

Policy, Laws, Organizations, and Other Governance Arrangements Influencing Forests in the US: A Baseline Assessment

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Abstract

We analyzed key aspects of forest governance in the United States as outlined in Criterion 7 of the Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Forests. Specifically, we considered: (1) land tenure, (2) legislation, (3) law enforcement, (4) taxation and incentives, (5) cross-sectoral coordination, (6) partnerships, (7) public participation and conflict resolution, (8) institutions and personnel, (9) research, and (10) monitoring and reporting as they relate to forests and their sustainability. We document the broad range of legal, institutional, and economic approaches that encourage sustainable forest management (SFM) in the United States, at all levels of government and in the private sector. Public laws govern public lands, which comprise about one-third of the nation's forests. They dictate management and public involvement in various detailed approaches. Federal and state laws protect wildlife and endangered species on all public and private lands, and foster various levels of forest practices regulation or best management practices to protect water quality, air quality, and other public goods. Federal and state laws also provide for technical and financial assistance, research, education and planning on private forest lands, but do not prescribe specific actions or standards. Many newer market based mechanisms, including forest certification, wetland banks, payments for environmental services, and conservation easements increasingly are used to implement SFM across the country. And, there is increasing development of cross-sectoral policies and programs that link related policy networks, purposes, and desired outcomes at all levels. Critical partnerships affecting forests are evolving around cross-boundary issues, such as climate change, land use, and water conservation. Nevertheless, challenges remain in addressing issues that cross ecological, social, political, legal, and other boundaries. And, forestry continues to be challenged by competitive land uses, particularly in places where incentives for SFM are low and pressures for development and/or agriculture are high.

Keywords: forest governance, forest policy, United States

Introduction

The United Nations Conference on the Environment and Development in 1992 served as a significant catalyst to the development and application of criteria and indicators (C&I) for characterizing, guiding, monitoring, and assessing progress towards sustainable forest management (SFM) at local to international levels. Since then, close to 150 countries have participated in at least one of nine international and regional processes to develop, implement, and use SFM C&I, including the Montreal Process for temperate and boreal forests, the International Timber and Trade Organization (ITTO) guidelines for tropical forest products producers and global forest products consumers, the Helsinki Protocol for the Pan European Forest Process, the Lepaterique Process for Central America, the Tarapoto Process for the Amazon Basin, and the African Timber Organization Initiative.

Twelve countries voluntarily participate in the Montreal Process: Argentina, Australia, Canada, Chile, China, Japan, the Republic of Korea, Mexico, New Zealand, Russia, Uruguay, and the United States. Together, they account for 45 percent of world trade in wood and wood products, about half the world's

population, and about 60 percent of the world’s forest area (<http://www.mpci.org>). In 1995, member countries agreed on a comprehensive framework of criteria and indicators for assessing and reporting on the sustainability of forests at the national level. The Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (MPC&I) address: (1) biological diversity of forests; (2) productive capacity of forest ecosystems; (3) forest health and vitality; (4) forest soil and water resources; (5) forest contributions to global carbon cycles; (6) socio-economic benefits associated with forests; and (7) the legal, policy, economic, and institutional framework for forest conservation and sustainable management.

Most Montreal Process member countries have used the MPC&I at least twice to report on the status of and trends in their nation’s forests. Over time, the indicators have been revised based on experiences with their implementation, their effectiveness in measuring SFM, and evolving international priorities to measure and monitor forests. In 2009, member countries agreed on revisions to the Criterion 7 indicators, making them more concise, streamlined, and measurable than previous versions. Together, these indicators can be used toward a comprehensive measure of forest governance that can be tracked over time. They provide information that is essential for understanding the enabling (and disabling) conditions for SFM and for the formulation and/or revision of related policies and programs. We present an overview of our application of Criterion 7 in the United States and related key findings on forest governance at the national level. This work is part of the broader national process to measure, monitor, and report on forest sustainability using the MPC&I (<http://www.fs.fed.us/research/sustain/>).

Approach and Methods

The Criterion 7 Indicators of the Montreal Process address: forest-related (1) legislation, (2) cross-sectoral coordination, (3) taxation and incentives, (4) land tenure, (5) law enforcement, (6) institutions and personnel, (7) research and technology, (8) partnerships, (9) public participation and conflict resolution, and (10) monitoring and reporting (Table 1). The Montreal Process Technical Advisory Committee provides guidance for their measurement, which we adopted and adapted as necessary (Montreal Process 2009). We used both qualitative and quantitative methods to address these indicators.

