

**Principles of
Sustainable Forest Management:
Examples from Recent U.S.
And International Efforts**

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Principles of Sustainable Forest Management: Examples from Recent U.S. and International Efforts¹

V. Alaric Sample²

Introduction

The central purpose of the Seventh American Forest Congress, scheduled for February 20-23, 1996, is to establish a common vision on future of the nation's forests, agree upon a set of principles to guide us toward that vision, and plan the next steps for implementing this vision and principles.

As we begin to articulate this common vision and overarching set of principles in the preliminary local roundtables and in the Congress itself, it is useful to review the results of several recent national and international activities that attempt to develop basic principles for sustainable development and sustainable forest management. Also included in this background paper are examples of national forest policies developed recently in several other temperate and boreal forest countries such as Denmark, Australia, Canada, and Tasmania.

The purpose of this background paper is to briefly summarize the results of some of these efforts, identify a number of common elements that seem to consistently appear, and to assist participants in the Seventh American Forest Congress process in building upon these efforts to develop a national policy framework for forest conservation in the United States.

Background

During the past decade, there has been a growing recognition in the United States and abroad that an adversarial relationship between environmental interests and economic interests is counterproductive, and that the only real long-term solutions lie in "ecologically sound, economically viable, and socially responsible" approaches that a broad and diverse majority of citizens can agree upon and work together to

¹ This paper was prepared as a background report for participants in the Seventh American Forest Congress, Washington, DC, February 19-22, 1996.

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achieve.³ *Our Common Future*, the report of the World Commission on Environment and Development ("The Brundtland Commission") was one of the first major efforts to bring environmental and business interests together to develop cooperative approaches to what they termed "sustainable development," defined as [meeting the ecological, economic, and social needs of this generation without compromising the ability of future generations to meet their own needs].⁴ Additional information on the mission, policy directions, and principles for international cooperation and institutional reform can be found at Appendix 1.

Within the sustainable development context, more specific concerns over the future of the world's forests—and all the ecological, economic, and social values they represent prompted a parallel effort to develop new approaches to the management and use of these resources. At the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, 145 nations signed an agreement that established a set of principles for the sustainable management of the world's forests, defined as "the complementary goals of maintaining and enhancing the health of our forest ecosystems, while providing environmental, economic, social and cultural opportunities for the benefit of present and future generations."

Since UNCED, most of the signatory countries have developed their own sets of sustainable forest management *principles*, and sets of *criteria* and *indicators* by which to measure the nation's progress toward its goals in sustainable forest management.

A **principle** is a stated value, or goal, that serves as a fundamental guide to action. Criteria support and more clearly define management concepts that flow from the principles. Monitoring and measurement of indicators, and comparison with reference levels, permit the tracking of progress toward sustainability.

A **criterion** is a clearly defined and achievable objective, a distinguishing characteristic that provides a policy framework. With the principles adopted at UNCED and at the individual national level as guides, the framework will include criteria that are central to any decisions made with respect to sustainable forest management.

An **indicator** is a measurable variable. For each criterion, there will be one or more indicators that can be used to report the status or trend of that criterion. Each indicator can be monitored regularly, and the measurements taken can be compared with established baselines and historical data to show trends.⁵

³ Aplet, G.H., Johnson, N., Olson, J.T., and V.A. Sample (eds.). 1993. *Defining Sustainable Forestry*. Washington, DC. Island Press.

⁴ World Commission on Environment and Development. 1987. *Our Common Future*. Cambridge: Oxford University Press.

⁵ Adapted from: Forestry Canada. 1994. *Criteria and Indicators for the Sustainable Management of Forests: The Canadian Process*. Montreal: Forestry Canada.

The focus of the Seventh American Forest Congress is on the development of a set of "constitutional principles" that would serve as the basis for a U.S. national policy framework for the protection and sustainable management of forests. These principles could provide guidance in a comprehensive review and evaluation of the laws and policies that currently guide forest management in the United States. They could also become a primary reference as the United States develops its own set of criteria and indicators for sustainable forestry, in accordance with the agreement signed by the United States and 144 other countries at UNCED.

Criteria and indicators for the sustainable management of temperate and boreal forests are being developed through an ongoing process in which several nations, including the United States, are participating. The "Montreal Process" has produced a set of criteria and indicators, known as the Santiago Declaration, that was agreed to in February 1995 by the governments of Australia, Canada, Chile, China, Japan, Mexico, Korea, New Zealand, the Russian Federation, and the United States (see text of Santiago Declaration in Appendix 2). The "Helsinki Process" used an alternative approach to develop criteria and indicators for European temperate and boreal forest nations. At its meeting in April 1995, the United Nations Food and Agriculture Organization (FAO) brought together representatives from both European and non-European nations to begin ironing out the differences for the consistent application of criteria and indicators in temperate and boreal forests worldwide.⁶

Principles of sustainable forestry: recent examples

As we in the United States begin to develop our own set of principles, and a shared vision for a national policy framework for sustainable forest management, it is useful to review the results of several other recent efforts to articulate these principles. The examples that follow are only a sampling of numerous efforts from public, private, and non-governmental organizations (NGOs), arranged chronologically. These examples are intended to illustrate the range of principles, but also the elements that many of these efforts have in common. These common elements suggest a point of departure for discussions in the local roundtables leading up to the Seventh American Forest Congress, and for the Congress itself.

Grey Towers Protocol

In 1990 a conference on land stewardship was held at Grey Towers National Historic Landmark to commemorate the centennial of the national forests. The conference produced a set of forest stewardship principles known as the "Grey Towers Protocol:"⁷

- Management activities must be within the physical and biological capabilities of the land, based upon comprehensive, up-to-date resource information and a thorough scientific understanding of the ecosystem's functioning and response.

⁶ United Nations Food and Agriculture Organization. 1995. *Expert Meeting on Harmonization of Criteria and Indicators for Sustainable Forest Management*. FAO Background Note 2/95. Rome: UNFAO.

⁷ Sample, V.A. 1991. *Land Stewardship in the Next Era of Conservation*. Milford, PA: Grey Towers Press.

- The intent of management, as well as monitoring and reporting, should be making progress toward desired future resource conditions, not on achieving specific near-term resource output targets.
- Stewardship means passing the land and resources—including intact, functioning forest ecosystems—to the next generation in better condition than they were found.
- Land stewardship must be more than good "scientific management," it must be a moral imperative.

