

Forest Certification

Roots, Issues, Challenges, and Benefits



Kristiina A. Vogt • Bruce C. Larson
John C. Gordon • Daniel J. Vogt
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Preface

The idea to write a book and have a class on forest certification originated during a walk through Amazonian tropical forests in Camutá do Pucuruí (Gurupá, Pará State, Brazil). Several of us — Daniel Vogt, Kristiina Vogt, and Anna Fanzeres — were scouting for research sites for Anna's dissertation. While walking through several forest sites, we realized that although some of the areas had clearly different forest productivities, they would be evaluated as being similar using many of the criteria and indicators of the certification protocols. By using our own ecological indicators to assess these sites, it became obvious that the ecological characteristics of one of the forests would support timber harvesting without degradation of the forest landscape if conducted under existing social/ecological legacies; however, another site would become degraded if timber harvesting were part of management. This resulted in a lively discussion about the indicators relevant to determining whether or not forest-dweller communities could harvest their timber without causing degradation of their forests. Moreover, we thought it would be interesting to apply our findings to the situation in the United States, to determine whether small forestland owners could be certified if they were conducting sustainable forest management. We then had the idea of having students from Yale evaluate one of its forests, using several different protocols, to help identify how we could develop protocols that would be sensitive to the ecological indicators we had observed in the forest.

We decided that we needed to have a class to scientifically examine certification, and the class structure and topics were developed. Two graduate students at the School of Forestry and Environmental Studies were instrumental in developing the course: Francis Raymond and Jessica Lawrence; their insights into certification were crucial in selecting our guest speakers. In addition, Yale Forest Forum sponsored the class and helped make it a reality. Gary Dunning, director of the forum, helped us acquire funds for guest speakers' fees and to defray some of the publishing costs for a book on forest certification. Through the generous support of the Cricket Foundation, we were able to support the speaker series during the spring of 1998.

Several experts spoke to the class about topics related to certification. They were instrumental in making us consider all the issues related to certification and we would like to acknowledge them. The guest speakers generated lively discussions and helped make the class the success that it was. The ideas presented in this book are those of its authors; however, the guest speakers did stimulate our thinking about the issues from a fresh perspective. We want to thank the following individuals for the insights that they offered so freely:

Harold Burnett, certified natural resource manager, Two Trees Forestry, Maine

Richard Donovan, director, Smartwood, Rainforest Alliance, Richmond, Vermont

Jim Drescher, ecologist, Windhorse Farm, Nova Scotia

Jamie Ervin, U.S. contact person, Forest Stewardship Council

Morgan Grove, social ecologist, U.S. Forest Service, Vermont

Bill Mankin, director, Global Forest Policy Project, Washington, D.C.

Catherine Mater, vice president, Mater Engineering, Corvallis, Oregon

Michael Northrup, Rockefeller Brothers Fund, New York

Blaine Puller, forest manager, Kane Hardwood/Collins Pine, Kane, Pennsylvania

Bob Simpson, National Tree Farm Association, Washington, D.C.

As part of the class, we also had a final panel discussion with representatives from several certification organizations. The discussion was sponsored by the Yale Forest Forum and the following individuals were on the panel:

Jamie Ervin, Forest Stewardship Council, Waterbury, Vermont

Julie Jack, Sustainable Forestry Initiative, AF&PA, Washington, D.C.

Gerry LaPointe, Sustainable Forestry Certification Coalition, Montreal, Canada

Bill Mankin, Global Forest Policy Project, Washington, D.C.

In addition to the class discussions, there was a field trip to the Vermont Family Forest and Value-Added Operation. Thanks must be given to David Bryne (Smartwood certified natural resource manager, Addison County, Vermont) and Alan Calfee (forest assessor, National Wildlife Federation [Smartwood's New England partner], Montpelier, Vermont) who hosted the trip.

