in Forestry

Legislation: Chemicals need to be used according to their label instructions. Using chemicals may not harm the environment or human health.

Standard: The AFS standard promotes alternative cost-effective methods and the use of more benign chemicals in forestry applications. In forest operations, the forest manager shall prevent or constrain water pollution and soil contamination.

In general, the requirements of the legislation and the AFS Standard are in line, but the standard additionally promotes the use of alternative methods.

1.14 Climate Change, Carbon Management

Legislation: The Forestry Act assigns the Forestry Commission to manage carbon sequestration- and trade- related issues**.**

The NSW Greenhouse Gas Abatement Scheme (GGAS 2005) allows forest activities to be used as offsets, when certain rules are complied with. To create abatement certificates from forestry activities, a party must be a 'Sequestration Pool Manager'. Essentially a Sequestration Pool Manager:

- owns or controls the Carbon Sequestration Rights registered on the eligible land on which the forestry activity takes place;
- has management arrangements and policies in place that demonstrate the capacity to satisfy clause 73ID of the Regulation in regard to continued storage of the carbon sequestered for 100 years; and
- has adequate procedures in place with respect to hazards and risks to the eligible forests.

Standard: According to the AFS standard, the forest manager shall maintain forest contribution to carbon cycles and minimize greenhouse gas emissions caused by forest activities.

Both legislation and the AFS Standard recognize the issues but take slightly different approaches: the legislation focuses on sequestration certificate regulation, and the standard focuses on the maintenance of carbon sequestration capacity and the minimization of emissions in general.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: Public participation, especially aboriginal input, is mentioned in several acts. The Forestry and National Park Estate Act provides for provisions with respect to community consultation on forestry operations and other matters covered by the (regional) forestry agreement. Aboriginal rights are also secured in the National Parks and Wildlife Act and the Aboriginal Land Rights Act, which provides for establishment of formal body of representatives to represent aboriginal communities. Informing the public of the opportunity for public participation is also required in bush fire risk management planning (Rural Fires Act).

Standard: The forest management policy shall consider the views of stakeholders. Relevant stakeholders shall be identified and contact established. Participation of identified stakeholders in forest management planning shall be facilitated and encouraged. A "good neighbourhood" policy is to be also maintained by considering and minimizing the adverse impact of forest operations on neighbours.

Indigenous people's rights and responsibilities shall be acknowledged and respected, and their participation in decision making ensured. This includes "their economic aspirations in sharing benefits."

The Legislation and the AFS Standard are in line, but the standard adds a "good neighbourhood" requirement, encouragement of public participation, and even a requirement for including indigenous people's "economic aspirations in sharing benefits."

1.16 Training and Outreach

Legislation: The main responsibility for forestry educational and research issues falls to the Forestry and Timber Bureau (Commonwealth Forestry and Timber Bureau Act). The Catchment Authority also has educational responsibilities in connection with natural resource management. The Occupational Health and Safety Act obligates en employer to provide employees instruction, training, and supervision to ensure the employees' health and safety at work.

Standard: An adequate level of skills and competencies of staff and contractors shall be ensured.

The Standard and legislation are in line regarding training and outreach.

Annex 9

BRAZIL

Legislation
FSC Standard: National Legislation Standard – Terra Firme

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1. SUMMARY OF LEGISLATIVE AND STANDARD REQUIREMENTS FOR SELECTED ISSUES OF SUSTAINABLE FOREST MANAGEMENT (SFM)

Brazil has about 470 million hectares of forests (comprising 57% of the national territory). Out of these, 87% are primary forests. The use of forests in Brazil is divided as follows: 5.5% production; 17.8% protection; 8.1% conservation; 23.8% social services; and 44.8% multiple purposes. Also, Brazil represents 5% of all global productive forest plantations (5 384 000 ha).

In 1988, Brazil enacted a new Constitution with a greater emphasis on social and environmental welfare, which is recognized as one of the most advanced in the world on environmental protection. The Constitution establishes norms laws and principles that aim at protecting forest ecosystems in the national territory. Article 225 establishes that all people have the right to an ecologically balanced environment, which is an asset of common use and essential to a healthy quality of life, and both the government and the community shall have the duty to defend and preserve it for present and future generations.