Duluth Manifesto

A follow-on conference a year later in Duluth, Minnesota produced a somewhat more detailed set of principles that became known as the "Duluth Manifesto."⁸

- Humans are a part of nature and the forest environment. All forests have been and will continue to be affected by human actions.
- Forest policies are and must be driven by the broad goals and objectives of an informed society.
- Healthy forests are essential if the United States is to achieve environmental quality *and* economic vitality.
- If forests' contributions to meeting human needs are to be sustained, population growth and rising consumption must be addressed *together*.
- As a consuming country, the U.S. has a responsibility to help developing countries use their resources wisely. The U.S. should export its knowledge, *not* its environmental problems.
- Sustaining and renewing forests require the application of the best available science and technology.
- Landowner rights must be based on responsible stewardship. At the same time, society must exercise its interests with due respect for landowners' rights.
- Sustainable development means securing current benefits from forests without compromising their ability to meet the needs of future generations.
- The public has a stake in the decisions that influence the use and condition of forests. Strong and confident resource professionals recognize the benefits of collaboration and shared leadership.

⁸ Institute of Forest Analysis, Planning, and Policy. 1993. *Principles to guide decisions on forests*. (The Duluth Manifesto). Baltimore, MD.

Public sector: USDA Forest Service

In 1992, the USDA Forest Service announced a shift in policy, adopting "an ecological approach to management" of the National Forests and Grasslands.⁹ In 1994, the agency published a set of principles, a "course to the future," detailing its approach to ecosystem management.

Ecosystem management is the means by which the Forest Service will achieve the goal of sustainability. Simply stated, ecosystem management means the integration of ecological, economic, and social factors in order to maintain and enhance the quality of the environment to best meet current and future needs. The National Forests and Grasslands will be managed as models of ecosystem management, and principles of ecosystem management will be carried forth in our international and domestic assistance programs. Descriptions follow, with examples of actions to be taken. For each action, performance measures to indicate success will be developed, and we, collectively and individually, will be accountable for our progress.¹⁰

1. **Protect Ecosystems.** The Forest Service will work to ensure the health and diversity of ecosystems while meeting people's needs. Special care for fragile or rare ecosystem components will be provided on National Forest System lands and encouraged on other lands. The following examples illustrate possible management actions to protect ecosystems:
 - Understanding the roles of fires, insects and disease, and drought cycles in shaping ecosystems, and bringing that understanding to bear in management.
 - Developing and using measures of sustainability.
 - Establishing and managing wetland and riparian conservation areas.
 - Evaluating the effects of human use and habitation on the sustainability of ecosystems (in urban, suburban, and rural settings) while supporting the quality of life in those ecosystems.
2. **Restore Deteriorated Ecosystems.** The Forest Service will improve deteriorated ecosystems on National Forest System lands. Scientific understanding and technologies needed for effective restoration will be developed. Domestic and international assistance programs will encourage ecosystem restoration. These efforts will improve the likelihood that diversity, long-term sustainability, and future options are maintained. The following examples illustrate possible management actions to restore ecosystems.
 - Promoting the use of prescribed fires in ecosystems that evolved with a fire regime, through technology transfer, conservation education, and incentives.

⁹ Robertson, F. Dale. 1992. Memorandum to Regional Foresters and Directors (unpublished), June 1992

¹⁰ USDA Forest Service. 1994. *The Forest Service Ethics and Course to the Future*. Washington, DC: USDA Forest Service.

- Restoring wetland and riparian conditions to protect water quality through the use of best management practices such as planting of desired vegetation, stream bank stabilization, and management of livestock use.
 - Developing technologies needed to restore ecosystems and monitor effectiveness of restoration.
3. **Provide Multiple Benefits for People Within the Capabilities of Ecosystems.** Within the limitations of maintaining ecosystem health and diversity, forests and rangelands must meet people's needs for uses, values, products, and services. Forest Service programs will focus on providing benefits to people from these lands, emphasizing those that the National Forests and Grasslands have special advantages to provide. On other forests and rangelands, we will offer assistance to owners and managers to help fulfill their objectives in an ecologically sound manner. The following illustrate possible management actions to provide multiple benefits within the capabilities of ecosystems.
- Providing water, recreation, timber, minerals, fish, wildlife, forage, wilderness, and heritage and aesthetic values on the National Forests and Grasslands.
 - Implementing Forest Service cooperative programs using an ecosystem management approach on non-Federal lands, domestically and internationally.
 - Assisting urban and rural communities to maintain, restore, and enhance the quality of ecosystems and to build capacity for meeting their needs in an environmentally sound manner.
 - Promoting conservation of wood by developing and providing technologies to increase efficiency of its use, including recycling.
4. **Ensure Organizational Effectiveness.** The Forest Service will improve organizational effectiveness by creating and maintaining an atmosphere where people are respected, trusted, and valued, and where expertise and professionalism are rewarded. Our work force will be multicultural and multidisciplinary. Forest Service people will be empowered to carry out the agency's mission and be accountable for achieving negotiated objectives. Listening to, learning about, and collaborating with the citizens of the United States—the owners of public land—is a continuous process. The agency will use appropriate scientific information and decision-making processes, and will involve diverse communities of interest in decisions. Partnerships and collaboration with an expanding array of groups will characterize Forest Service operations. The following examples illustrate possible management actions to enhance organizational effectiveness.
- Achieving a work force that reflects the full range of diversity of the American people. This includes cultural and disciplinary diversity, as well as diversity in skills and abilities.
 - Enhancing the monitoring and evaluation of efforts to reach agency goals, including ecosystem health and sustainability.

- Expanding collaboration between researchers, scientists, and practitioners to better integrate science into agency policy considerations, decisions, applications, and practices.
- Establishing accountability as an integral part of defining all goals and evaluating actions, including achieving a diverse work force.

Private sector: American Forest and Paper Association

On October 14, 1994, the American Forest and Paper Association (AF&PA) Board of Directors approved comprehensive Sustainable Forestry Principles and Implementation Guidelines. These AF&PA principles and guidelines are the result of an 18-month effort to identify forest benefits most important to the public and to set a course to better provide or improve them. AF&PA members represent more than 80 percent of the paper production, more than 50 percent of the solid wood production, and approximately 90 percent of the industrial forestland in the United States.