We especially want to thank several individuals who spent a lot of time commenting on various drafts of this book. We are very grateful to Timothy Farnham and William Barclay who had helpful comments on the structure and development of Chapter 2. Rui S. Murrieta contributed many good thoughts on various topics in the book and we appreciate his input.

Many of the ideas in this book are the results of the Vogts' collaborative research in Puerto Rico, the eastern and western parts of the United States, Alaska, Iceland, Brazil, Belize, and Malaysia. Many of their collaborations have been with Yale graduate students who are a decidedly stimulating and fun group with whom to explore new ecosystems. We also would like to acknowledge other research collaborators who have contributed to the development of our ideas, but we do not have enough space to name all the individuals who have helped us to formalize our ideas during the past twenty years. We want to acknowledge the following individuals who discussed many ideas with us related to ecosystems: Philip Wargo (U.S. Forest Service's Northeast Center for Forest Health Research) was instrumental in our understanding of the roles of insects and pests in ecosystems, and Alan Covich (Colorado State University) and Larry Woolbright (Seneca College) were not only stimulating to interact with, but also helped us learn about animals in tropical ecosystems.

Many of the ideas in this book developed while conducting research supported by the National Science Foundation (NSF) and by the U.S. Forest Service. NSF support has been in the form of individual grants to the Vogts and in their involvement with the Long-Term Ecological Research Program in Puerto Rico's Luquillo Experimental Forest. The USDA Forest Service, the Northeast Global Change Program, and the USDA Forest Service Insect and Disease Lab have supported research that has stimulated our thinking on the assessment of forest ecosystems by addressing the role of disturbance in affecting ecosystem resilience.

These research interactions have been instrumental in opening our eyes to the difficulties in assessing ecosystems. They have also caused us to consider how we can incorporate humans as drivers of ecosystem functions in tropical, temperate, and boreal ecosystems.

In addition, the research has stimulated several of us to think about frameworks that would allow us to link the social and natural sciences. The insights from all the different locations have been crucial in understanding the differences that exist in any ecosystem.

The purpose of this book is to conduct a globally relevant scientific analysis of certification. Some of the discussions are United States-specific, but the issues transcend every country's boundaries. Because the Yale School of Forestry and Environmental Studies is located in the United States, the case study was conducted on school lands. In addition, the authors' familiarity with small non-industrial landowners and the issues they face means that information from the United States will be emphasized. However, the issues faced by U.S. landowners are not much different from those faced by people in developing or developed countries. The examples given will be useful for anyone studying these issues since they will face very similar problems in integrating the social and natural sciences in natural resource assessments. Despite the uniqueness of the forests in the United States and its societal structure, we see this book as an extremely useful tool that transcends borders to address global environmental issues. By using a new perspective, we hope the reader will also begin to think about certification and will help us further expand our thinking on this topic.

*Kristiina A. Vogt
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Authors

Kristiina A. Vogt is professor of forest ecosystem ecology at Yale University's School of Forestry and Environmental Studies. She is also the chairman of the Yale Forest Forum. Her expertise is in carbon and nutrient cycles at the ecosystem and landscape levels in wetland and terrestrial systems. She has conducted research in Iceland, Malaysia, Mexico, Brazil, Belize, Puerto Rico, and within the United States in Alaska, Oregon, Washington, New York, Vermont, New Hampshire, and New Mexico.

Kristiina has been intrigued by the roles of human and natural disturbances in controlling processes in ecosystems and in determining the links between species diversity and ecosystem sustainability. In her research, she attempts to understand the mechanisms that control how ecosystems function and what causes changes in natural cycles, believing that this knowledge will help us understand how to restore ecosystems. Kristiina believes that no adequate tools exist to document the impact of human activities on our landscape. An adequate, working framework would help to analyze the effects our activities are having on changes in the natural processes of a system and aid in our ability to determine when the trajectory of a system moves towards degradation. Her long-term interest in determining the best, minimum amounts of information needed to interpret our landscape resulted in a 1997 book written with several other authors, entitled *Ecosystems: Balancing Science with Management*.