In order to ensure the effectiveness of this right, it is incumbent upon the government to, among other issues, I - preserve and restore the essential ecological processes and provide for the ecological treatment of species and ecosystems; III - define territorial spaces to receive special protection. IV - require a prior environmental impact study for the installation of activities which may potentially cause significant degradation of the environment; VI - promote environmental education; and VII - protect the fauna and the flora. The Constitution also establishes that the Brazilian Amazonian Forest, among other ecosystems in the country, is part of the national patrimony, and shall be used under conditions which ensure the preservation of the environment.

In addition to the Federal Constitution, Brazil has a multitude of laws which support the sustainable exploitation and preservation of forests located in the country. Brazil's regulatory structure affecting forest management is primarily the responsibility of the federal government. Brazil established its first Forest Code in 1934, which also created the Brazilian Forestry Service. The latter was the predecessor to the Brazilian Forestry Development Institute (IBDF), set up in 1965 through revisions to the Forest Code (Law No. 4,771/65), but which was subsequently absorbed by an environmental agency entitled the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA) in 1989. Natural forests are considered by the 1988 Constitution to be a national patrimony and therefore, within the domain of IBAMA. The federal government also licenses plantations, which are subject to environmental impact assessment requirements (EIA/RIMA) when they exceed specified size limits (over 1,000 ha).

The Forest Code stipulates that natural forests should be subject to sustainable management, which is specified in Decree n. 5,975/2006. The Decree establishes the requirement that management plans must be prepared prior to harvest in both public and private natural forests. These management plans must receive approval by the forest service before harvesting may proceed.

The National Environmental Policy (6.938/81) makes manifest the Constitutional rules on the need for environmental licences. It grants to the National Council on the Environment (CONAMA) the authority to design rules and criteria for the licensing of potential polluting activities; as well as the criteria for the development, approval and execution of an environmental impact assessment and study (EIA/S).

Another important component of Brazilian legislation is the requirement that private landowners set aside permanent preservation areas (APP)[1] and establish private forest reserves within the boundaries of their private property. Within the Amazon Basin, 80% of all privately owned forested properties must be established as permanent legal reserves.

Brazilian legislation has also generated other laws that support sustainable forest management, such as the National Environmental Policy (1981), Fauna Protection Law (1967), Water Resources National Policy (1997), Bio-safety law (2005), GMO (2006 and 2007), National Systems of Seedlings (2003), National Environmental Education Policy (1999), and Public Forests Concession Law (2006).

In addition, the country established national programs addressing both chemicals and climate change.

Brazilian Forests and Certification

In comparison to the plantation segment, a relatively limited proportion of natural forests has been certified, even though Brazil is the world's largest producer of tropical timber from natural forests. This is explained by the fact that a substantial volume of timber originating from deforestation and illegal extraction in the Amazon continues to flood the domestic market, which does not have a high demand for certified products.

In addition, Brazil's remaining natural forests suffer from severe problems of deficient governance, and often overlapping land ownership. Such issues act as deterrents to coherent forest management, and hence to certification. Property titles are often of spurious legality, due to the practice of *grilagem*[2], particularly in the Amazon, where multiple-tier property titling is common.

Although a good deal of FSC requirements go beyond IBAMA's forest management requirements, certification may be perceived by local regulatory officers as an effort to facilitate the licensing of forest management plans by IBAMA. For instance, IBAMA requirements demand compliance with legal restrictions on land use such as permanent protection areas, but do not require the establishment of a permanently untouched forest area for comparison purposes of 5% of the total managed area to assess management impacts on biodiversity. FSC standards are analytical and evolutionary, allowing for pre-requisites and progress over time, while IBAMA either approves or cancels a PMFS license. Furthermore, FSC standards apply to concerns beyond the management practices themselves, such as corporate/community relations, road-building, overall land use planning, etc., which are not present in the IBAMA requirements

Even though FSC rules are considered stricter, experience suggests that efforts to achieve certification bring forest operations under more intense scrutiny. In some cases, this has called attention to management or procedural deficiencies, resulting in fines and/or harassment. To some extent, IBAMA personnel view certification of forest operations as a ploy on the part of some firms to obfuscate their extraction of timber from other areas not within management plans nor legally titled to the forestry enterprise.