The ambitious program contained in the principles and guidelines, commonly referred to as the AF&PA Sustainable Forestry Initiative (SFI), constitutes AF&PA's members' commitment to sustainable forestry and the measures by which the public can benchmark this commitment. The SFI is intended to perceptibly improve the performance of member companies, set new goals for the entire forest industry and other forest landowners, and enhance public confidence in forest management.

Embodied in the Sustainable Principles and Implementation Guidelines is a process to promote, monitor, and report continuous improvement of all forest land in the United States. The SFI recognizes the strong record of the industry, yet commits to do significantly more, especially on members' own forest land and where industry activity affects other privately owned forests.

The SFI Forest Principles spell out five broad elements of sustainable forestry. They are to:

- Meet the needs of the present without compromising the ability of future generations to use the forest for products as well as for ecological and other uses.
- Promote both environmentally and economically responsible practices on industrial and all other forestlands.
- Improve long-term forest health and productivity by protecting forests against wildfire, pests, and disease.
- Manage forests of biological, geological, or historical significance to protect their special qualities.
- Continuously improve forest management and regularly track progress toward achieving the goal of sustainable forestry.

The SFI's Implementation Guidelines translate these principles into action by providing forest managers with a specific road map for the best way to achieve sustainable forestry. The Guidelines are suitably flexible to accommodate the wide variety of forest types, soil conditions, and other natural

features found across the forests of the U.S. The Guidelines also commit AF&PA to public reporting and involvement, and to the support of broad public policy goals for all forests. Various objectives and performance measures specified throughout the Guidelines oblige AF&PA members to involve independent, third-party experts. Beginning in 1996, compliance with these Guidelines is a condition of membership in AF&PA.

The AF&PA Sustainable Forestry Initiative Implementation Guidelines are summarized as follows:

- Broaden practice of sustainable forestry
 - Define company programs, policies, and plans
 - Support research
- Guarantee prompt reforestation
 - Specific reforestation timetable
 - Report success
- Protect water quality
 - Meet or exceed existing laws
 - Protect all perennial streams or lakes
 - Involve experts
 - Support research
- Enhance wildlife habitat
 - Define company programs, policies and plans
 - Support research
- Minimize impact on visual quality
 - Define company programs, policies, and plans
 - Manage clearcut size
 - Green-up requirement
- Protect special sites
 - Identify and manage appropriately
 - Involve independent experts
- Contribute to biodiversity
 - Support research
 - Adaptive management
- Continue to improve utilization
 - Employ appropriate technology
- Continue prudent use of forest chemicals
 - Meet or exceed all legal requirements

- Broaden the practice of sustainable forestry in the procurement of wood and fiber from loggers and other land owners
 - Information from companies to landowners
 - Logger training and education programs in place by January 1996
 - Annually report progress
 - Communicate commitment throughout company
 - Each member plans inventory and procurement policies
 - Support and promote other landowner education efforts
- Publicly report performance
 - Members annually report to AF&PA
 - AF&PA issues annual report
 - Independent expert review of report
- Public and forestry community participation
 - Support and promote appropriate mechanisms for public outreach
 - Appropriate program funding at state level to address concerns
 - National forum of loggers, landowners, and member companies
- Support the following public policy goals for sustainable forestry on all private and public lands in the U.S.
 - Increase forest growth, quality, and productivity
 - Ecosystem management on federal lands
 - Reduce risk of and suppress wildfires
 - Promote and utilize integrated pest management
 - Encourage forest health and productivity
 - Encourage continuing education
 - Recognize excellence
 - Protect ability of private landowners to manage forestland in a sustainable manner.

Conservation NGO: SmartWood

Private and non-profit organizations offering a consumer-products label certifying certain wood products as having come from sustainably managed forests have devised principles by which the quality of forest management can be assessed. Among them is the following set of guidelines for assessing natural forest management, developed by the SmartWood program. These guidelines, which meet the Forest Stewardship Council's accreditation standards, are used as the "starting point" for field assessments of natural forest management.

- Forest Security
 - Land tenure is clear and legally secure.
 - Land is dedicated by owners to long-term forest management.

• Management Planning

- A multi-year forest management plan is written and available.
- An annual operating or harvesting plan is available and used in the field.
- The management plan includes:
 - i) management objectives;
 - ii) analysis of inventories of target species and factors affecting their population;
 - iii) a plan of proposed silvicultural interventions;
 - iv) maps which describe harvest areas, conservation and/or buffer zones, haul roads, log landings, and primary skid trails;
 - v) a plan for forest protection against fire, pests, encroachment, etc.;
 - vi) description of measures for environmental protection, including soil conservation and watershed protection, conserving biological diversity, and use of toxic materials;
 - vii) a plan for forest product utilization and marketing;
 - viii) description of the consultation process with affected communities and its results;
 - ix) a plan for periodic monitoring and reporting, which shows how management prescriptions will be changed based on new information.
- Maps and work plans are produced at adequate scale and provide operational guidance for management activities and facilitate on-site monitoring.
- Technical specifications for road design and conservation structures have been written.
- Non-timber forest products have been inventoried and their management is incorporated into the planning process.

• Sustained Yield Management

- Rationale behind silvicultural prescriptions is well-documented, i.e. based on site-specific field data or published analyses of local forest ecology or silviculture, and government regulations.
- Annual allowable cut (AAC), by area or volume, has been set based on conservative and well-documented estimates of growth and yield.
- AAC is being followed in the forest.
- Silvicultural prescriptions (pre-, during, and post-harvest) are being adhered to.
- Growth rates, stocking, and regeneration are being monitored by a suitable continuous forest inventory system.
- Actions to ensure quantity and quality of future crop, through either natural or planted regeneration, are being implemented.
- Post-logging assessments take place to assess the impact of harvesting on future crop trees and the forest, preferably within 12 months after harvesting.

• Environmental Impacts

Biological Conservation:

- Field assessments of non-timber forest products and biological resources appropriate to the scale of the operation have been conducted in forest management areas.
- Biological conservation is explicitly considered in annual operating plans.

- Timber species on either local and/or international endangered or threatened species lists (e.g. CITES Appendix 1, national lists) are not being harvested.
- Other threatened, rare, endemic or endangered species, or their habitat, are explicitly being taking into consideration during planning and harvesting activities (e.g. dens, or nesting and roosting trees protected, openness to research on biological issues, etc.).
- Based on the identification of key biological areas (through 5.1 above), roughly 10% of the total area under forest management (not including stream or roadside buffers) is designated as a "conservation zone," i.e. land or forest to be conserved in its natural state without logging.
- Conservation zone is preferably a contiguous block, though it may be a series of smaller blocks linked by corridors as wide as the average height of forest canopy in a mature forest (over 75 years).
- Conservation zones are clearly demarcated on maps and in the field and timber felling controlled so as not to take place in these areas.

