Appendix —Survey of Forest Management Certification Standards in the Context of Oregon Wood Products

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Executive Summary

The goal of this analysis is to provide policy-makers with information to compare the management practice requirements for uncertified wood in Oregon and wood that comes from certified forests in Oregon or competing wood supply regions. To inform our selection of forest practice requirements for comparison, we identify three criteria (private resource productivity, public resource protection, and legality) and 15 associated attributes of forest sustainability. The criteria and attributes we adopt in this study trace to the Montreal Process Criteria and Indicators of temperate forest sustainability, of which the U.S. is a member country. In this Appendix, we report how the Oregon Forest Practices Act (OFPA) and standards for certification under the Sustainable Forestry Initiative (SFI) and Forest Stewardship Council (FSC) certification programs address our attributes for sustainable forestry.

The SFI and FSC certification programs each address most of the attributes of forest sustainability considered here. The OFPA itself addresses about half of the attributes. If one also considers applicable U.S. federal and state laws, the OFPA—coupled with applicable laws—addresses the majority of the forest sustainability attributes considered in this study. Although the OFPA and the two certification programs studied address many of the attributes considered, they do so with varying specificity. For the attributes covered by the act, the OFPA has a high degree of specificity. The SFI certification has high specificity for some attributes, such as reforestation and replanting; SFI relies on state-adopted best management practices (BMPS) for some attributes, especially those related to water quality such as road practices and stream protection. Standards for FSC certification are developed independently for nations/regions of the world and they vary in the specificity of required management actions to address forest practices. The FSC standard applicable to the Pacific Northwest has, in general, a high degree of specificity; the FSC standards for regions outside Oregon often had lower degrees of specificity around forest practice requirements.

There is often consistency in the forest practices required under the OFPA, SFI, and FSC. For instance, each of the programs considered allows for the use of chemicals as part of integrated pest management and each requires demonstration of protection of identified threatened and endangered species. However, there are also some meaningful differences in the requirements of OFPA, SFI, and FSC, including allowable size for clearcuts, the size of riparian protection zones, and the width of no-harvest zones along riparian areas. Finally, the FSC certification program has specific requirements that are not addressed by the OFPA or SFI. For instance, protection of certain rare species and prohibition on the use of genetically modified organisms are not addressed in the OFPA or the SFI requirements. In some cases, items not explicitly covered by the OFPA or SFI (e.g., the use of genetically modified organisms) are addressed in existing U.S. federal and state laws.

Product Certification of Wood and Wood-based Materials

Eco-labeling, or green labeling of products, has become commonplace in the market. Coffee, clothing, and other consumable and durable goods in the U.S. can be labeled with signals that the good is environmentally-friendly or responsibly-produced. Those signals can be sent to consumers through government-regulated labels, such as "organic," or through private "green labeling" with the label of certification organizations, such as "Equal Exchange" or "Fair Trade." In this context, consumers are left to make judgments about the relative merits of labeled (or "certified") products versus those which are not labeled.

Like other consumer products, labeling of wood and wood products is commonplace. In creating a standard practice for categorizing wood and wood-based products, ASTM International— formerly America Society for Testing and Materials—has identified a framework for categorizing wood fiber as coming from legal, responsible, or certified sources (ASTM International 2010) (Table 1). Fiber that achieves "legally-sourced" labeling can be traced to locations with basic tenure and legal frameworks for property rights to wood, along with governance standards that are regulatory or proprietary-based in nature. "Legally-sourced" wood has no specific requirements for resource protection during forest harvesting actions.

Fiber from "responsible" and "certified" sources meets or exceeds the standards for "legally-sourced" fiber, and includes adherence to specific environmental benchmarks for harvesting activities (including designated best management practices). In some cases, fiber from different responsible and certified sources can have many commonalities and few differences.

Under the ASTM International framework, a primary distinction between fiber from a "responsible source" and a "certified source" is whether forest harvesting protects water quality by complying with local best management practices (potentially including forest regulations)— "responsibly-sourced"—or through forest practices that are consistent with forest management standards identified by a certifying body—certified sourced. Under this framework, responsibly-sourced fiber can be produced with practices that protect environmental quality but not be classified as "certified" because those adhered-to forest practices differ from those specified in a particular certification standard. The failure to achieve "certified" status does not necessarily mean the "responsibly-sourced" fiber has lower environmental production characteristics than "certified" fiber. Depending on the forest practices required in the certification standard and the context in which the responsibly-sourced fiber is produced, responsibly-sourced fiber can be produced with practices that meet, are consistent with, or exceed the environmental practices of fiber certified under the standard.