However, the new law on concessions in public forests and forest family partnerships may draw laws and certification criteria closer together. As regulation, controlled governmental concessions, and sheer resource exhaustion in settled areas limit access to formerly open-access timber reserves, certified natural forest management may grow in relative importance, spurred on by the creation of certified buyers' and producers' groups. A 2006 law regarding public forest concession allows to grant timber extraction rights in public forests, which may be the catalyst to bring laws and

[1] Considered to be permanent preservation areas are forests and other types of natural vegetation located: a) along rivers and other bodies of water; b) around lakes, lagoons and water reservoirs, whether natural or artificial; c) around water springs; d) on top of mountains; e) slopes with decline over 45 degrees; among others described in law or declared by the public power.

[2] Literally, "cricketing" (from *grilo*) – owing to the practice of fabricating false deeds and putting them in a box along with a few of these creatures, whose consumption and defecation age the papers.

certification requirements closer together, because although this law does not require certification, it encourages external auditing[3] [1], which mimics certification requirements.

Enforcement and Compliance

IBAMA enforces compliance with the Forest Code through its regional offices in each state, with the support of armed forest police battalions. This is because confrontations with illegal loggers have tended to be violent. There are, however, critics who view the enforcement arm of IBAMA as corrupt because of charges now and then of bribery and corruption. State governments are also critical of IBAMA's enforcement arm, but there are no plans to shift enforcement from federal to state environmental agencies.

In addition, the continuous pressure on illegal forest operations near settled areas in the so-called Arc of Deforestation[4] has led to demands by the timber industry to regularize its access to use of these and other forests in the public domain, under government-approved management plans. Such an approach could potentially legalize timber extraction in a considerably larger area of public unclaimed lands (*terras devolutas*) in the Amazon region. Governmental promoters of this policy anticipate that this process will increase demand for certification of sustainable origin, since its regulatory requirements emphasize socio-environmental care.

A further issue associated with compliance and property rights has to do with the sustainable use of areas that by law should be left permanently intact for environmental protection: the permanent preservation areas (APP) and the legal reserve. In practice, rather than obeying the Forest Code, agro-pastoral proprietors occupy these lands and cultivate them with annual crops or pastures rather than protecting them, while industrial forest plantations in general observe the code. Revisions in the Forest Code under consideration in the Senate would permit small farmers to use part of these lands for agro-forestry or small-scale tree lots for sustainable wood.

National and State regulations

As mentioned above, forestry is mainly regulated at the federal level, but nothing prevents the states from defining stricter rules. For example, Pará State follows national regulations, and on specific issues defines more detailed set of laws, such as (1) the requirement of a State environmental license on top of the federal required one for some activities; and (2) more specific procedures on public participation.

The Terra Firme standard is directed to the entire Amazon Basin, which covers 7 Brazilian States. Therefore, it would be impracticable for the standard to absorb all of the different states' rules into its framework.

1.1 Harvesting Level

Legislation: The legislation requires that land be set aside under the title of permanent preservation area, and describes the specific cases in which these areas can be suppressed. It also provides for the establishment of legal reserves: 80% of the land in private properties located in the Amazon region.

Legislation also forbids the exploitation of primitive forests of the Amazon basin. Land in this area can only be exploited through an act of the public power.

[3] The Arc of Deforestation is a huge swath of originally forested land in the eastern and southern fringes of the Amazon basin, which has been the target of much recent settlement and agro-industrial expansion pressure.

It provides that the exploitation of forests and successions, both on private and public land, depends on (1) prior approval from the state authority; (2) the adoption of appropriate harvesting, forests reposition (regeneration), and management techniques compatible with the various ecosystems; and (3) allows exploitation only upon prior approval of the Sustainable Forest Management Plan (SFMP) from the appropriate public authority.

The holder of the SFMP will submit the annual operation plan to the environmental authority, specifying the activities that will take place and the maximum volume proposed to be extracted; and will deliver a report to the public authorities with information about all areas of sustainable management and the description of the activities undertaken, and the actual volume exploited. The SFMP will be submitted for technical audits that accompany and routinely control the operations and activities developed in the management area

Also, the legislation dictates that the construction, installation, increase and operation of establishments and activities that utilize environmental resources, considered polluting or potentially polluting, as well the ones capable, under any form, to cause environmental degradation, will be subject to prior licensing from the appropriate government agency.

Standard: The FSC-Terra Firme Standard does not specify an annual allowable cut measurement, but the provisions require that the forest management unit must be registered and hold an environmental license and management plan. The management plan must specify the volume of the annual cutting, the selection of species and diameter, and all activities to be carried out, such as monitoring. The standard also requires identification of permanent, contiguous preservation areas of five per cent of the total managed area. The purpose of this last requirement is to assess management impacts on biodiversity.