Kristiina Vogt has published more than 80 peer-reviewed articles and two previous books. Her published work covers topics from the ecology of species to the productivity of deserts — from forest and wetland ecosystems to the development of frameworks to assess ecosystem health and resilience — to the development of indicators to determine whether ecosystems will degrade and how they will respond to invasive species. After obtaining her Ph.D. and M.S. in microbial ecology at New Mexico State University, she was a research faculty member at the University of Washington for 11 years. She earned her B.S. from the University of Texas, El Paso.

Bruce C. Larson is director of the forests belonging to Yale University and a lecturer in forest management at Yale's School of Forestry and Environmental Studies. He is also a member of the Scientific Advisory Board and a consultant to Mistik Management Ltd. in Meadow Lake, Saskatchewan, Canada; consultant to S.D. Warren Company; senior consultant for Interforest, LLC; president of CONNWOOD, Inc.; and a member of the National Research Committee.

Bruce Larson's expertise in forest management and silvicultural issues is presented in several important forestry academic books which he has coauthored. They include *The Ecology and Silviculture of Mixed-Species Forests*, published in 1992 with M. Kelty and C.D. Oliver, *Forest Stand Dynamics*, published in 1996 with C.D. Oliver, and *The Practice of Silviculture: Applied Forest Ecology (9th ed.)* published in 1997 with D. Smith, M. Kelty, and P.M.S. Ashton. Additionally, he has published numerous reports and articles in scientific journals. His field experience has been applied in the United States in the Northeast and the Pacific Northwest, British Columbia, and Iceland.

Before becoming a faculty member at Yale, Bruce taught at the University of Washington and Duke University. His B.S. in biology was earned *magna cum laude* from Harvard University. He earned his M.S. in forestry science from Yale School of Forestry and Environmental Studies and his Ph.D. from the University of Washington.

John C. Gordon is currently a Pinchot professor of forestry at Yale's School of Forestry and Environmental Studies, a position he has held since 1990. He has twice been the dean at the Yale School of Forestry and Environmental Studies (from 1983 to 1992 and from 1997 to 1999) and was acting director for the Yale Institute for Biospheric Studies. Before joining Yale, Gordon was a professor of forest science for more than five years before becoming head of the department at Oregon State University. Prior to that, he was professor of forestry at Iowa State University's department of forestry (College of Agriculture). In addition to his experience in academia, Gordon has worked as a plant physiologist for the United States Department of Agriculture, and as a consultant to business and not-for-profit sectors. He collaborated with overseas development initiatives, including USAID projects in India and Pakistan, where he led field teams and designed research and educational projects. Gordon has also worked in China, Australia, Brazil, Argentina, and Costa Rica. He was a member of the first official United States delegation on forestry to China in 1980, and in 1985 led tours given by U.S. foresters. Gordon was a member of the team in Costa Rica that made recommendations for restructuring CATIE, a key training center for agriculture and forestry for Central and South American countries.

His association with forest certification began in its early days while serving as chairman of the Workshop on Environmental Criteria and Indicators for Sustainable Development of Boreal and Temperate Forests, the precursor to the Montreal Process.

John Gordon's list of honors is extensive: he serves on committees and boards of renowned institutions, and is in demand as a lecturer and guest at national and international meetings. His contributions to scientific knowledge include being the author or coauthor of 29 books or chapters and 103 articles in scientific journals, and reports for government institutions.

Daniel J. Vogt is a lecturer on soils and ecosystem ecology and an associate research scientist at the Yale School of Forestry and Environmental Studies. His expertise is in the different aspects of the properties and processes of soils related to ecosystem ecology, sustainable forestry, and biological conservation. He has been involved in research in Belize, Brazil, Iceland, Malaysia, and Mexico, and his experience includes work in Alaska, Connecticut, Hawaii, New Hampshire, New Mexico, New York, Oregon, Vermont, and Washington.