Because of the presence of a clear regulatory framework and the Oregon Forest Practices Act (OFPA), uncertified fiber coming from forests of Oregon meets the requirements for classification as "responsibly sourced" as described by ASTM International (2010). Any distinctions between "responsibly-sourced" Oregon wood and "certified" wood from Oregon, or

elsewhere, traces to the comparability of forest practices required under Oregon forest regulations and the practices set out in any certification standard under which wood fiber achieves "certified" status. This Appendix focuses on comparing forest practice requirements for wood that might be uncertified and produced in Oregon under the OFPA and certified wood produced under several forest certification standards in Oregon and elsewhere.

Appendix Table 1—ASTM D7612-10 framework for categorizing fiber procurement system certifications and management standards

Requirements	Legal sources	Responsible sources	Certified sources
Fiber comes from…	Areas with controlled wood standards or legal frameworks	Areas with controlled wood standards or legal frameworks	Areas with controlled wood standards or legal frameworks
Governance is…	Regulatory, **or** proprietary	Regulatory, **or** proprietary, **or** consensus-based	consensus-based
Forest harvesting complies with…	None specified	Locally-defined best management practices to protect water quality, **or** a forest management plan that complies with a recognized certification standard	A forest management plan that complies with a recognized certification standard
Fiber can be traced…	To a specific jurisdiction	To a specific jurisdiction, **or** through a certified procurement system, **or** through a chain of custody system	Through a chain of custody system

Adapted from Table 1 of ASTM D7612-10, Standard practice for categorizing wood and wood-based products according to their fiber sources

Common Green Building Standards and their Recognized Forest Certification Systems

Labels of forest certification systems are visible to retail consumers of wood and wood products for use in their purchase decision making. Certifications are also integral components of green building certification systems which are widely recognized in construction and renovation of buildings. Some green building standards recognize just a single forest certification program; others recognize multiple certification programs (Table 2). For example, the US Green Building Council's Leadership in Energy and Environmental Design (LEED) standards recognize wood and wood products (e.g., tissue and office paper) certified to the FSC standard while the ICC 700 National Green Building Standard, developed by the National Association of Home Builders and International Code Council (National Green Building Standard) recognizes wood from forests certified under several systems. Of the green building programs considered, the SFI and FSC programs are commonly identified as recognized certified wood sources. As such, it is

appropriate to consider these forest certification systems as being representative of all those covered in the green building certification systems. In addition to considering how forest management actions are set forth in those two systems, we also will consider the forest management requirements of the OFPA.

Appendix Table 2—Recognition of North American forest certification systems in select green building programs

Green building certification system	Oregon Forest Practices Act	American Tree Farm System	SFI	FSC
Leadership in Energy & Environmental Design (LEED) Green Building Rating System				X
ASHRAE 189.1 Standard for the Design of High-Performance Green Buildings		X	X	X
ICC 700 National Green Building Standard		X	X	X
ANSI/GBI 01-2010 Green Building Assessment Protocol for Commercial Buildings		X	X	X
2012 International Green Construction Code		X	X	X

Sustainable Forestry Initiative and Forest Stewardship Council Certification Systems

Program development and geographic scope

The SFI certification program is implemented in North America. The SFI program was developed in 1994 and implemented in 1995 (SFI 2013). The initial program was developed from work done on forest management standards by the American Forest and Paper Association with review by an external advisory committee and is today an independent organization. Today about 240 million acres of forest in the U.S. and Canada are certified to SFI standards (SFI 2013). Of the two certification programs considered here, the SFI program is more commonly adopted within the U.S.

The FSC certification program formed in the wake of what is commonly referred to as the Rio Summit (or Earth Summit) of 1992. The FSC program was developed from a loose coalition of environmental and conservation organizations using the Rio Summit discussions as a starting

point. The FSC program was developed in the early 1990s and implemented in 1995. Unlike the SFI program, which is confined to North America, the FSC program is implemented worldwide. In North America, FSC certification covers about 175 million acres (FSC US 2013); worldwide, FSC certification covers about 470 million acres.

Principles of SFI and FSC

Each forest management certification program has a clearly defined set of principles that guide what forest certification standards are established under the program (SFI 2010; FSC-US 2010) (Box 1). The principles of each program define the spirit of forest certification for the program and can guide specification of the intent and interpretation of the program standards. The principles, different for each certification program, represent what is believed to be sustainable forestry under the respective certification programs.