While the national regulations requirements demand compliance with legal restrictions on land use, such as in the case of permanent protection areas, the standard surpasses the legislation by calling for a permanently untouched forest area for comparison purposes of 5% of the total managed area.

1.2 Reforestation Management

Legislation: Legislation has several provisions dealing with reforestation of both private and public forests. It subjects both harvesting and reforestation to prior approval from the state authority. Also, it states that the industries that consume high quantities of raw material are obliged to maintain in a certain radius an service scheme that assures the plantation of trees to cover its needs. These companies must procure resources from forests managed with an SFMP; suppression of natural vegetation with appropriate authorization; planted forests.

The law also defines (1) forest reposition (regeneration); (2) outlines the type of companies which are obliged to conduct forest reposition, as well as exceptions to these rules; (3) specifies geographic locations related to forest reposition (regeneration); and (4) describes specifically how the public authorities verify the forest reposition (regeneration).

Standard: The standard contains few provisions on reforestation.

Forest Code and its regulating decree, approved in 2006, contains stricter requirements than the FSC standard, given that the latter was approved prior to the Decree, in 2002. Therefore, one expects that during the revision of the standard which is currently taking place, the new provisions brought by the law will be integrated into the standard norms.

1.3 Clearcutting

Legislation: Legislation does not allow for clearcutting of natural forests, as it strives to preserve several areas (see harvesting level in 1.1). These areas include permanent preservation areas, legal reserve, and others.

Standard: The FSC Standard follows the legislation in not allowing clearcutting of natural forests. The standard also calls for a permanently untouched forest area for comparison purposes of 5% of total managed area, to assess management impacts on biodiversity.

The FSC standard meets and exceeds the legislation by calling for a permanently untouched forest area for comparison purposes of 5% of total managed area, in order to assess management impacts on biodiversity.

1.4 Forest Conversion

Legislation: The Forest Code does not prevent forestry land from being converted to other purposes, so long as certain provisions are respected, such as the preservation of permanent preservation areas and legal reserves, which can also be suppressed under the specific cases defined by law. Conversion is allowed in cases such as settlement linked to agrarian reform.

Standard: The standard has few provisions on the subject, but does assert that the converted area (1) has to be for the local communities' subsistence; (2) does not occur in areas of High Conservation Value Forest; and (3) it must be clear that it brings benefits for the FMU conservation.

The FSC Standard requirements slightly exceed the legal requirements.

1.5 Plantations

Legislation: Legislation does not restrict the establishment of planted forests, as long as it complies with the regulation. However, there is a provision asserting that in the case of planted forests, the Brazilian environmental agency (IBAMA) will ensure that in each municipality, land is also allocated to ensure the production of basic food and pasture lands in order to guarantee local subsistence.

Standard: The Standard did not integrate FSC principle 10, and therefore does not have any provisions on plantations.

1.6 Forest risk and Productivity Management (fire, insect, disease)

Legislation: The use of forest products as fuel necessitates the use of a device which reduces the risk of setting the vegetation on fire; and regulations also forbid the use of fire in forests and other areas of vegetation. It is likely other, more specific fire-prevention rules are more defined administratively under CONAMA rules. .

Standard: The Standard goes well beyond the legal requirements and has several provisions on fire management and harvesting practices to avoid damage.

The Standard sets additional requirements to preserve the health of forests and makes some otherwise voluntary guidelines obligatory in certified forestry.

1.7 Illegal Logging

Legislation: Legislation: The legislation strives to protect the forests from illegal logging through a series of provisions that subject private and public land forest harvesting to (1) prior approval from the state government authority; (2) an environmental license; (3) an approved management plan; and (4) the adoption of appropriate harvesting, regeneration, and management techniques compatible with the various ecosystems. In addition, annually, the holder of the SFMP must deliver a report to the public authorities with the information on all the areas of sustainable management, a description of the activities undertaken, and the actual volume extracted during the previous 12 months. Harvesting operations and management plans are subject to routine auditing. The legislation aims at protecting the forests from illegal harvest through a series of provisions that condition forest exploitation, both in private and public land, to previous approval from the state authority, environmental license and an approved management plan, as well as the adoption of techniques of conduction, exploitation, forest reposition and management compatible with the various ecosystems. In addition, annually, the holder of the SFMP will deliver a report to the public authorities with the information on all the area of sustainable management and the description of the activities undertook and the real volume exploited on the previous 12 months, and will be submitted to technical audits to accompany and control routinely the operations and activities developed in the management area.