Daniel's research is driven by his desire to understand how natural and human-derived disturbances affect soil quality and health, and sustainability of ecosystems. He has been funded by NSF, USDA (USFS and NRCS), and other foundations and NGOs. He is a coinvestigator of the Tropical Long-Term Ecological Research Project (LTER) conducted at the Luquillo Experimental Forest in Puerto Rico. His most recent research projects, concerning the global climate change programs of both the U.S. Forest Service and the Natural Resources Conservation Service, were developed to enhance sequestration of soil carbon and to model soil carbon relative to different types of forests and soils in New England. He has presented research at more than 50 national and international conferences and workshops and has published more than 30 peer-reviewed articles in scientific journals and books.

In 1997, Daniel coauthored *Ecosystems: Balancing Science with Management* with Dr. Kristiina Vogt. His academic achievements include a B.S. in biology, an M.S. in Agronomy from New Mexico State University, Las Cruces, and a Ph.D. in forestry from the University of Washington.

Anna Fanzeres is a candidate for a doctorate in forestry and environmental studies from Yale, where she also earned her M.S. in environmental studies. She received her B.S. in forest engineering from the Brazilian Rural Federal University, Rio de Janeiro. Anna's professional experience includes applied forest ecology research in the Atlantic Coastal Forest and Amazonia, and technical support to nongovernmental organizations. Anna has been

heavily involved in the issues of forest certification, participating in many debates, and in the development of criteria and indicators for sustainable forest management. Her dissertation focuses on linking natural and social sciences during the evaluation of certified forest-management initiatives. Anna was instrumental in the development of a forestry certification class at Yale's School of Forestry and Environmental Studies and in the subsequent publication of this book.

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Issues in Forest Certification

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Despite the existence of laws governing forestlands, management of forest ecosystems is far from adequate. Certification of forestlands and forest products has been proposed as a means to improve management of these resources. Since its inception in the late 1980s, certification has become a central focus of forest management. It is also being considered by national and international agencies as a solution to many other environmental problems (e.g., global warming and carbon sequestration in forests; Apps and Kurz 1991, NRC 1998), and for achieving the goals of sustainable development (see 2.1, 2.2). Because it is in the early stages of development, the science behind forest certification has not been evaluated in order to determine whether forests are being assessed for the many benefits they provide. It is critical at this time to examine the strengths and weaknesses of certification approaches to ensure that the “emperor without clothes” analogy does not come back to haunt a very useful tool that can promote sustainable forest management. The human values integral to certification assessments must be recognized, and the consequences of focusing exclusively on them must be made transparent. If these values are not recognized, there is a strong likelihood that forest certification protocols will be ineffective in assessing the long-term maintenance of forest ecosystems.

Forest certification is a recent trend that has had an increasing market impact and has created growing interest among forestland owners and managers committed to good forest stewardship. Environmental groups and the public have continued to push forest management to meet multiple objectives, including watershed and water-quality protection, preserving scenic beauty, and providing recreational opportunities (Heissenbuttel et al. 1995). Certification has also been influenced by efforts to:

- Improve forest practices
- Make forest management more environmentally and socially responsible
- Develop and incorporate ecosystem management in national and state forest policies and private forestry

Certification has also been influenced by consumer and political pressure to promote “sustainable forest management” thereby attaining sustainable development (see 3.1.2, 4.3.5.3). However, few policymakers or citizens have thought specifically about the meaning of “sustainability,” the underlying idea for sustainable forest management. Sustainability is more a set of ideals than a concrete, measurable concept. Therefore, many forest certification approaches require “sustainable forest management” but are vague and, in some cases, even misleading about the ramifications of pursuing this goal (see 1.2, 3.1.2).

1.1 Improvements crucial to successful implementation of forest certification

Two tenets exist in the forest certification debate: 1) integration of social, ecological and economic factors, and 2) the sustainability of forestlands can be attained if the previous integration has been successful.