For each indicator, we identified relevant metrics for its measurement at national and sub-national levels, determined related sources of data, collected data at national and sub-national levels, and analysed the data according to the objectives of the indicators (Table 1). Some indicator metrics were associated with regularly collected or existing datasets. However, most indicators required primary and/or secondary data collection and analysis.

For example, the first indicator under Criterion 7 addresses legislation and policies supporting the sustainable management of forests. In the U.S., there is no specific national source for data on forest-related legislation and policies. There are in fact thousands of national, state, and local laws and regulations that affect forests. Through legal, organizational, and literature review, we identified, reviewed, and assessed the major federal laws that directly and indirectly affect sustainable forest management on public and private lands, reviewed and summarized state and local forest legislation, and documented key references and web sites for federal, state, and local laws.

Table 1: Montreal Process Criterion 7 indicators and examples of related metrics

C7 Indicators	Metrics Examples
I7.1 Legislation and policies supporting SFM	<ul style="list-style-type: none"> • Number and description of national, subnational forest legislation and policies • International forest, environmental agreements/processes participation

I7.2 Cross-sectoral policy and program coordination	<ul style="list-style-type: none"> • Number and description of interagency arrangements • Description of horizontal, vertical coordination
I7.3 Taxation and other economic strategies that affect forests	<ul style="list-style-type: none"> • Description and funding of subsidies, incentives, taxes, etc. • Area of forestland benefitting from economic strategies
I7.4 Clarity and security of land and resource tenure and property rights	<ul style="list-style-type: none"> • Number and area of forest by property rights/tenure
I7.5 Enforcement of laws related to forests	<ul style="list-style-type: none"> • Description of forest related law enforcement processes and systems • Number of forest-related prosecutions, convictions, and law enforcement officers per hectare per agency
I7.6 Programs, services, and other resources supporting SFM	<ul style="list-style-type: none"> • Description of public, private institutions involved in SFM • Number of registered foresters • Number of universities with accredited forestry curriculum
I7.7 Development and application of research and technologies for SFM	<ul style="list-style-type: none"> • Number of full time employee equivalents in forest science and research and development
I7.8 Partnerships to support SFM	<ul style="list-style-type: none"> • Number, type, funding, and area covered by public-public, public-private, and international partnerships
I7.9 Public participation & conflict resolution in forest-related decision making	<ul style="list-style-type: none"> • Description and number of public consultation processes, disputes, and public advisory bodies
I7.10 Monitoring, assessment, and reporting on progress towards SFM	<ul style="list-style-type: none"> • Frequency, completeness, and currency of forest assessment by MP Criteria

Results and Discussion

In the United States, property may be owned by any public or private organization, ranging from local private property owners, to corporations, to federal land management agencies, to Native American tribes (I7.4). Of the 766 million acres of forest land in the United States, the public sector holds 321 million ha (42 percent), while private noncorporate owners hold 39 percent (298 M acres) and private corporate owners hold 19 percent (147 M acres) (Hewes et al. 2014) (Figure 1). Property and tenure rights in the U.S. are determined by the government, and may be changed at the behest of government with due process that takes into account community and landowner interests. Historically, forest property rights in the U.S. have governed the ownership of all the resources associated with a forest, both above ground and below ground, in most cases. Notable exceptions to this ‘rule’ include the mineral rights under forest land (e.g., oil, gas, coal), which often have been sold separately from the land rights to the forests, and in fact often hold superior claims. More recently, private landowners increasingly are choosing to lease or sell development and other rights to their forest land through conservation easements and payments for environmental services, among other instruments.