The question of compliance and enforcement of these requirements is addressed on the text above.

Standard: The standard requires that the forest management area must be protected against illegal exploitation, but does not provide any actual guidance to doing so. In addition, it states that there shall not be evidence that the person responsible for the forest management unit is involved in illegal logging activities; and requires that there be little to no evidence of inappropriate harvest.

The legislation is more specific than the standard requirements regarding illegal logging.

1.8 Wildlife Habitat Management

Legislation: The legislation protects habitat indirectly by requiring that certain areas be left preserved under APP, legally protected reserves, and primitive forests of the Amazon Basin. The Constitution, though, makes a direct reference to the need to preserve and restore the essential ecological processes, and provides for the ecological treatment of species and ecosystems. In addition, the Fauna Protection law establishes that wild animals of every species and in every stage of development that live in nature, as well as their nests, shelter and natural *criadouro* are property of the State, and it is forbidden their utilization, persecution, destruction, hunt and capture.

Standard: The standard also makes reference to the legally required protected areas, and goes beyond to require two things: (1) as part of pre-harvesting activities, sites and areas of reproduction of rare animals or animals under threat of extinction be identified and steps taken to protect them; (2) that the layout of the management areas avoid the fragmentation of the ecosystems, in order to provide for the movement of fauna and (3) that plans exist for the identification and protection of rare, threatened and endangered species, and for sites and areas of reproduction of these species.

The standard is more specific than the legislation in its requirements of pre-harvesting activities that must be carried out to protect wildlife.

1.9 Species Management (endangered etc)

Legislation: The regulation overall has stringent rules on species management. Rules for protecting areas, such as APP and legal reserves, indirectly address the safeguarding of species. Also, the Constitution makes reference to the need for protecting fauna and flora, and the Fauna Protection law (following Constitutional principles on environment) declares that every species is property of the state

and nation and their exploitation, persecution, destruction, hunt and capture are forbidden. The latest law provides licensure of certain activities which may affect species. CONAMA also has several rules on species management.

Standard: The standard has specific provisions on endangered species. For example, exotic species such as genera “Eucalyptus” and “Pine” are not to be used to enrich the forest.

The standard exceeds the legislation reviewed for this study, as it identifies specific exotic species not to be planted in natural forests.

1.10 Water Quality Management

Legislation: The Water Act is a relatively new legislation, and it contains several provisions to protect the national waterbodies. It mainly states that (1) water is an asset of public domain; (2) it has an economic value; (3) it should be managed in a decentralized manner with the participation of public power, users and communities; (4) a plan must be developed for each watershed; and (5) the concession/grant regime that authorizes the use of the water must assure the quantity and quality of the water.

Standard: The Standard does not have specific provisions on water quality. Its norms refer to avoid, control and mitigate impact in the management unit, which can be applied indirectly to protect water quality.

1.11 Old-growth Management, High Conservation Value Forests (HCVF), Special sites

Legislation: There are no provisions in the law to protect HCVF as defined under FSC. However, the Federal Constitution on its article 15 states that the exploitation of primitive forests of the Amazon Basin is forbidden, except if directly authorized through an act of the public power.

Standard: The standard aims at protecting HCVFs by calling for a permanently untouched forest area for comparison purposes of 5% of total managed area, to assess and monitor management impacts on biodiversity If in the management unit Areas within the management unit with high value attributes for conservation such as rare and endemic species habitat must be verified.

1.12 Restrictions on the Use of Gene-Modified Organisms (GMOs)

Legislation: Brazil has several laws regulating the management of GMOs, as they are generally forbidden in the country. The Constitution establishes that it is incumbent upon the government to–(1) preserve the diversity and integrity of the genetic patrimony of the country; (2) to control entities engaged in research and manipulation of genetic material; and (3) control the production, sale and use of techniques, methods or substances which represent a risk to life, the quality of life, and the environment.

There are specific laws to regulate the cases in which GMOs can be used in Brazil. These laws establish that the installation and operation of labs and greenhouses for the research purposes are subject to previous registration with the appropriate agencies, when there is risk of causing environmental degradation. Therefore, there is a need for specific licensing when an entity (not a private individual) aims to do research on or otherwise use GMOs. A license is also required for the commercialization and common use of GMOs, in which cases an EIA must be performed.