Control of Chemicals:

- A constant effort is made to reduce or eliminate the use of chemicals in the forest.
- Chemicals banned in Europe, U.S. and target country are not used.

Road Construction:

- Topographic maps have been prepared well before logging or road construction which specify areas which are suitable for all-weather harvesting or dry-weather only; and indicate locations for extraction (or haul) roads, loading ramps (or log yards), main skid (or snig) trails, drainage structures, streamside and roadside buffer zones, and conservation areas.
- No road fill is placed in stream courses.
- Road surfaces are well drained, culverts large enough to avoid ponding, water bars are installed where roads are abandoned.

Tree Felling:

- No timber harvesting is taking place in highly erodible areas or within pre-designated buffer zones for rivers and streams, with a minimum protection (or buffer) zone equal to twice the width of perennial stream courses (e.g. if stream is 20 meters wide, buffer zone should be 20 meters on each side), and with a minimum buffer of 10 meters on each side.
- No tree felling is taking place on slopes exceeding 35 degrees measured over 100 meters (exception: cable yarding, degree slope dictated by documented local experience and conditions).
- Harvest trees are marked prior to logging
- Future harvest (crop) trees have been marked or explicitly taken into consideration.
- Directional felling techniques are being used (i.e. trees are felled parallel to or in the direction of skidding).

Skidding:

- Front end of logs is lifted off ground during mechanical skidding.
- Skid trail gradients do not exceed 25 degrees.

- Specifications in terms of skid trail width and location have been set and are being followed.

Post Harvest Protection:

- In-migration, settlement, hunting, and timber extraction along logging roads is controlled.

Product Processing:

- Waste from processing plants (e.g. sawmill, factory) is being properly disposed of.
- Use of chemicals is minimized and controlled in processing center.

• **Community Relations**

- Local communities are given first preference in logging and other forest management activities in terms of ownership, management, labor pool, agroforestry, etc.
- Local organizations directly affected by forestry activities are given an opportunity to participate in forest management planning.
- Local communities' traditional rights to own, manage or use forest resources have been formally recognized.
- Fuelwood needs of local communities are being met locally.
- Regulated access given to local communities to forest for timber and non-timber forest products.

For privately owned/managed concessions:

- Community lands excluded from commercial concession area; boundaries redrawn if necessary.
- Traditional and legal rights of communities are documented in written agreements and honored, with maps showing protected areas and areas of limited harvesting.
- Proposed harvesting operations described to affected communities in public meetings in advance, and begun only after agreements documented legally.
- Community-concession relations monitored by a board locally constituted that processes grievances and imposes compensation for harvesting damage to communities.
- Local non-governmental organizations involved in legal training, negotiations, monitoring of community concession agreements.
- Compensation is provided to local communities for damage to crops, game, trees, land, other managed resources, impairment of essential environmental functions (water quality), or loss of income.

• **Employee Relations**

- Wages and other benefits (health, retirement, worker's compensation, housing, food) are fair and consistent with (not lower than) prevailing local standards.
- Worker safety is considered and conditions are fair and consistent with local norms (not a higher than normal accident rate).

- **Economic Viability**

- Based on local experience and markets, stumpage rates or other rents being paid to landholders are at or above the norm (i.e. average), and are perceived by landowners to be a positive incentive for encouraging long term forest management.
- Stumpage paid is sufficient to cover costs of maintaining land as forest.
- Revenue received is sufficient to financially support post-harvest management activities such as road maintenance, silvicultural treatments, and long-term forest health and growth and yield monitoring.

- **Optimizing Forest Potential**

- Forest operations encourage the utilization of lesser-known, or less-commonly utilized, plant species for commercial and subsistence uses.
- Forestry operations seek the "highest and best use" for individual tree and timber species.

- **Tracing and Tracking**

- Documentation of management activities on all forest blocks should be kept in a form that makes it possible for monitoring and certification to occur.
- Certified forest products should be clearly identifiable through marks or labels, or separate documented storage, at all stages of processing and distribution.
- Documentation of source and destination for all forest products must be available at all intermediate storage yards (e.g. log yards), processing and distribution centers.

National Forest Policy Frameworks of Other Countries

Based upon principles such as these, several countries have endeavored to develop their own overarching national policy frameworks for sustainable forest management. Following are excerpts from a national forest policy discussion in the United States, a national forest policy recommendation from Tasmania, a national forest policy statement from Australia, and a set of principles for developing a provincial forest practices code for British Columbia.

United States

The primary purpose of the Seventh American Forest Congress was to ascertain if Americans agree on a common vision for America's forests and a set of principles to guide us toward the vision. The local roundtables that preceded the Forest Congress and the Forest Congress itself focused on creating a vision and principles. The results demonstrate major agreement on most elements of a common vision and a large number of principles. Although the vision elements and principles that were not widely agreed to highlight some important disagreements, the process of re-crafting during the Forest Congress—and in the earlier local roundtables as well—demonstrates the potential for moving toward agreement even where considerable discomfort or disagreement originally exist.

The following is a listing of those vision elements and principles which were agreed to by 50% or more of those participating in the Forest Congress. Of the 13 vision elements that were developed at the Forest Congress, 12 received votes of agreement by 50% or more of participants. Of the 21 Revised Principles, 15 received votes of agreement by 50% or more of participants. Finally, of the 39 Draft Principles, 14 received votes of agreement by 50% or more of participants.

The listing of the vision elements and two sets of principles is offered according to the level of agreement achieved. The text of each is identical to that which was voted on by Forest Congress participants. No interpretations are offered. Under each vision element and principle is the tally, by percentage and total voting population, of levels of affirmation.

For vision elements, these levels are defined as:

Green -- Agreement, include as a vision element.
 Yellow -- Mixed feelings, but willing to accept as a vision element.
 Red -- Disagreement, do not include as a vision element.

For principles, these levels are defined as:

Green -- Agreement
 Yellow -- Sense of un-ease or lack of information
 Red -- Disagreement

In summary, those vision elements and principles which received 50% or more GREEN votes by Forest Congress participants are outlined in this review.

Vision Elements

In the future our forests . . .