Appendix Box 1--Principles of the Sustainable Forestry Initiative and the Forest Stewardship Council

Sustainable Forestry Initiative	Forest Stewardship Council
Sustainable forestry	Compliance with laws and FSC principles
Forest productivity and health	Tenure and use rights and responsibilities
Protection of water resources	Indigenous peoples' rights
Protection of biological diversity	Community relationships and workers' rights
Aesthetics and recreation	Benefits from the forest
Protection of special places	Environmental impact
Responsible fiber sourcing practices in North America	Management plan
	Monitoring and assessment
Avoidance of controversial sources, including illegal logging in offshore fiber sourcing areas	Maintenance of high conservation value forests Plantations
Legal compliance	
Research	
Training and education	
Public involvement	
Transparency	
Continual improvement	

Standard setting and governance

Governance of SFI is directed by an 18-member Board of Directors that includes representatives of "…environmental, conservation, professional and academic groups, professional loggers, family forest owners, public officials, labor, and the forest products industry" (SFI 2013). The Board membership is equally divided between environmental and conservation groups, community and social interest groups, and SFI member company representatives. Each chamber has equal voting power. The standards of SFI are updated every five years by working groups and within the context of the SFI principles and criteria. Draft standards are approved by the Board through a process that includes public review and input from topical committees formed of external participants (SFI 2013). The current SFI standard was published in January 2010.

Governance of FSC includes both a general assembly and a Board of Directors elected from the general assembly. The general assembly is the highest decision-making body for the organization. FSC representatives are from "environmental and social non-governmental organizations, the timber trade, forestry organizations, indigenous people's organizations, community forestry groups, retailers and manufacturers, and forest certification organizations, and individual forest owners and interested parties" (FSC 2013). The FSC general assembly is divided into three chambers representing social, environmental, and economic interests. Each chamber has equal voting power and voting power within any chamber is equally divided between representatives of the northern and southern hemispheres. The Board of Directors is comprised of 9 members elected from the general assembly and equally divided between the three chambers.

Certification under FSC is based on standards developed for specific nations or regions guided by the overall principles and criteria of FSC International. The national/regional standards are developed by working groups, established specifically for the purpose, and reflect the indicators, verifiers, norms, and guidance of the overall principles and criteria established in the FSC international standard (FSC 2009). Revised national/regional standards are reviewed and approved by the FSC Policy and Standards Committee appointed by the FSC Board of Directors. National standards are to be reviewed within 3 years of approval; standards are typically approved for five years. In the absence of standards adopted by the full FSC governance body and applicable to a given nation/region, FSC-approved auditors use their own standards developed for the region as interim standards. In this report, we rely on an interim standard to examine certification requirements for plantation forests in Brazil. The current FSC-US standard was approved in July 2010.

Audits and verification

Audits and verification to the SFI standard are completed by third party entities. Forests certified under SFI are required to undergo surveillance audits annually and a full certification audit every three years. Audit report summaries for SFI certified companies are publicly available and are posted on the SFI website.

FSC certification and audits for forest management are completed by FSC-accredited entities. Approval audits are required every five years; a surveillance audit is completed every year. Audit reports for FSC-certified forests are also publicly available.

Under the OFPA, operators in Oregon, certified and uncertified, are required to file notifications to the Oregon Department of Forestry (ODF) for a variety of forest management actions. An operator who fails to file notification prior to an operation would be in violation of the OFPA. Post-operation, the ODF completes random site visits of operations associated with filed notifications to ensure that OFPA regulations were followed. Operators in violation of the OFPA are subject to civil and criminal penalties.

Criteria and Attributes for Comparison in this Study

Our comparison of uncertified wood produced under the OFPA and certified wood produced under the SFI and FSC forest certification programs is based on three broad criteria that relate to the overarching goal of forest sustainability: private resource productivity, public resource protection, and legality. These three criteria trace generally to the oft-cited components of natural resource sustainability: economic, ecological, and social. Consideration of each component typically is considered a necessary condition for sustainable management of natural resources.

Study criteria and the Montreal Process

The criteria that we adopt in this process compare well to the general criteria of the Montreal Process. The Montreal Process Criteria and Indicators represent an independent and peer-reviewed set of metrics to gauge the sustainability of forests. Here we use the Criteria and Indicators of the Montreal Process as a neutral guide for the scope and metrics that can be used to define sustainability in forests. The 54 qualitative and quantitative Indicators of the Montreal Process are contained within 7 Criteria (Montreal Process 2009) (Box 2).