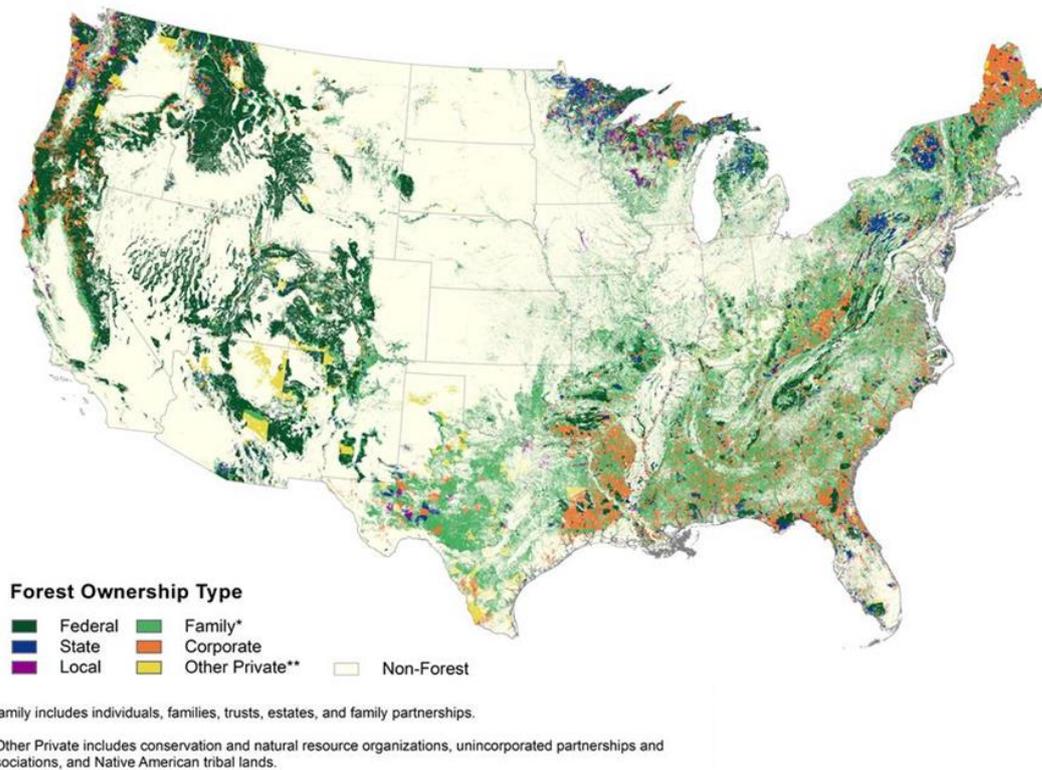


Figure 1. Distribution of Forest Ownership Types in the United States. (Source: Hewes et al. 2014)

A broad range of international, federal, state, and local forest policies and laws exist to protect and enhance the nation’s forests (I7.1). There is no single national forest policy that governs all public and private forest lands in the U.S.; indeed there is no single policy that governs all federal public forest lands. Rather, there is a complex web of laws and policies that govern forests across the landscape, as well as significant differences among states. In fact, national and subnational policies and laws that affect forest sustainability in the U.S. are so abundant that it is a challenge to summarize them all succinctly. Federal lands have specific laws dictating forest management and protection and state and local lands have various laws, policies, and institutions. Most private forest lands are not regulated directly by comprehensive forestry laws, with the exception of the extensive state forest practice acts in the West and a few states in the East, which require reforestation and environmental protection. Instead, a variety of technical assistance, incentives, and educational efforts typically are used to influence private forest management

A broad suite of environmental laws affect federal and other public lands, as well as private forests and businesses (I7.1). These include the National Environmental Policy Act (NEPA) of 1970, which requires environmental impact analyses and statements for proposed federal agency actions with potential for environmental impacts, as well as concomitant state NEPA acts. The Endangered Species Act of 1963 is intended to protect significantly imperiled species of flora and fauna and the ecosystems upon which they depend. The Clean Air Act of 1970 and the Clean Water Act of 1972 are designed to control air and water pollution throughout the country.

In the past decade or so, there has been increasing emphasis on the development of cross-sectoral policies, laws, and programs that link related policy networks, purposes, and desired outcomes, many of which focus on a landscape-scale (I7.2). Progress in the development of cross-sectoral policies and programs that address persisting and emerging issues linking forests and land and water use, energy production, and climate change, among others is notable. Nevertheless, forests continue to be affected by an expanding array of forces that stretch far beyond the forest sector crossing ecological, economic, social, political, administrative, and legal boundaries.

Forest-related laws and other policy directives requiring enforcement actions are extensive in the U.S. (I7.5). They exist at national and subnational levels and address environmental conditions (air, water, hazardous waste), wildlife and fisheries (harvest limits, species preservation, subsistence hunting), timber resources and extraction (harvest limits, road construction, health and safety) and special features protection (sensitive or fragile areas, archeological sites), among many others. Federal agencies with forest land management and protection mandates, such as the Bureau of Land Management, the National Park Service, the Fish and Wildlife Service and the Forest Service have substantial authority and institutional capacity to enforce forest-related laws, regulations, and guidelines. Together, these four agencies oversee more than 672 million acres of land. In 2010, they employed more than 4,000 law enforcement personnel and invested more than \$470 million in their law enforcement programs. However, forest law enforcement officials frequently are responsible for vast and/or isolated areas of land. For example, the total area overseen by the BLM averages more than 820,000 acres per law enforcement officer, and in some locations, such as Alaska, a single officer's area of responsibility can extend up to 25 million acres (BLM 2013).