By focusing the discussions of forest certification on the identification and definition of criteria and indicators that translate the values behind social, economic, and ecological parameters, the central focus of supporters and promoters of certification became the development of a long laundry list of objectives to be fulfilled.

There are, however, many issues that have not been adequately analyzed in certification that will determine the effectiveness of criteria and indicators and how readily they can be generalized to assess sustainability. It is understandable that forest certification has reached a point where there is a strong need to reevaluate the approaches. For example, certification is quite young as an assessment approach, with the earliest certifications of forestlands being traced to the late 1980s (see 2.1, 2.5). Because of the eagerness of forest certification promoters to establish as many certified forests or initiatives on the ground as possible, the initial reasons for pursuing certification were lost. Certification became a goal in and of itself, rather than a consequence of adequate forest management practices. Forest certifiers had an urgent need to develop checklists that could be used to assess all types of forests: tropical, temperate, and boreal; and plantations of exotics or native tree species worldwide. This approach was contradictory to the initial goals that drove the forest certification debate, where the need had been identified to develop standards more applicable to the local level (FSC 1996, FSC 1999a). If the initial goals of certification had been followed, perhaps the parameters proposed would not have been so value oriented and would have been more indicative of the responses of natural systems to human interventions.

Several topics have not received serious analysis as part of the ongoing discussions about certification. The purpose of this book is to perform a scientific analysis of the different elements of certification in order to evaluate what works well and what needs to be adapted to make certification more effective.

The following topics are presented and evaluated in this book:

IMPLEMENTATION

- An analysis of certification as one of the suite of tools to be used, without forcing forestland owners to perform functions that may be the purview of state, federal or international-level organizations (Chapter 2)
- How to integrate social and natural science legacies that continue to control the response of a system to any disturbance or management activity (Chapter 5)
- How to develop approaches that can distinguish when value-based and non-value-based indicators are most appropriate for assessing a site (Chapters 3, 5, 7)

DEFINITIONS

- The differences between “good forest management,” “sustainability,” and “sustainable development” (Chapter 3)

DEVELOPMENT OF CERTIFICATION

- A comparison of the different approaches of certification protocols, and their strengths and weaknesses (Chapters 2, 4)

ECOLOGICAL AND SILVICULTURAL FOUNDATIONS

- How to more specifically link the management activities and their impacts on the environment by identifying indicators that best reflect the sensitive driving variables that control how resistant or resilient a forested system is (Chapter 6)
- Understanding the minimum information needs of an assessment, and how to weight the importance of individual data needed to assess a site (Chapter 5)
- The determination of what forest condition should be used to assess a system as “sustainable” (Chapters 3, 4, 7)

SOCIAL INPUT

- The amount and type of participation by the public in managing forestlands when they typically have little training in managing forest resources (Chapters 3, 7)
- Identification of the elements of an assessment protocol that are not being driven by human values; recognizing that human values may drive the use of good forest management practices, but may also drive the use of management practices that degrade ecosystems (Chapters 2, 3, 6, 7)

EFFECTIVENESS

- A scientific analysis of the structure and effectiveness of different certification protocols in evaluating different sites (Chapter 4)
- The ability to balance the values of the producers and their property rights with the values of consumers and society (Chapters 2, 3, 7)
- Tools to effectively integrate the social and natural science aspects of sustainability in certification (Chapters 3, 4, 5, 7)

STANDARDIZATION

- The determination of whether there is a need for the development of a uniform set of standards (criteria and indicators) for all sites in order for certification to be credible, and how this deals with natural ecosystems that have different constraints and driving variables controlling their resilience (Chapter 5)

BARRIERS

- Factors which limit the acceptance of certification as a broad scale approach, or are impediments to implementing certification (Chapters 2, 5, 7)
- The determination of what limits and how not to exclude small, non-industrial forestland owners from being certified (Chapters 2, 4, 7)

Several issues recur in the list above. Some of these points are serious impediments to certification because they result from the different values driving the development of the structure being used in the assessments. For example, many organizations promoting certification and assessing forestlands are embedding their values for a particular standard forest condition into their assessments, which are reflected in their choices of criteria and indicators (see Chapters 2, 3, 4 and 5).