Appendix Box 2: Montreal Process Criteria (2009)

1. Conservation of biological diversity	5. Maintenance of forest contribution to global carbon cycles
2. Maintenance of productive capacity of forest ecosystems	6. Maintenance and enhancement of long-term multiple socio-economic benefits
3. Maintenance of forest ecosystem health and vitality	7. Legal, institutional, and economic framework for forest conservation and sustainable management
4. Conservation and maintenance of soil and water resources	

The Montreal Process Criteria were established after the 1992 Rio Summit and are considered a benchmark for considering the sustainability of management and use of resources from temperate forests. Twelve countries, including the U.S. and Canada, form the membership of the Montreal Process (Montreal Process 2014). To measure against the Montreal Process Criteria, the USDA Forest Service—the federal agency responsible—regularly publishes the report "Forest Resources of the U.S." The Montreal Process Criteria and Indicators are set by a governing board and regularly reviewed and updated.

We select 15 attributes to serve as metrics to benchmark the programs against our three criteria of sustainability (private resource productivity, public resource protection, and legality) (Table 3). To help identify appropriate attributes, we draw from the Indicators used in the Montreal Process. Each of the attributes we consider here trace to an Indicator used in the Montreal Process (Table 3). To facilitate comparison across standards, we have broken down each attribute into one to three indicators that further characterize the attribute under consideration.

Appendix Table 3—Linkages between study criteria and attributes and Montreal Process Criteria and Indicators

	Montreal Process (2009)	
Certification Comparison Criteria and Attributes	**Criteria**	**Indicator(s)**
Private resource productivity		
Reforestation/replanting	2	2.a
Species choice for native and plantation forests	1	1.3.b
Monitoring of harvest rate	7	7.5.c
Control and response to disease and disturbance	3	3.b
Public resource protection		
Requirements for stream protection	4	4.2a
Road practices and location	4	4.2a, 4.3a
Weed and pest management	3	3.a
Biological conservation	1	1.2b
Consideration of genetically modified organisms	1	1.3a
Consideration of plantation forestry	2	2.c
Carbon storage considerations	5	5.a
Legality		
Land tenure and property protection	7	7.3a
Public participation	7	7.5a, 7.5b
Indigenous peoples' rights	6	6.5a
Labor protection	6	6.3b

Recognition of Study Criteria and Attributes in Certification Systems

At the highest level of comparison, SFI and FSC standards both address the majority of the criteria and attributes considered in this study. The standards of FSC cover each of the criteria and attributes considered in this study. The SFI standard addresses most of the criteria and attributes considered here. Those attributes not covered by SFI are, for the most part, addressed under SFI by requiring participants to comply with state, provincial, and federal legal requirements. The OFPA addresses about half of the attributes explicitly and would cover many others through compliance with state and federal law. For instance, labor and private property rights and tenure protections are required for forest management activities in Oregon under state and federal laws. Federal and state protections for property rights, labor, and tenure are not, for the most part, duplicated under OFPA or SFI.

Appendix Table 4—Representation of study criteria and attributes under the Oregon Forest Practices Act (FPA), two forest certification programs, and select federal laws and regulations

Criteria and Attributes	Applicable US federal laws/regulations	Oregon FPA	SFI	FSC
Private resource productivity				
Reforestation/replanting		Addressed	Addressed	Addressed
Species choice for native and plantation forests		Addressed	Addressed	Addressed
Monitoring of harvest rate		Not Addressed	Addressed	Addressed
Control and response to disease and disturbance		Addressed	Addressed	Addressed
Public resource protection				
Requirements for stream protection	Yes	Addressed	Addressed	Addressed
Road practices and location		Addressed	Addressed	Addressed*
Weed and pest management	Yes	Addressed	Addressed	Addressed
Biological conservation	Yes	Addressed	Addressed	Addressed
Consideration of genetically modified organisms	Yes	Not addressed	Not addressed	Addressed
Consideration of plantation forestry		Not addressed	Not addressed	Addressed
Carbon storage consideration		Not addressed	Addressed	Addressed
Legality				
Land tenure and property protections	Yes	Not addressed	Addressed	Addressed
Public participation		Not addressed	Addressed	Addressed
Indigenous peoples' rights	Yes	Not addressed	Addressed	Addressed
Labor protection	Yes	Not addressed	Addressed	Addressed