At the state-level, forest and/or water quality laws that authorize enforcement of actions intended to enhance forest sustainability on public and private lands, and there is a plethora of county, parish, and local regulations that are enforced locally (I7.5). Most states have considerable institutional capacity to enforce forest-related laws, regulations, and guidelines. Forty-nine states have best forest management practices guidelines: 21 percent use a strictly voluntary approach to their enforcement (technical assistance, education, fiscal incentives), about 27 percent use a strictly regulatory approach (inspections, investigations, fines, penalties), and about 35 percent use a voluntary approach, with a regulatory backstop for violations or noncompliance. Additionally, the U.S. leads and participates in international efforts to ensure the legality and protection of forest resources and products, many of which have enforcement requirements.

Forest-related laws and policies also are implemented through persuasive measures, such as fiscal incentives and subsidies (I7.3). The United States has a wide variety of investment and taxation policies that favor long-term forest resource investments, provide consistent market based incentives and signals, and provide some payments for the provision of environmental and nonmarket values. These include incentives and subsidies in the form of federal and state income tax benefits; favorable treatment of timber and wildlife habitat in state and local property taxes; deductions for donating land or its development rights in perpetual conservation easements; and for direct conservation incentive payments through the federal Farm Bill or other agencies, state programs, or from other private sources. All states also have policies that allow for the reduction or elimination of property taxes on forest land, including exemptions, rebates, yield taxes, modified assessment rates, or modified assessment property tax laws, as well as various other types of state tax programs affecting farms and forests. These types of fiscal incentives have made substantial reductions in property taxes for forest landowners in most states (Butler et al. 2010) (Figure 2). However, even with these reductions, taxes and other costs of forestry may still outpace revenue potential, resulting in ongoing pressure on U.S. forests to be converted to other uses. For example, between 1982 and 2007, most of the rural land that was converted to development included over 11 million acres of cropland, 12 million acres of pasture and rangeland, and 16 million acres of forestland (USDA 2009). By the 1990s, conversion of forest land to developed uses had reached a million acres per year in the United States (Alig et al. 2003). An additional 23 million acres of forest land in net (i.e., accounting for reforestation on agricultural and other lands) is projected to be lost to development by 2050 (idem).

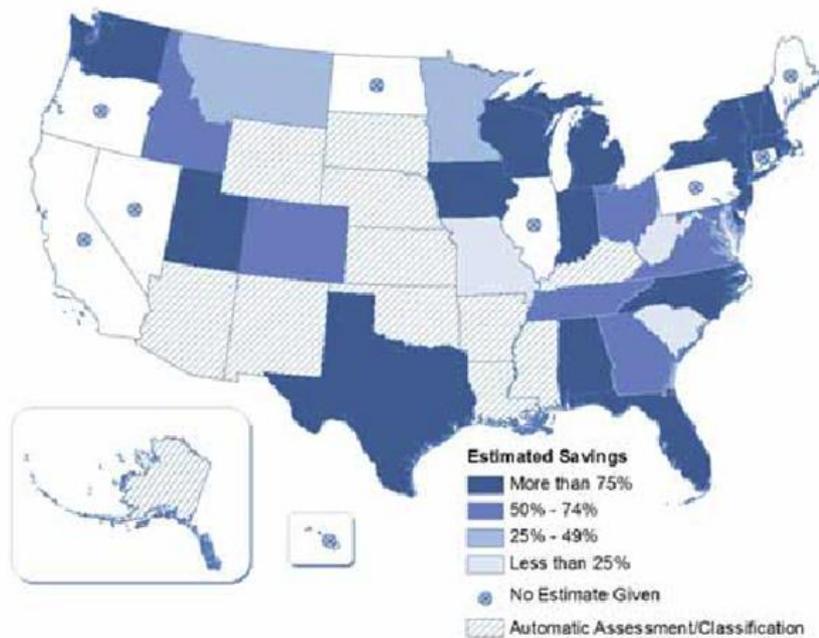


Figure 2. Reduction in annual property taxes for forest owners enrolled in the preferential property tax programs as reported by program administrators (Source: Butler et al., 2008)

Forest-related decision-making in the United States, particularly on public lands, increasingly incorporates collaborative processes involving place-based networks of stakeholders using participatory approaches to identify policies and programs that meet shared goals (I7.9). Administrative, environmental, and forest-specific legislation requiring public participation activities around forests and other natural resources has developed over the past 65 years or so. The Administrative Procedures Act (APA) of 1946 was the first of its kind, requiring federal agencies to keep the public informed of their organization, procedures, and rules, as well as provide for public participation in the rulemaking process. Since their establishment, the APA and state-level equivalents have substantially influenced public policy, requiring increased openness and transparency to the regulatory aspects of the American governmental process (Nylander 2006).