- 1) will be held in a variety of public, private, tribal, land grant, and trust ownerships by owners whose rights, objectives, and expectations are respected and who understand and accept their responsibilities as stewards.

Green	Yellow	Red	Total	Green	Yellow	Red	Total
90%	7%	3%	100%	910	66	31	1007

- 2) will be enhanced by policies that encourage both public and private investment in long-term sustainable forest management.

Green	Yellow	Red	Total	Green	Yellow	Red	Total
89%	6%	5%	100%	899	65	45	1009

- 3) will sustainably provide a range of goods, services, experiences and values that contribute to community well being, economic opportunity, social and personal satisfaction, spiritual and cultural fulfillment, and recreational enjoyment.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
88 %	8 %	4 %	100 %	887	84	37	1008

- 4) will be maintained and enhanced across the landscape, expanding through reforestation and restoration where ecologically, economically, and culturally appropriate, in order to meet the needs of an expanding human population.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
85 %	10 %	5 %	100 %	861	100	48	1009

- 5) will be shaped by natural forces and by human actions that reflect the wisdom and values of an informed and engaged public, community and social concerns, sound scientific principles, local and indigenous knowledge and the need to maintain options.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
84 %	11 %	5 %	100 %	847	111	48	1006

- 6) will be managed consistent with strategies and policies that foster forest integrity and maintain a broad range of ecological, economic, and social values and benefits.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
79 %	14 %	7 %	100 %	795	143	68	1006

- 7) will be sustainable; support biological diversity; maintain ecological and evolutionary processes; and be highly productive.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
75 %	18 %	7 %	100 %	752	185	73	1010

- 8) will contribute to strong and vital rural and urban communities that benefit from, protect and enhance the forests in their vicinity.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
74 %	16 %	10 %	100 %	748	157	104	1009

- 9) will be managed with consideration for the global implications of land stewardship.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
69 %	17	14 %	100 %	697	165	143	1005

- 10) will maintain their essential role in protecting watersheds and aquatic systems.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
68%	14%	18%	100%	683	143	184	1010

- 11) will be acknowledged as vital by citizens who are knowledgeable and involved in stewardship and who appreciate the contribution of forests to the economic and environmental quality of life.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
67%	21%	12%	100%	678	208	123	1009

- 12) will be managed on the basis of a stewardship ethic with respect, reverence, and humility.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
54%	19%	27%	100%	544	192	271	1007

Revised Principles

- 1) Ensure that open and continuous dialogue is maintained and encouraged among all parties interested in forests.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
88%	7%	5%	100%	960	81	50	1091

- 2) Voluntary cooperation and coordination among individuals, landowners, communities, organizations and governments is encouraged to achieve shared ecosystems goals.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
85%	9%	6%	100%	924	97	70	1091

- 3) Cohesive and stable policies, programs, and incentives should be available to allow forest owners and managers to sustain and enhance forests.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
84%	11%	6%	100%	910	115	62	1087

- 4) Science-based information is accessible and understandable, distributed in a timely manner, and contributes to forest policy and management.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
80%	13%	7%	100%	881	143	73	1097

- 5) Comprehensive, integrated and well organized research is well funded. It is designed and conducted in collaboration with stakeholders to ensure for society the countless benefits of our forest ecosystems. Knowledge and technology products are effectively distributed, tested, and implemented.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
76%	12%	11%	100%	834	134	125	1093

- 6) All differences in goals and objectives of public, private and tribal forest owners are recognized and respected. Forest owners, including the general public, recognize and embrace both the rights and responsibilities of ownership. All forest owners acknowledge that public interests (e.g. air, water, fish and wildlife) exist on private lands and private interests (e.g. timber sales, recreation) exist on public lands.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
75%	15%	10%	100%	809	166	110	1085

- 7) Urban and community forest ecosystems will be valued, enhanced, expanded and perpetuated.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
74%	15%	11%	100%	809	169	120	1098

- 8) People's actions should ensure that the management of forests should sustain ecosystem structure, functions, and processes at the appropriate temporal and spatial levels.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
70%	20%	10%	100%	763	217	113	1093

- 9) Forestry policy and management decisions must reflect the interdependence of diverse urban, suburban, and rural communities.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
69%	17%	14%	100%	755	183	153	1091

- 10) Forests provide a broad range of social, environmental, cultural, and economic resources and benefits.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
67%	20%	13%	100%	725	215	146	1086

- 11) Forests are a global resource that sustain the health of the planet and its inhabitants. Our forest stewardship must recognize the trends of global population, consequential supply and demand, and the potential for ecological, social, and economic impacts worldwide. We will actively seek to learn from the global community.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
65 %	17 %	18 %	100 %	708	182	194	1084

- 12) All federal public lands should be maintained for present and future generations and managed in accordance with national laws. Changes in those laws should be pursued through an open legislative process that allows the airing of views by the public.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
65 %	16 %	20 %	100 %	704	171	216	1091

- 13) People's actions should ensure factual information and education concerning forests be readily available, engaging and actively disseminated to all.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
61 %	20 %	19 %	100 %	662	223	203	1088

- 14) Land area covered by forests is maintained and potentially increased.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
53 %	25 %	22 %	100 %	581	270	238	1089

- 15) Forestry decisions should take into account the concerns of an increasingly diverse U.S. population, as well as the needs of the forests, while linking benefits and responsibilities within the communities.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
50 %	26 %	24 %	100 %	547	283	257	1087

Draft Principles

- 1) Natural resource issues should be resolved by peaceful means.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
81 %	7 %	12 %	100 %	878	77	125	1080

- 2) Create financial and non-financial incentives for long term forest stewardship.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
81%	10%	9%	100%	875	112	93	1080

- 3) Conflicts over forest issues will be resolved through nonviolent processes.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
71%	9%	20%	100%	772	93	215	1080

- 4) Forest conservation will be promoted through efficient use, minimization of waste, recycling, and reuse of forest products and diversification of fiber sources. Clarification: "Sustainable forest management" may be substituted for "forest conservation."