* Addressed in some FSC regional standards

Consumer Products and Regional Production

There is global competition in wood products markets. Consumers purchasing wood products may be purchasing wood produced in Oregon, somewhere else in the U.S., or somewhere else in the world. In the context of green building construction, a builder might be selecting wood and wood products that are awarded points under a green building certification system that promotes the use of SFI- or FSC-certified timber. When faced with a certification program that promotes a specific wood certification system, a builder may end up purchasing certified wood products produced in another country (Table 5). For this study, we identify four other regions that can serve as competitive regions to supply the wood products also supplied from Oregon: the U.S. Southeast (Forest Stewardship Council—US 2010), Russia (Forest Stewardship Council—Russia 2012), Canada's boreal forest (Forest Stewardship Council Canada Working Group 2004), and the plantations of Brazil (Scientific Certification Systems 2010). Because the FSC standard varies regionally, all subsequent comparisons in this Appendix include the OFPA, the SFI standard, and the respective FSC standards for the four competing regions plus the FSC Pacific Coast variation.

Appendix Table 5—Example competitive regions for Oregon wood products for study consideration

	Select Competitive Timber Supply Regions				
Wood products	**Oregon**	**Southeast U.S.**	**Russia**	**Canada (Boreal regions)**	**Brazil**
Softwood lumber	X	X	X	X	
Hardwood lumber and veneer	X		X	X	
Composites	X	X		X	X
Plywood	X	X	X	X	
Engineered wood products	X	X		X	
Pulp and paper	X	X		X	X

Criteria and Attribute Coverage

Certification system coverage of attributes

Private resource productivity—The certification standards address most of the attributes related to private resource productivity. Further, there is a moderate amount of specificity around private resource productivity in each of the standards (Table 6). Each of the standards considered include some requirements or recognition around reforestation/replanting and tree species choice

criteria. Furthermore, certification under SFI or FSC requires some demonstration of control of invasive species; the OFPA specifies that when invasives are controlled, integrated pest management is encouraged. Each of the standards considered includes an allowance for the use of exotic species only in special cases or with approval of a local regulatory body.

The OFPA includes a high level of specificity in regards to requirements for reforestation/replanting and the use of exotic species. The SFI addresses reforestation and retention as well as requiring that control of disturbances (e.g., invasive species) is demonstrated. The FSC regional standards include some requirements for each of the private resource productivity indicators considered here. In most cases, the FSC standards have either a high degree of specificity in the standard or have specific conditions under which the management action is permitted. The FSC standards for Canada, Russia, and Brazil have relatively low levels of specificity for clearcut size restrictions. In the FSC Southeast standard, there is less direction regarding reforestation or retention in clearcuts. In the FSC SE standard, clearcuts are not allowed in natural forests.

Appendix Table 6—Overview: Certification standards for private resource productivity

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Reforestation/replanting							
Clearcuts allowed	X	X	X^0	X^0	X^0	X	X^*
Reforestation requirements	X	X	X^*	X^*	X	X	O
Clearcut size limits	X	X	X	X^0	X^*	X^*	O
Species choice (exotics)							
Exotic species allowed	X^0	X^0	X^0	X^0	X^0	X^0	X^0
Monitoring of harvest rate	O	X	X	X	X	X	X
Control and response to disease and disturbance							
Demonstrate measures to control invasive species	O	X	X	X	X	X^*	X^*

X: Yes; high level of specificity or direction.
X^0: Yes; only true in specific cases or with additional qualification or approval.
X^*: Yes; low level of specificity or direction.
O: Not covered.

Public resource protection—For all but three public resource protection attributes, each of the standards considered includes some requirements or direction (Table 7). Genetically modified

organisms (GMO), conversion of forests to plantations, and consideration of carbon storage are not addressed in the OFPA. For the majority of criteria and attributes under consideration, the standards include a high level specificity or direction. Most criteria and attributes we consider here are well covered by each of the standards.