Many of the solutions being generated by certifying organizations may require changes in the social and political institutions that manage forestlands without requiring changes in societal values. History has shown us that societal values will continue to change with time (Vogt et al. 1997a, see 2.1). Therefore, protocols should be structured to be adaptable to changing values, since what is currently acceptable may not be in ten years.

This is especially relevant, since many of the changes occurring in forest management are in response to society changing its values on natural-resource uses, and not in response to developments in the science of managing forest resources (see Chapter 6). This requires the development of flexible systems that are sensitive to new information, new understanding of our systems, and new values generated by the suppliers and consumers of natural-resource products.

Superimposed on the changing societal values, with little change happening in management practices, are the values being brought about by the organizations involved with certification (see 1.2, 3.2.2.2). Nongovernmental Organizations (NGOs) (i.e., environmental, socially oriented, industry representatives, feminist groups, First Nations, etc.) have gained influence in the last decade by having their values and perceptions of the environment included in the design of public policies. Despite disagreement on how much power they wield (Arts 1998, MacDonald 1998), the expression of societal values through these organizations has been a very effective way for individuals to have their values heard and for them to become reality (Tuan 1974). These organizations are extremely important for society as long as they continue to represent society's changing values and are flexible. They must also be aware that they represent just one of the many values represented in any society. If certification protocols are designed to reflect a narrow set of values, they will probably be effective tools for assessing good forest management and sustainability of social and natural systems. It is also important that every certification protocol be able to explicitly separate its desired values from those which naturally constrain how a system functions, and ultimately determine its sustainability (Vogt et al. 1999ab).

Another very serious problem is the failure, or lack of willingness, of most forest certification protocols to look at patterns and processes at the landscape level. This type of information would be invaluable as a mechanism for weighting the importance and types of data needed, and it is necessary to link the proposed management activities to the adequate scale or level of impact. The zones of influence relative to each type of activity must be taken into consideration if there is a desire to detect whether a system is changing in a negative manner. For example, the present focus of existing protocols on the need to maintain biodiversity fails to consider whether the abundance or absence of certain organisms is driving the regeneration of desired species (see 3.2.1). The choice of criteria and indicators must be based on the potential impact of management activities (see Chapter 6), and on external activities which might be influencing management. Another good example, showing the lack of a link between human values and those factors controlling ecosystem function, is hunting. For example, the elimination, or favoring of, certain game species can feedback to affect vegetation structure (i.e., fauna roles in browsing, dispersing, etc.). These feedbacks have to be taken into consideration when evaluating the responses of the system to further human interventions.

An inclusive approach is important if certification is to impact forestry practices around the world. If there is participation in certification only by very large industrial forest enterprises or small, non-industrial forestland owners, certification's ability to change forest management practices and to satisfy societal values will be minimal. How much each of these sectors participates in certification, of course, varies from country to country. In the United States, the importance of the small, non-industrial forestland owners is highlighted because of the significant amount of forestland they own. In 1992, nonfederal forestland comprised 66.2% of the total forest area in the United States (NRC 1998). These same lands were also where most of the timber harvesting was occurring in the United States (NRC 1998). The potential impact of forest certification could be quite large if these owners became certified, because of their size and economic importance in the forest products industry (see 7.4). The United States accounts for 25.2% of the world roundwood production (WRI 1994) and 25% of the world's solid wood products (Zinkhan 1992). In

the United States, 6% of the gross national product comes from the forest products industry (Zinkhan 1992).