This law establishes security safeguards and compliance mechanisms for the construction, cultivation, production, manipulation, transportation, transfer, importation, exportation, storage, research, commercialization, consumption, spreading, and the disposal of GMOs and their derivatives. Taken

into account are scientific advances in biosafety and biotechnology fields; the protection of life; human, animal and vegetal health; and compliance with the precautionary principle.

Standard: The Standard prohibits the use of GMOs.

all of the bio-safety regulations related to GMOs were approved in the country after the approval of the standard in 2002. Therefore, it is likely that these new rules will be somehow integrated into the standard during its revision.

1.13 Management of Chemical Use in Forestry

Legislation: There is no specific legislation on chemical use in forestry, but it is likely that the issue is dealt with under more administration-specific rules. The Environmental Ministry, though, has a National Plan to prevent, prepare and quickly respond to environmental emergencies caused by dangerous chemical products. The plan integrates the government, private sector and representatives from civil society to improve the prevention, preparation and quick response process to potential environmental emergencies in the country. It covers the activities that could potentially cause accidents with dangerous chemical products.

Standard: The Standard specifies that chemical products be utilized only in clearly justified situations. The most restrictive precautions, with regard to their manipulation, storage and use are to be observed. FSC Guidelines on compliance with pesticides use are to be respected, Chemicals banned by the FSC are not to be used.

In addition, to the standard requires that chemicals products be used by operators properly trained and equipped; that a plan exists for the management of wastes; and that there are appropriate procedures and infrastructure established for the handling, treatment, disposal or incineration of wastes, of residues, and containers.

The Standard sets requirements that are more explicit than the legislation.

1.14 Climate Change, Carbon Management

Legislation: There are no specific provisions under the forest legislation requiring private and public sectors to reduce carbon emissions. However, a fund for the Amazon forest conservation (Amazon Fund) was launched in August 2008 by the Brazilian Government with an initial target of USD 1 billion, to reach USD 21 billion by the year 2021. The initiative is important for Brazil for image reasons and for the recognition of the link between climate change, biodiversity, and the rain forests. It also signals the Government's will to control the use of funding flows rather than relying on international PES mechanisms (which have been interpreted as a sovereignty issue). The fund will support, inter alia, sustainable forest management and production of non-wood timber products by indigenous and other forest communities.

The Brazilian Plan to Eliminate Pollution and Consumption of Substances that Destroy the Ozone Layer (PBCO) was developed in 1994. This plan targets the industrial sector's large and mid size companies, where the consumption of Substances that destroy the ozone layer (SDOs) have been greatest. The plan supported CONAMA and IBAMA regulations which aim at helping the country comply with the commitments made in the Montreal Protocol. A Plan to Eliminate Chlorofluorocarbons (CFCs) was approved in 2002.

The Concession law of public forests have two provisions on the commercialization of carbon credits.

Standard: Climate change and carbon management are not addressed in the FSC Standard.

1.15 Public Participation and Community Involvement, Indigenous People

Legislation: Overall, there are various requirements for public participation and forest management in the laws, as well as a specific CONAMA resolution on the procedures for promoting public participation.

Standard: The standard rules are very specific on this area.

The standard outlines the importance of public participation more than the legal requirements do.

1.16 Training and Outreach

Legislation: Legislation requires that all decisions and documents issued by authorities be made public. This applies also to the forest use declarations submitted prior to harvesting operations, and the gathering of general data on forest resources.

There are also specific laws on the promotion of environmental education, utilizing both the formal and informal systems.

Standard: The FSC Standard emphasizes the need to promote capacity building and to encourage community, workers and other related stakeholders' participation. There are several provisions on the standard, indicating that the topic is considered of high importance to achieve certification.

The approach on training and outreach in the legislation and standard is different. Legislation focuses on making documents public and on the need to promote formal and informal environmental education. The standard focuses on ensuring that all stakeholders are aware of the issues.