Appendix Table 7—Overview: Certification standards for public resource protection

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Stream protection							
Restricted use area (includes the no harvest area)	X	X*	X	X*	X	X*	O
Road practices							
Minimize stream crossings	X	X*	X	X*	X	X*	X
Allow fish passage	X	X*	X*	X*	X*	X*	O
Weed and pest management							
Chemicals allowed	X^0	X^0	X^0	X^0	X^0	X^0	X^0
Biological conservation							
Threatened & endangered	X	X	X	X	X	X	X
Rare	O	X^0	X	X	X	X	X
Genetically modified organisms prohibited	O	O	X	X	X	X	X
Consideration of Plantation Forestry							
Conversion limited	O	X^0	X	X	X	X	X
Carbon Storage consideration	O	X*	X*	X*	X*	X*	X*

X: Yes; high level of specificity or direction.
X^0: Yes; only true in specific cases or with additional qualification or approval.
X*: Yes; low level of specificity or direction.
O: Not covered.

The OFPA has specific regulatory requirements related to this criterion for the following attributes: stream protection, road practices, biological conservation, and the use of chemical pesticides. The SFI incorporates coverage of most of the attributes for this criterion, but has a relatively low level of specificity on some indicators. The SFI standard requires the timber owner to meet local BMPs, regardless of whether such BMPs may be voluntary locally. Because of that, the specific management practices required under SFI can differ between U.S. regions. Neither the SFI standard nor the OFPA have language relating to the use of GMOs. However in Oregon and the U.S., GMOs are regulated by the U.S. Animal and Plant Health Inspection Service and currently prohibited in nearly all cases. The OFPA does not limit conversion to plantations,

beyond the requirements for use of native species. However, relatively few production forests in Oregon would be classified as plantations as defined under FSC U.S. (see definition in Table 10). Therefore, the lack of coverage of plantation conversion by OFPA has limited consequence for Oregon in the context of FSC certification.

The various FSC national/regional standards specifically restrict conversion to plantations and ban the use of use of GMOs. That is reasonable, as both of those indicators are covered with high specificity in the FSC International principles and criteria direction. There is a moderate level of variation in the specificity of the FSC national/regional standards in regard to the other attributes. The greatest variation in the level of specificity across the FSC standards is in the road practices criteria.

Legality—Most of the FSC standards address most of the legality attributes with a fairly high degree of specificity (Table 8). The SFI standard addresses the role of forest stewardship education and input into forest management. The OFPA does not address the legality attributes we consider. For the both the SFI and the OFPA, in most cases, the attributes considered under legality would be covered under state and federal laws.

Appendix Table 8—Overview: Certification standards for legality

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Land tenure and property protection addressed	O	X	X	X	X	X	X
Public Participation							
Forest stewardship education required	O	X	X*	X*	X	O	O
Forest management input considered	O	X*	X	X	X	X	X
Indigenous peoples' rights							
Management plan ensures protection	O	X	X	X	X	X	X
Labor protection							
Provide wages consistent with local norms	O	X	X	X	X	O	O
Efforts to employ locally	O	O	X	X	X	X	X

X: Yes; high level of specificity or direction.
X^0: Yes; only true in specific cases or with additional qualification or approval.
X*: Yes; low level of specificity or direction.
O: Not covered.

Comparison across Regulations and Certification Systems

Consistency between regulations and systems

Private Resource Productivity—For the private resource productivity criteria, there is moderate to high consistency in the way most of the attributes are addressed in the certification metrics and in the OFPA (Table 9). For example, the use of exotic species requires approval or is permitted only under specific circumstances and the use of clearcuts is allowed under certain circumstances under all standards and the OFPA. Furthermore, both SFI and FSC standards require that efforts to control pest species are demonstrated. The OFPA does not require such demonstration, but does encourage that integrated pest management be used when controlling pests.

Although most criteria and attributes are addressed in consistent metrics by the differing standards, there are substantive differences in the metrics related to allowable clearcut size and reforestation/replanting requirements. Allowable clearcut sizes under FSC Pacific are smaller than that of the OFPA and the SFI standard. Clearcut size limits are not definitively established in Canada or Russia; clearcut size limits are not addressed in the Brazil standard. Under FSC, reforestation requirements are achieved either through meeting retention requirements or reforestation, which is sometimes not specifically addressed. The OFPA and SFI both have clear replanting requirements that are more specific than FSC and must be met in the first several years post-harvest.

Public Resource Protection—Each of the standards include some recognition of the attributes considered for public resource protection (Table 10). There is consistency in the specific standards in addressing weed and pest management and biological conservation (although the OFPA does not require protection of rare species and SFI requires protection of a more limited list). In regard to the road practices attribute, the OFPA and the FSC standards each require that stream crossings be minimized and that demonstrable measures to protect fish passage are in place. The SFI standard relies on state-adopted BMPs to address road practices and does not include explicit requirements for fish passage.