Despite increasing support for and development of stakeholder involvement in public decision making, in general, and specifically as it pertains to public land management, some places and issues generate conflicting interests and policy and program impasses that routinely result in appeals and litigation. When conflicts emerge over federal land management decisions, for example, stakeholders have been given expanding access to the judicial system to address their concerns (I7.9). Similarly, at the state and local level, land use plans and zoning rules affecting forests can be contested in the public arena and in the judicial system. Ultimately, litigation has had a prominent role in public land decision-making over the past several decades, particularly for forests. For example, from 2001 to 2010, about one of every three environmental impact statements (EISs) prepared by the Bureau of Land Management and the US Forest Service were challenged in court and about one in ten EISs had an injunction or remand associated with it as a result of a court case (NEPA 2015). Multiple authorities and guidance influence the prevention and resolution of forest-related and other environmental conflicts around federal lands and decision making (I7.9). Requirements and opportunities for public participation in forest-related decision-making and management generally have increased in the last decade or so, particularly on public lands. Yet, while government agencies have increased their use of environmental collaboration and conflict resolution, controversies over public forest land use persist and continue to be addressed through appeals and litigation.

Partnerships are used in the public and private sectors to leverage resources and maximize their effectiveness to meet common objectives related to forests and their conservation (I7.8). Critical partnerships affecting forests in the U.S. increasingly evolve around cross-boundary issues, such as climate change, land use and open space preservation, and water conservation. Natural resource and land management organizations have a long history of developing partnerships with public entities at all levels and with non-profit and private sector organizations. State and local forest and land management organizations also rely on partnerships to accomplish forest-related goals. In particular, State forest agencies receive financial and technical support from federal partners and are responsible for administering key federal program funds to assist private landowners in managing their forested lands and protecting those lands from insects, fire, disease and other issues. Civil society and private sector organizations that directly and indirectly affect forests also pursue partnerships based around forests. For example, water utility companies across the country have begun to develop a range of partnerships to promote the protection of and improvements in forest and watershed conditions.

Government, civil society, and private sector capacity to protect and maintain the nation’s forest goods and services in the form of human, financial, and physical capacity has been fairly stable in the past several decades, though some recent trends are detectable. Land Grant universities, community colleges, and private university accredited forestry programs conduct most college level forestry education and training (I7.6). As of 2014, 45 universities in the U.S. had Bachelor of Science or Master of Science forestry degree programs accredited by the Society of American Foresters (SAF). In addition, there were 15 programs in forest technology and 9 candidate degree programs accredited by the SAF (SAF 2014a,b). There also are a wide variety of natural resource, wildlife, and environmental science programs that provide varying levels of forest resource management skills in university education programs.

Over the last two decades, there have been increasing numbers of students in wildlife and natural resource programs, but fewer students in forest management degrees (Figure 3). As of 2009, there were about 2,800 forestry students in the U.S., 4,400 natural resources and environment students, 2,800 fisheries and wildlife students, 600 wood products students, and 1,000 outdoor recreation students (Sharik and Lileholm 2010). In the workforce, there were 2,244 SAF certified foresters in 2009, including forestry consultants (25%), private industry (24%), state and local government (19%), federal government (9%), college/university (7%), retired (7%), and others (9%) (SAF 2014c).