However, of the 66.2% of the forestland in nonfederal ownership in the United States, probably only a small fraction can satisfy the requirements for being certified (see 2.5, 7.4, 7.5). Certification must consider and attempt to incorporate the small landowners who, at least in the United States, will be an important source of timber in the future (Birch 1996). These small landowners have great difficulty in being certified or even participating in the process (see 7.4, 7.5) because of several limitations. These private nonindustrial forestlands contribute significantly to many global-scale environmental values and services. For example, nonindustrial private timberlands have been estimated to annually sequester 61 million metric tons of carbon in the woody plant species found on these lands (NRC 1998). These lands have great potential to increase the amount of carbon that can be sequestered in the United States.

Another major issue with certification is related to the types and quantity of data that are expected to be collected during an assessment; these strongly limit the ability of many forestland owners to pursue certification, because they cannot satisfy the data required to verify that they are managing sustainability, or are using good forest management. An approach must be developed that identifies which indicators are relevant in assessing forest management practices. Most indicators appear to be laundry lists of data that are not directly related to how an ecosystem functions. It is obvious that a small landowner will not have the required information needed to satisfy a certification assessment. This high need for so many indicators reflects the desire to satisfy several different values from a given unit of land. However, the requirement for so much data makes the process very subjective due to the lack of a system to weight the importance of different indicators. Presently, no framework exists that allows the values of the certifying organization to be selectively isolated from the constraints that determine how social and natural systems function.

Another major weakness of most of the protocols is that they do not present supporting data for the selected criteria or indicators chosen for the assessments of forest management operations. In addition, there are no guidelines for determining when a particular activity will cause the system to change or when a threshold of degradation may be crossed. These protocols have not really linked the specific impacts of management activities at the ecosystem level nor used them to assess a management unit (see Chapter 6).

Certification will have to consistently evaluate a site in the same manner if it is to be accepted as an assessment tool. This will require a certifier to be able to weight the importance of different indicators and to determine when a change in an indicator really means that a system has the potential to degrade. Assessments also need to be expanded to include potential legacies that exist for each site, and the spatial matrix within which the management unit is embedded (see Chapter 5). These legacies can be understood as cyclical temporal and spatial dynamics of an ecosystem in relation to natural disturbances and socio-economic institutions (Vogt et al. 1999ab, see Chapters 3 and 5).

1.2 Why certification is relevant

There are many reasons why certification is such a hot topic of conversation in the natural resource community. Timber certification is being described by some as a market-driven solution to social value-driven problems. For industrial and non-industrial forestland owners, it is perceived as an effective tool for producers of wood products to demonstrate,

by using a label, that their forests are being managed in a sustainable manner. Since certification is voluntary, forestland owners can decide whether they are interested in pursuing this process and in meeting its criteria. The reasons forestland owners decide to become certified or to pursue certification are quite varied and will be discussed below.

Several factors are driving the use of certification as a tool in natural resource management. Some of the factors and aims of forest certification are to:

- Control resource management techniques
- Control resources economically
- Alleviate poverty
- Create a system that assures the public that environmental concerns and values have been addressed
- Manage resources holistically so that healthy environments are maintained
- Diminish the amount of regulation that is being imposed on a forestland owner
- Balance the need to extract resources from the environment while maintaining sustainable ecosystems
- Control the values of private forestland owners, or for private forestland owners to maintain their values in the face of society's drive to impose its values on them

Several rationales can be stated as to why certification has become a method of characterizing the sustainability of natural resource management. Before examining these rationales, it is worthwhile to consider the word *sustainability*, because of the problems it has created for certification assessments (see 3.1.2). This term was used during the late 1980s, when the tools for certification were first being developed. Sustainability was the forest condition for owners to aim for when certifying their lands (Crossley 1996, Granholm et al. 1996, Upton and Bass 1996, Viana et al. 1996). Distinction should be made between the original definition of this term within forestry (i.e., related to constant yields of timber), to the more recent paradigm shift which strives for a balance between socio-economic and ecological variables (see 3.1.3).