There are differences in how the standards address the stream protection attribute. Each of the standards includes protection for streams; however, the size of the restricted use zone for stream protection differs across the standards. The rules of the OFPA regarding the size of the restricted use zone are generally consistent with the requirements under other standards. The SFI relies on state-established BMPs and has no standard size restrictions. Across the FSC standards considered here, there is variation in the stream protection requirements. For example, the FSC Canada and Russia standards have specific size requirements for restricted use areas and no

harvest zones while the FSC Southeast standard relies on state-established BMPs to meet the standard. For Oregon, the FSC Pacific standard specifies that local BMPs for restricted use areas should be followed in addition to specifying a no-harvest area. The no harvest area of the FSC Pacific standard is larger in size than that of the OFPA. The restricted use zone for stream protection under FSC is not consistent across regions.

Legality—Across the FSC standards considered, there is high consistency in practices that are required to meet the legality attributes we consider here (Table 11). In some cases, the FSC standards in Russia and Brazil do not address the governance attributes we consider. The SFI standard setting process includes input from external, public groups and includes requirements to meet applicable federal, state and local laws. The OFPA, for the most part, does not have requirements, but instead relies on applicable state and federal laws.

Consistency within systems

The SFI system relies on a single standard applied across all certified forests. The standard does not vary based on the forest region under consideration. For example, the SFI requirements for average clearcut size not to exceed 120 acres and reforestation by planting in 2 years or natural regeneration in 5 years apply to all SFI certified forests (tables 9 - 11). Similarly, the requirement to ensure stream protection requires that certified forests, regardless of location, meet state-established BMP requirements. Although the SFI standard for stream protection does not vary by region, the reliance on state BMPs leads to different requirements for road placement and management and waterway protection. Although this approach recognizes the importance of local knowledge and conditions in determining best practices, state-adopted best management practices are highly variable. As a result, forests in different states, and even in differing regions within a state, can be required, under SFI, to follow management requirements that differ dramatically.

The FSC certification system has a standard set of principles for certification of forest sustainability but relies on many regional standards for forest certification. The regional standards are set by regional governing boards. Within FSC regional standards, further variation can enter with differing standards for different forest regions within the area covered by the standard. For example, the US FSC regional standard recognizes 9 forest regions within the broader standard. Further, in some regions, the U.S. FSC regional standard relies on state-level BMPs for road practices and water practices. The requirements of those BMPs are highly variable.

Appendix Table 9—Certification standards for private resource productivity

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Reforestation/replanting							
Clearcuts allowed	Yes	Yes	Yes, when ecological conditions merit clearcuts	Yes, outside natural forests	Yes, when ecological conditions merit clearcuts	Yes	Yes
Reforestation requirements for clearcuts	Reforestation within 2 years by planting and free to grow within 6 years	Reforestation within 2 years by planting or 5 years by natural regeneration	Reforestation through retention requirements	Optional, reforestation through natural seeding	Primarily through retention requirements	Reforestation through retention requirements	Not addressed
Clearcut size limits	120 ac maximum; adjacent land green-up requirements	120 ac average; adjacent land green-up requirements	40 ac average; adjacent land green-up requirements	Optional, 40 to 80 ac maximum; adjacent land green-up requirements	Case-by-case basis; no adjacent land green-up requirements	Phase-out larger cuts; no adjacent land green-up requirements	Not addressed
Species choice (Exotics)							
Planted stands	Approval required	Approval required	Approval required	Approval required	Allowed for afforestation only, except in Quebec Province	Approval required	When performance is greater than native species
Natural stands	Approval required	Approval required	Approval required	Approval required	Not allowed	Not allowed	n/a
Monitoring of harvest rate	No calculation required	Calculate and demonstrate compliance	Calculate and demonstrate compliance	Calculate and demonstrate compliance	Calculate and demonstrate compliance	Calculate and demonstrate compliance	Justify extraction levels with data

Appendix Table 9—Certification standards for private resource productivity (cont.)

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Control and response to disease and disturbance							
Invasive species control	Not addressed	Demonstrate appropriate measures	Demonstrate appropriate measures	Demonstrate appropriate measures	Demonstrate appropriate measures	Demonstrate appropriate measures	Demonstrate appropriate measures

The term reforestation as is defined in the Oregon Forest Practices Act was used for the purposes of this table and is summarized as follows: Reforestation—the re-establishment of forest cover either naturally or by planting or seeding.