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
69%	19%	12%	100%	746	205	130	1081

- 5) Forest policies should be long term, non-partisan commitments—needed to accomplish long term sustainability.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
65%	18%	17%	100%	698	197	182	1077

- 6) Recognize the special importance of existing old-growth forests.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
63%	16%	21%	100%	681	178	225	1084

- 7) Forests should be managed through adaptive decision-making processes based on data obtained using standardized inventory protocols, continuing assessments, monitoring, and adjustments that reflect evolving knowledge.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
63%	18%	19%	100%	669	196	205	1070

- 8) Forests will be understood in the local context in which they exist and valued for their special qualities.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
55%	23%	22%	100%	594	242	239	1075

- 9) Dialogue and policy on forest issues will be based on a common understanding of terminology that is specific and clear.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
54%	19%	27%	100%	591	202	299	1092

- 10) Soil productivity is a basic component of forest health.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
53%	13%	34%	100%	577	140	362	1079

- 11) Forest should be professionally managed under a multiple use philosophy that recognized that each acre cannot provide all good and services values.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
53%	24%	23%	100%	567	256	251	1074

- 12) Regulation of private forestlands for public benefit should recognize private property rights and responsibilities.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
53%	21%	26%	100%	571	231	282	1084

- 13) Water quality and quantity from headwaters to the sea are essential to the health and vigor of both forest and human communities.

<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>	<u>Green</u>	<u>Yellow</u>	<u>Red</u>	<u>Total</u>
52%	20%	28%	100%	564	211	304	1079

14) Sovereign rights of tribes and responsibilities relative to forests should be recognized.

Green	Yellow	Red	Total	Green	Yellow	Red	Total
50 %	21 %	29 %	100 %	542	226	320	1088

Tasmania¹¹

Mission Statement

To responsibly and sensitively manage Tasmania's forest in a way that:

- Protects and conserves environmental values.
- Provides long-term job security and additional job opportunities for employees.
- Provides long-term security of resource for industry.
- Provides long-term prospects for competitive markets for Crown and private forest products.

Principles

- The FFIS must produce an outcome which protects and seeks to enhance jobs of Tasmanians who currently work in the forest or who are dependent on the forest products industry for their livelihood.
- Changes in industry structure which effect the nature or level of employment should be offset by reinvestment, agreed compensation and redundancy, and investments in other sectors.
- The natural and cultural values of Tasmania's forest should be properly conserved through a combination of protection in secure reserves, multiple use policies, and the implementation of a transition strategy from timber harvesting from principally old-growth forests to timber harvesting from principally regrowth and intensively managed forests.
- Allocation of public forest land to various uses should be based on a thorough evaluation of its potential to meet a range of social, environmental and economic needs.
- Public forests set aside on the Register of Wood Production Forests should be managed to optimize the sustainable supply of timber products within a framework of multiple use forest management.

¹¹ Tasmanian Forest Service. 1994. *Summary of Agreed Recommendations for Tasmania's Forest and Forest Industry Strategy*. Hobart, Tasmania.

- Legislative initiatives, supported by both State and Federal governments should be developed to provide for appropriate resource security from identified public forests permanently set aside for sustainable timber supply.
- The total volume of pulpwood available for sale will be that generated from producing the agreed level of Crown sawlog and minor forest products plus supplementary volumes from salvage and thinning operations.
- The management practices on public forest should provide for a continuing level of supply of special species timbers for Tasmania's craftworkers, the furniture industry and other high quality uses.
- A comprehensive Forest Practices Code covering public and private forests provides the most practical approach to protecting environmental values during forest operations.
- Forest management plans for public forests should provide for the efficient supply of a range of products.
- The long-term maintenance of a commercially viable small country sawmill sector is vital to the Tasmanian community and, in particular, regional rural communities.
- Public forests set aside in the Register of Wood Production Forests will be managed primarily to optimize the sustainable supply of high quality sawlogs within a framework of multiple use forest management.
- A new allocation and pricing system should be negotiated for Crown timber supplies that achieves a more efficient market based approach to timber supply taking account employment implications, history of existing commitments and investments, size and nature of the Tasmanian industry, and benefits of micro-economic reform.
- The hardwood sawmill industry will be encouraged to restructure to achieve an efficient industry which optimizes further processing.
- The veneer industry provides high value-added further processing of the suitable wood resource. Strategies will be developed to ensure its on-going commercial viability.
- Public policies for private forestry should seek to ensure that it is a viable commercial enterprise.
- Private forest owners should be encouraged to manage their forests to optimize economic benefits provided they comply with all appropriate planning and environmental legislation.
- The development of industrial private forests should be encouraged. In achieving the objective of providing some future wood supplies from intensively managed plantations it should be recognized that there is a legitimate need for a market for the pulpwood arising.

*Australia*¹²

Vision

- The unique character of the Australian forested landscape and the integrity and biological diversity of its associated environment is retained.
- The total area of forest is increased.
- There is a 'holistic' approach to managing forests for all their values and uses so as to optimize benefits to the community.
- Private forests are managed in an ecologically sustainable manner and in close cooperation with public forest managers to complement the conservation and commercial objectives of public forests.
- A range of sustainable forest based industries, founded on excellence and innovation, will be expanding to contribute further to regional and national economic and employment growth.
- Forests and their resources are used in an efficient, environmentally sensitive and sustainable manner.
- Forest management is effective and responsive to the community.
- The Australian community will have a sound understanding of the values of forests and sustainable forest management, and will participate in decision-making processes relating to forest use and management.

Goals

- Conservation: To maintain an extensive and permanent native forest estate in Australia and to manage that estate in an ecologically sustainable manner so as to conserve the full suite of values that forests can provide for current and future generations.
- Wood production and industry development: The goal is for Australia to develop internationally competitive and ecologically sustainable wood production and wood products industries. Efficient industries based on maximizing value-adding opportunities and efficient use of wood resources will provide the basis for expansion in wood products manufacturing, which in turn will provide national and regional economic benefits.

¹² Commonwealth of Australia. 1992. *National Forest Policy Statement—a New Focus for Australia's Forests*. Canberra, Australia.