Harvest Level

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				(X)	X	X	X	X	X	X	X	X
	ND				ND				-	ND	D	D	ND	D	ND	ND	ND
	Pro				Pro				Pro	Per	Pro	Pro	Per	Pro	Per	Pro	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 n3	FSC
	n	n	n	n	n	n	n	n	+	+	n	n	n	+	n	n	n
	D	D	ND	ND	ND	D	D	D	ND	ND	ND	ND	-	ND	-	ND	-
	Pro	Per	Per	-	Per	Pro	Per	Pro	Per	Per	Per	Per	Per	Per	Per	-	-

Reforestation

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				XX				(X)	X	X	XX	X	X	X	X	X
	ND				ND				D	ND	ND	ND	ND	-	ND	ND	ND
	Pro				-				Pro	Per	Per	Per	Pro	-	-	Pro	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	n	n	n	n	n	n	n	+	n	n	+	n	+	n	n	n
	D	D	ND	D	ND	D	D	-	ND	ND	ND	ND	D	ND	ND	ND	ND
	Pro	Pro	Per	Pro	Per	Pro	Pro	-	Per	Per	-	Per	Pro	-	Per	Pro	-

Clearcutting

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	XX				X				n	X	n	n	X	X	n	X	X
	-				ND				-	-	ND	-	ND	ND	ND	-	ND
	Per				-				-	-	Per	-	Pro	Pro	Per	-	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	n	n	n	++	n	n	n	+	n	+	n	n	n	+	n	n
	-	-	ND	D	ND	-	-	-	ND	ND	ND	-	D	-	ND	ND	ND
	-	-	Per	Pro	Per	-	-	-	Per	Per	Per	-	Pro	-	Per	Per	Pro

Forest conversion

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				n	n	X	X	X	X	X	X	(X)
	D				-				-	ND	ND	ND	ND	ND	ND	ND	ND
	Pro				Per				-	Per	Per	Per	Pro	-	Per	Per	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	+	+	n	+	n	+	+	+	n	n	n	n	n	n	+	n	+
	-	D	-	ND	-	-	D	ND	-	-	D	-	ND	ND	-	ND	ND
	Pro	Pro	-	-	-	Pro	Per	Per	-	-	Pro	-	Pro	-	Per	Per	Per

Plantations

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	na				na				n	na	na	na	n	n	n	X	(X)
	D				ND				-	D	-	-	D	ND	-	ND	ND
	Pro				-				-	Pro	-	-	Pro	Per	-	Per	Per
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	na	na	na	+	na	na	na	+	n	n	+	na	+	n	+	n	n
	-	-	-	D	-	-	-	ND	-	-	-	-	D	-	ND	ND	-
	-	-	-	Pro	-	-	-	Pro	-	-	-	-	Pro	-	Per	Per	-

Forest risk and productivity

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	XX				X				X	X	X	X	X	X	X	X	x
	D				-				D	D	ND	ND	ND	-		D	-
	Pro				-				Pro	Pro	Per	Per	Pro	Pro		Pro	-
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	n	n	n	n	n	n	n	n	n	n	++	n	n	n	n	++
	-	-	ND	D	ND	-	-	D	ND	ND	-	ND	ND	D	ND	ND	ND
	-	-	Per	Pro	Per	-	-	Pro	Per	Per	-	Per	Pre	Pro	Per	-	Pro

Illegal logging

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				X	X	X	X	X	X	X	X	X
	ND				D				ND	ND	-	ND	-	ND		ND	ND
	-				Pro				Per	Per	-	Pro	-	Pro		Per	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	+	+	++	n	++	+	+	+	+	+	+	+	+	n	+	+	n
	-	-	ND	ND	ND	-	-	-	ND	ND	ND	ND	ND	-	ND	ND	ND
	-	-	Pro	Pro	Pro	-	-	Pro	Pro	Pro	Per	Per	-	-	Per	Per	Per

Wildlife habitant management

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				XX				X	X	X	X	X	X	(X)	X	X
	-				ND				D	ND	D	ND	ND	D		ND	ND
	Pro				Per				Pro	Per	Per	Per	Per	Pro		Per	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	+	+	+	n	n	n	+	+	+	+	n	n	n	+	n	n
	ND	D	ND	ND	ND	ND	D	-	ND	ND	D	-	ND	ND	ND	-	ND
	Pro	Per	-	Pro	-	Pro	Per	Pro	-	-	Per	Per	Pre	Per	Per	-	-

Species mgmt

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				XX				X	X	X	X	(X)	X	X	X	X
	ND				ND				-	ND	ND	ND	ND	ND		D	ND
	Pro				Per				-	-	Per	Per	Per	-		Pro	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	+	+	+	+	+	+	+	+	++	+	n	+	+	+	+	n	+
	ND	D	ND	ND	ND	ND	D	ND	ND	ND	D	ND	ND	ND	ND	ND	ND
	Pro	Per	-	Pro	-	Pro	Per	Pro	-	-	Pro	Per	Per	-	Per	Pro	Per