Appendix Table 10—Certification standards for public resource protection

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Stream protection							
Restricted use area (includes the *no harvest area*)	20 to 100 feet (varies with stream type and size)	Use state-defined riparian zones; Use water quality BMPs	75 to 200 feet (varies with stream category)	Use state-defined riparian zones; Use water quality BMPs	At least 213 feet from treed edge	See no harvest area below	Not specified
No Harvest area	20 feet	Use state-defined riparian zones; Use water quality BMPs	25 to 50 feet (varies with stream category)	Use state-defined riparian zones; Use water quality BMPs	66 feet (permanent streams)	164 feet to 656 feet (no clearcuts, varies with stream length)	Not specified
Road practices							
Stream crossings	Minimize	Use water quality BMPs	Minimize	Minimize	Minimize	Minimize	Minimize
Fish passage	Follow requirements and regulations for fish passage	Not specified	Demonstrate measures to ensure fish passage	Demonstrate measures to ensure fish passage	Demonstrate measures to ensure fish passage	Demonstrate measures to ensure fish passage	Not specified
Weed and pest management							
Chemicals allowed	Yes; integrated pest management encouraged	Yes; integrated pest management encouraged	Yes; employ integrated pest management	Yes; employ integrated pest management	Yes; employ integrated pest management	Yes; employ integrated pest management	Yes; integrated pest management

Appendix Table 10—Certification standards for public resource protection (cont.)

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Biological conservation							
Threatened & endangered	Demonstrate protection	Demonstrate protection	Demonstrate protection	Demonstrate protection	Demonstrate protection	Demonstrate protection	Demonstrate protection
Rare	None required	Demonstrate protection	Demonstrate protection	Demonstrate protection	Demonstrate protection	Demonstrate protection	Demonstrate protection
Genetically modified organisms	Allowed[a]	Allowed[a]	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Consideration of Plantation Forestry							
Conversion	Not limited	Limited to avoid significant ecological impact	Limited to degraded areas or for restoration[b]	Limited to degraded areas or for restoration[b]	Limited to 5% or less of productive forest area	Limited to 5% of forests within the FMU	Limited to 1% of forests within the FMU
Carbon Storage	Not addressed	Address non-timber issues such as carbon storage	Consider in decision-making	Consider in decision-making	Discussion of national goals in the standard	Discussion of national goals in the standard	Address non-timber issues such as carbon storage

[a] The U.S. Department of Agriculture Animal and Plant Health Inspection Service regulates any potential use of genetically modified organisms within the U.S. and such organisms are, largely, prohibited.

[b] For the U.S., FSC defines plantations as: Forest areas lacking most of the principal characteristics and key elements of native ecosystems as defined by FSC-approved national and regional standards of forest stewardship, which result from the human activities of either planting, sowing, or intensive silvicultural treatments. The vast majority of planting projects in the United States would not be classified as plantations under the current FSC-US Standard.

Appendix Table 11—Certification standards for legality

Attribute	OFPA	SFI	FSC Pacific	FSC Southeast	FSC Canada	FSC Russia	FSC Brazil plantations
Land tenure and property protection	Not addressed	Refers to applicable laws	Demonstrate commitment to the standard and legal use rights for the long-term	Demonstrate commitment to the standard and legal use rights for the long-term	Demonstrate commitment to the standard for the life of the management plan and legal use rights	Demonstrate commitment to the standard for the long-term and legal use rights for at least five years	Demonstrate commitment to the standard and the management plan, and forest use rights for the long-term
Public Participation							
Forest stewardship education	Not addressed	Support and/or provide outreach	Support and/or provide outreach	Support and/or provide outreach	Support and/or provide outreach	Not addressed	Not addressed
Forest management input	Not addressed	Establish procedures to address	Seek and consider input	Seek and consider input	Seek and consider input	Seek and consider input	Seek and consider input
Indigenous peoples' rights	Not addressed	Refers to applicable laws	Management plan ensures protection	Management plan ensures protection	Management plan ensures protection	Management plan ensures protection	Management plan ensures protection
Labor protection							
Prevailing wage	Not addressed	Meet or exceed	Meet or exceed	Meet or exceed	Meet or exceed	Not addressed	Not addressed
Local employment	Not addressed	Not addressed	Evidence of opportunities provided locally	Evidence of opportunities provided locally	Evidence of opportunities provided locally	Evidence of opportunities provided locally	Evidence of opportunities provided locally

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