- **Integrated and coordinated decision making and management:** The goals are to reduce fragmentation and duplication in the land use decision-making process between the States and the Commonwealth and to improve interaction between forest management agencies in order to achieve agreed and durable land use decisions.
- **Private native forests:** The goal is to ensure that private native forests are maintained and managed in an ecologically sustainable manner, as part of the permanent native forest estate, as a resources in their own right, and to complement the commercial and nature conservation values of public native forests.
- **Plantations:** One goal is to expand Australia's commercial plantations of softwoods and hardwoods so as to provide an additional, economically viable, reliable and high quality wood resource for industry. Other goals are to increase planting to rehabilitate cleared agricultural land, to improve water quality, and to meet other environmental, economic or aesthetic objectives.
- **Water supply and catchment management:** The goals are to ensure the availability of reliable, high-quality water supplies from forested land and to protect catchment values.
- **Tourism and other economic and social opportunities:** The goal is to manage Australia's forests in an ecologically sustainable manner for a range of uses, including tourism, recreation and production of non-wood products.
- **Employment, workforce education and training:** The goal is to expand employment opportunities and the skills base of people working in forest management and forest-based industries.
- **Public awareness, education and involvement:** The goals are to foster community understanding of and support for ecologically sustainable forest management in Australia and to provide opportunities for effective public participation in decision-making.
- **Research and development:** The goals are to increase Australia's national forest research and development effort and to ensure that it is well coordinated, efficiently undertaken and effectively applied. This research will expand and integrate knowledge about the many aspects of native forests, plantations, forest management, conservation, and forest product development.
- **International responsibilities:** The goals are to promote nature conservation and sustainable use of forests outside Australia and to ensure that Australia fulfills its obligations under relevant international agreements.

Canada: British Columbia¹³

Principles for developing the forest practice code.

- The Code must be seen as one component of a provincial commitment to protect and sustain the environment while ensuring a sustainable economy.
- The Code should recognize that the physical and biological capacity of the forest is a key to the long-term sustainability of all consumptive and non-consumptive uses.
- The Code should be based on integrated resource management principles.
- The Code should link forest practices to resource management priorities expressed in land-use plans.
- The Code should draw on the best of existing policies, practices and experience acquired over time and incorporate them within a single framework.
- The Code should provide minimum provincial standards for practices on applicable forest lands; the application of these standards should be flexible in response to the varying ecological conditions found in British Columbia.
- There must be a systematic and cost-effective process for public input in the development, implementation and revision of the Code.
- The Code should emphasize clear processes to develop locally relevant standards that improve upon provincial standards.
- Since practices are evolutionary there should be a process of review in response to changes in social values, new scientific information, new technology and the results of field experience.
- Decision-makers and resource managers must be accountable to the public and the Code should provide for an open and cost-effective appeal process against resource management decisions.
- The Code should promote optimal standards for good forest stewardship through a system that rewards good practices and penalizes poor practices.
- Enhanced stewardship and public accountability can be best achieved through a system of established standards for practices and processes that can be assessed by independent audit.

¹³ British Columbia Ministries of Forests and Environment, Lands and Parks. 1993. *The British Columbia Forest Practices Code--A Discussion Paper*. Victoria, British Columbia.

- While the Code should respect the cost implications of compliance, setting and enforcing standards should be rigorous enough to ensure protection of the integrity and long-term productivity of the forest.
- The safety of humans should be considered a priority in forest resource management.
- The Code should address the training of forest workers to ensure effective application of the Code in practice.
- The Code should promote public awareness of forest practices, standards and processes.

Objectives

- To set standards for enhanced stewardship for the province's forests.
- To recognize the importance of all forest values on an integrated resource basis.
- To strive for a balance between economic needs and long-term ecological sustainability.
- To give fair and equitable consideration to all forest stakeholders.
- To recognize the ecological and economic diversity of British Columbia, which requires that performance standards be applied on a provincial, regional and local basis.
- To support open and timely decision-making process that is accountable to the public and cost-effective.
- To provide an administrative system that is effective through a comprehensive system of incentives and penalties.
- To encourage a positive program of communication, education and training to assist forest users and resource managers in applying the Code effectively and equitably.

Appendix 1. World Commission on Environment and Development: Principles of Global Sustainable Development.¹⁴

Mission:

- To propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond;
- To recommend ways concern for the environment may be translated into greater co-operation among developing countries and between countries at different stages of economic and social development and lead to the achievement of common and mutually supportive objectives that take account of the interrelationships between people, resources, environment, and development;
- To consider ways and means by which the international community can deal more effectively with environmental concerns; and
- To help define shared perceptions of long-term environmental issues and the appropriate efforts needed to deal successfully with the problems of protecting and enhancing the environment, a long-term agenda for action during the coming decades, and aspirational goals for the world community.

Policy Directions:

- **Population and Human Resources:** The "population problem" must be dealt with in part by efforts to eliminate mass poverty, in order to assure more equitable access to resources, and by education to improve human potential to manage those resources.
- **Food Security:** Sustaining the potential.
- **Species and Ecosystems: Resources for Development.** The diversity of species is necessary for the normal functioning of ecosystems and the biosphere as a whole. A first priority is to establish the problem of disappearing species and threatened ecosystems on political agendas as a major economic and resource issue.
- **Energy: Choices for Environment and Development.** Any new era of economic growth must be less energy intensive than growth in the past. Energy efficiency policies must be the cutting edge of national energy strategies for sustainable development.
- **Industry: Producing more with less.**

¹⁴ World Commission on Environment and Development. 1987. *Our Common Future* (Brundtland Report). Cambridge: Oxford University Press.

- **The Urban Challenge:** Governments need to develop explicit settlement strategies to guide the process of urbanization. This will mean examining and changing other policies—taxation, food pricing, transportation, health, industrialization. Sustainable development of cities will depend on closer work with the majorities of urban poor who are the true city builders, tapping the skills, energies, and resources of neighborhood groups and those in the 'informal sector'.

International Co-operation and Institutional Reform:

- **Role of the International Economy:** Growth in many developing countries is being stifled by depressed commodity prices, protectionism, intolerable debt burdens, and declining flows in development finance. These trends must be reversed and there must be support of wider and longer term development objectives for sustainable development.
- **Managing the Commons:** Much remains to be done in the management of the 'global commons,' the oceans, outer space and Antarctica.
- **Peace, Security, Development, and the Environment:** The whole notion of security as traditionally understood—in terms of political and military threats to national sovereignty—must be expanded to include the growing impacts of environmental stress—locally, nationally, regionally, and globally. There are no military solutions to 'environmental insecurity.'
- **Institutional and Legal Change:**
 - **Getting at the Sources:** Governments must begin now to make the key national, economic, and sectoral agencies directly responsible and accountable for ensuring that their policies, programmes, and budgets support development that is economically and ecologically sustainable
 - **Dealing with the Effects:** Governments should also reinforce the roles and capacities of environmental protection and resource management agencies.
 - **Assessing Global Risks:** The capacity to identify, assess, and report on risks of irreversible damage to natural systems and threats to the survival, security, and well-being of the world community must be rapidly reinforced and extended.
 - **Making Informed Choices:** The right, roles and participation of the public, non-governmental organizations, the scientific community and industry in development planning, decision making, and project implementation should be expanded.
 - **Providing the Legal Means:** Governments need to fill major gaps in existing national and international law related to the environment and to find ways to recognize and protect the rights of present and future generations to an environment adequate for their health and well-being.
 - **Investing in Our Future:** Priority needs to be given to investing in environmental protection and improvement by international and national organizations in concert with economic development programs.