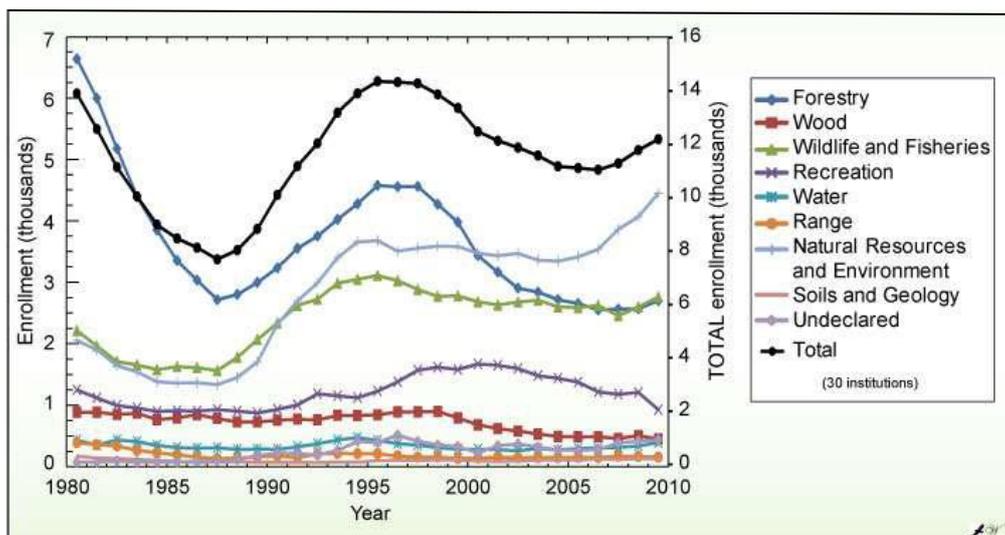


Figure 3. Undergraduate enrollments in natural resources by field of study for National Association of University Forestry Research Programs (NAUFRP) institutions from 1980-2009. (Source: Sharik and Lileholm 2010)

In the governmental sector, the US Forest Service is the by far the biggest forest-based employer, with approximately 29,500 permanent employees and more than 15,000 temporary/seasonal employees in 2014, declining about 20 percent in terms of full time equivalent employees in the last decade or so. State forest agencies employed 23,614 persons in 2010, including 6,183 foresters, 1,913 other professionals, 4,957 technical persons, 1,364 administrative and clerical staff, and 9,237 seasonal persons (NASF 2012). The largest share of seasonal state forestry employees—more than 7,000—work in fire control and fire prevention. Nevertheless, state forestry agency employment decreased by nearly 12 percent between 2008 and 2010 (*idem*).

Forest-related research and development is promulgated and authorized by government programs and laws. Civil society and private industry also promote and participate in research and development to improve scientific understanding of forest ecosystem characteristics and functions, as well as social and economic processes (I7.7). Furthermore, various laws and regulations also govern the collection, analysis, and release of data related to forests and important for public awareness and political decision making (I7.10). For example, the Federal Renewable Resource Planning Act mandates data collection and analysis to monitor the trends in U.S. forest conditions.

The US Forest Service is the largest forest research organization in the country by far, with 58 Laboratories and Research Locations, as well as 73 Experimental Forests and Rangelands (I7.7). Other federal agencies such as NASA, the National Science Foundation, the Department of Energy, and the Department of Interior have been increasing funding for research directly and indirectly related to forests, with several multi-million dollar initiatives related to climate change, bioenergy, genomics, and other disciplines. Timberland investment and management organizations and real estate investment trusts also contribute to forest research and development, though far less than historical private sector timber company investments.

Conclusions

Overall, public laws govern public lands in the U.S., which comprise about one-third of the nation's forests. They dictate management and public involvement in various detailed approaches. Federal and state laws protect wildlife and endangered species on all public and private lands, and foster various levels of forest practices regulation or best management practices to protect water quality, air quality, and other public goods. Federal and state laws also provide for technical and financial assistance, research, education, and planning on private forest lands, but do not prescribe specific actions or standards. Many newer market based mechanisms, including forest certification, wetland banks, payments for environmental services, and conservation easements increasingly are used to implement SFM across the country. And, there is increasing development of cross-sectoral policies and programs that link related policy networks, purposes, and desired outcomes at all levels. Critical partnerships affecting forests are evolving around cross-boundary issues, such as climate change, land use, and water conservation. Nevertheless, challenges remain in addressing issues that cross ecological, social, political, legal, and other boundaries. And, forestry continues to be challenged by competitive land uses, particularly in places where incentives for SFM are low and pressures for development and/or agriculture are high.

Utilizing the recently revised Montreal Process Criterion 7 indicators to assess forest related legislation, policies, processes, and economic instruments can provide a fairly robust and comprehensive assessment of forest governance arrangements at the country-level, given the adequate availability of related data. In the U.S., there is a considerable amount of data available to assess various characteristics of forest governance at multiple levels. However, limits and gaps remain, particularly in terms of the lack of regularly collected data on specific forest governance aspects at national and more importantly sub-national levels.

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