Water quality

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	XX				X				X	X	X	X	X	X	X	X	X
	ND				ND				D	ND	D	D	-	D		ND	Nd
	Per				Pro				Pro	-	Per	Per	Pro	Pro		Pro	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	n	n	n	n	n	n	n	+	n	n	+	n	n	+	n	n
	D	D	ND	ND	ND	D	D	ND	ND	ND	ND	ND	ND	-	ND	ND	ND
	Pro	Per	Per	Pro	Per	Pro	Per	-	Per	Per	Per	Per	Per	Pro	-	-	-

Old growth

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				n	(X)	X	X	(X)	X	X	X	X
	-				ND				D	-	D	D	-	ND		ND	ND
	Pro				Pro				Pro	-	Per	Per	Pro	Pro		Pro	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	n	n	n	n	n	n	n	+	n	++	+	n	+	+	+	n
	D	D	ND	ND	ND	D	D	-	ND	ND	D	ND	ND	ND	ND	ND	ND
	Pro	Per	Per	-	Per	Pro	Per	Pro	Per	Per	Per	Per	Pro	Pro	Per	Per	-

GMO's

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	(X)				n				n	n	X	X	n	n	X	X	X
	-				-				-	-	ND	ND	D	-		ND	ND
	-				-				-	-	-	Pro	-	-		Pro	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	+	n	+	n	n	+	++	+	+	n	n	+	+	n	n	+
	-	-	ND	-	ND	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	-	-	Pro	-	Pro	-	-	Per	Pro	Pro	Per	Per	Per	Per	Per	Pro	Per

Chemical use

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				X	X	X	X	(X)	n	X	X	n
	ND				ND				-	ND	ND	ND	-	D		ND	D
	Per				Pro				-	Per	-	Per	-	Pro		Per	-
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	+	+	+	+	n	+	+	n	+	n	+	+	+	n	+	+
	-	-	ND	D	ND	-	-	-	ND	ND	D	ND	ND	ND	ND	ND	ND
	-	-	Per	Per	Per	-	-	-	Per	Per	Pro	Per	Per	Per	Per	Pro	Per

Climate change /carbon

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	n				n				(X)	X	n	n	n	n	n	X	(X)
	-				-				ND	ND	D	D	-	-		ND	D
	-				-				Pro	Pro	Pro	Pro	-	-		Pro	-
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	n	+	n	n	n	n	+	n	n	n	n	n	n	n	n	n	n
	ND	D	-	D	-	ND	D	-	-	-	-	-	D	-	-	-	-
	Pro	Per	-	Pro	-	Pro	Per	-	-	-	-	-	Per	-	-	Pro	-

Public / FN involvement

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	XX				XX[1]				n	(X)	X	X	n	n	X	X	X
	ND				ND				D	-	ND	ND	D	-		ND	ND
	-				Pro				Pro	-	-	-	-	-		Pro	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	+	+	n	n	n	+	+	n	+	+	+	n	+	n	+	+	+
	-	-	ND	ND	ND	-	-	D	ND	ND	ND	-	D	ND	ND	ND	ND
	Pro	Pro	-	Pro	-	Pro	Pro	Pro	-	-	Per	-	Per	Pro	Per	-	Per

Training / outreach

	CAN B.C.				CAN Ontario				US Alabama	US Oregon	SWE	FIN	RUS	GER Bavaria	POL	AUS NSW	BRA
Leg.	X				X				X	X	X	X	n	X	n	X	X
	D				-				-	D	ND	ND	D	ND		ND	ND
	Pro				Pro				-	Pro	Pro	Pro	-	-		Per	Pro
Std.	CSA2 n2	CSA2 n8	SFI	FSC BC	SFI	CSA n2	CSA n8	FSC Bor	SFI	SFI	FSC	FFCS	SW[3] FSC	PEFC	FSC	AS47n8 (2nn3)	FSC
	+	+	+	n	+	n	n	n	+	+	+	n	+	+	+	n	+
	-	D	ND	D	ND	-	D	-	ND	ND	ND	ND	D	D	ND	ND	ND
	Pro	Pro	-	Pro	-	Pro	Pro	Pro	-	-	Per	Per	Per	Pro	Per	Per	Per