General Principles, Rights and Responsibilities:¹⁵

- **Fundamental Human Right**
All human being have the fundamental right to an environment adequate for their health and well-being.
- **Inter-Generational Equity**
States shall conserve and use the environment and natural resources for the benefit of present and future generations.
- **Conservation and Sustainable Use**
States shall maintain ecosystems and ecological processes essential for the functioning of the biosphere, shall preserve biological diversity, and shall observe the principles of optimum sustainable yield in the use of living natural resources and ecosystems.
- **Environmental Standards and Monitoring**
States shall establish adequate environmental protection standards and monitor changes in and publish relevant data on environmental quality and resource use.
- **Prior Environmental Assessments**
States shall make or require prior environmental assessments of proposed activities which may significantly affect the environment or use of a natural resource.
- **Prior Notification, Access, and Due Process**
States shall inform in a timely manner all persons likely to be significantly affected by a planned activity and to grant them equal access and due process in administrative and judicial proceedings.
- **Sustainable Development and Assistance**
States shall ensure that conservation is treated as an integral part of the planning and implementation of development activities and provide assistance to other States, especially to developing countries, in support of environmental protection and sustainable development.
- **General Obligation to Co-operate**
States shall co-operate in good faith with other States in implementing the preceding rights and obligations.

¹⁵ WCED International Legal Group 1987. "Summary of Proposed Legal Principles for Environmental Protection and Sustainable Development." In: Our Common Future. Cambridge: Oxford University Press.

Appendix 2. Criteria for the Sustainable Management of Temperate and Boreal Forests.

Helsinki Process Draft Criteria

1. Maintenance of forest resources and their contribution to global carbon cycles based on
 - changes in land use and forest area
 - changes in growing stock
 - status of carbon balance
2. Maintenance of forest ecosystem health and productivity
3. Maintenance of productive functions of forests for wood and non-wood products
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems based on
 - protection of representative, rare, and vulnerable forest ecosystems
 - protection of threatened species
 - status of and changes to biological diversity in managed forests
5. Maintenance of appropriate enhancement of protective functions in forest management for soil and water.
6. Maintenance of other socio-economic functions and conditions including economic significance of the forest sector, recreational services, provision of employment, research and professional education, public awareness, public participation in forestry matters, and cultural values.

Santiago Declaration Criteria (Montreal Process)

Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests

The following criteria and associated indicators characterize the conservation and sustainable management of temperate and boreal forests. The first six criteria relate specifically to forest conditions, attributes or functions, and to the values or benefits associated with the environmental and socio-economic goods and services that forests provide. The seventh criterion and associated indicators relate to the overall policy framework of a country that can facilitate the conservation and sustainable management of forests. Included are the broader societal conditions and processes often external to the forest itself but which may support efforts to conserve, maintain or enhance one or more of the conditions, attributes, functions and benefits captured in criteria one through six. No priority or order is implied in the listing of the indicators.

1. Conservation of biological diversity. Biological diversity includes the elements of the diversity of ecosystem, the diversity between species, and genetic diversity in species.

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

PINCHOT INSTITUTE FOR CONSERVATION

About the Pinchot Institute

The Pinchot Institute for Conservation is an independent, non-profit organization dedicated to leadership in conservation thought, policy, and action. The Pinchot Institute was dedicated in 1963 by President John F. Kennedy at Grey Towers National Historic Landmark in Milford, Pennsylvania, historic home of conservation leader Gifford Pinchot, to facilitate communication and closer cooperation among resource managers, scientists, policymakers, and the American public. The Institute continues Pinchot's legacy of conservation leadership as a center for policy development in support of sustainable forest management.

Programs and activities

- **Policy research and analysis.** The Pinchot Institute serves as a bridge between the scientific and policymaking communities in forest resource management. The Institute provides independent policy research and timely, objective analysis targeted to the current information needs of policymakers and resource managers.
- **Convening and facilitation.** The Institute serves as a convenor and facilitator, fostering collaborative approaches to resolving key issues in forest policy. The Institute brings together leaders in forest management, research, and education from federal and state agencies, universities, industry, and conservation organizations to address new challenges and discover new solutions for advancing sustainable forest management.
- **Leadership development.** Through its program on leadership in natural resource conservation, the Institute conducts research and provides training for resource management professionals and community leaders in participatory decision making and conservation leadership.

Current programs

Institutional and policy changes to implement sustainable forest management. Much of the effort to date in sustainable forestry has focused on policy development, with far less attention devoted to the mechanisms by which these policies will be implemented, or potentially thwarted. Policies for integrated approaches to resource management will make little difference on the ground until the appropriate organizational structures and administrative processes are developed. These include the development of processes for conservation-oriented strategic goal setting and performance measurement, and integrated resource management planning, budgeting and fiscal accountability. These considerations are complex and intensely politicized, and the Pinchot Institute can play a critical, constructive role through both independent analysis and facilitation.

Forest stewardship and sustainable rural development. The restoration and maintenance of forest ecosystems for multiple objectives requires a variety of continuing land treatments that can be the basis of stable employment and income in rural communities. There is a need for policies aimed specifically at facilitating the development of local capacity to carry out such land treatments through the kind of small entrepreneurial firms that characterize rural communities. The Pinchot Institute is working with policymakers, federal and state land management agencies and with a network of community-based rural development practitioners to identify and address key policy issues such as contracting, bonding requirements, capital financing, and training in the development of specific strategies to advance both forest stewardship and sustainable rural development.

Developing collaborative models of conservation leadership. The Pinchot Institute is committed to the development of effective natural resource conservation leadership among both beginning and mid-career professionals, in public agencies, private organizations, and conservation NGOs. The Pinchot Institute offers leadership workshops and executive development seminars in participatory decision models that are beginning to redefine the relationship between land management agencies and the communities they serve. The Institute's leadership development program is integrated with the training and conservation fellowship programs held at Grey Towers National Historic Landmark, primarily for mid-level managers in federal natural resource management agencies.

Leadership in Forest Conservation Thought, Policy and Action

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