Presently, the term sustainability is problematic because of the inability of academic and non-academic communities to consistently define it (see 3.1.2). No consensus exists on the definition of sustainability, except at a very general level (Wijewardana et al. 1997). This level, however, has not been useful in developing criteria and indicators in certification protocols. The inability to build consensus on the definition of sustainability has resulted in the word providing no guidance in identifying which indicators should be used in its assessment. Because of this, several certifying organizations are eliminating the use of this term in order to avoid its uncertainties. Currently, it is common to hear the term "good forest management" or "good forest stewardship" as the forest condition expected with certification (Mankin 1998). However, in this book, the word "sustainability" will be used because it defines the values associated with managers and certifiers (see 3.1.2).

However, spending too much time and energy in defining sustainability is not beneficial. It distracts developers of certification protocols from addressing other problems which are more significant, and can actually impede the usefulness of certification (see Chapters 4 and 7).

In the literature, there is no consensus on what the elements of sustainability are, but private forestland owners have specific elements they value. These values are expressed when forestland owners select a certification organization to certify their lands. For example,

forestland owners who value strict conservation are more apt to select a certifier that reflects this approach, while commercial forestland owners are more likely to choose certifiers that understand industrial concerns.

The initial interest in certification was driven by concerns over the non-sustainable uses of tropical forests and the reported losses of species from these forests (see 2.1). Much of this interest was fueled by reports of excessive deforestation rates in the tropics. In 1983, the first global forest assessment reported that tropical moist forests were being cleared at an unprecedented rate of over 11 million hectares per year (FAO 1983). Environmental groups initially attempted to reduce the rate of deforestation of tropical forests by boycotting the international tropical timber trade (Ozane and Smith 1993, Cabarle 1994b, Brockmann 1996, Viana et al. 1996). However, these boycotts were not very effective in changing the deforestation rates. In fact, it has been suggested that these boycotts further devalued already undervalued tropical forest resources, thereby increasing the rate of conversion of these forests (Vincent 1990, Johnson and Cabarle 1993). This suggested that a different approach was needed. The concept of timber certification was introduced to initially deal with the problem in the tropics, but it was later expanded to include all types of climatic forests — boreal, temperate, and tropical, as well as plantations (see 2.1).

The impact of deforestation on the sustainability of tropical forests was an important factor pushing the development of certification by environmentally focused organizations. This is apparent from an examination of the structure and data needs of certification protocols whose development has been strongly influenced by these organizations (see Chapter 4). These protocols reflect the present ethical and philosophical beliefs of society, and include those factors which are believed to be necessary to achieve sustainability. These protocols reflect the worldwide concern about deforestation and the losses of species in areas with high biological diversity (Guruswamy and McNeely 1998). All these factors are strongly reflected in protocols used by organizations under the umbrella of the Forest Stewardship Council (see 3.2).

Combined with these natural resource issues were concerns for the human rights of indigenous groups, and the high poverty levels of people living close to forestlands, especially in the tropics. In response, forest certification also became a vehicle to ensure land security and to alleviate the poverty of communities dependent on these ecosystems for their livelihoods. The criteria and indicators used in forest certification have been chosen to address the need to respect legislation and human rights, to recognize the utilitarian role of nature, to promote alternatives for the continuous consumption of forest products, and to obtain economic benefits (see Box 1.1).

Box 1.1

Categories of value-laden parameters of forest certification protocols

Parameters with emphasis on rules, legislation, and documentation

This category of data deals with destructive forest-use practices due to non-fulfillment of existing legislation, and/or rules designed locally to ensure the maintenance of the forest cover. These groups of parameters require a strong stand on what would be considered an alternative adequate model for using forest resources (environmentally and socially). Due to an inability to trust some claims from the timber industry, there was a need to require written documentation to justify all claims. This paperwork would allow for independent verification of all claims.

Parameters to ensure the protection of biodiversity, soil, and water

This category recognizes the existence of other forest values besides timber. It also deals with the new paradigm of using natural resources in the present, while also allowing future generations to enjoy the same benefits (and those benefits not yet recognized). This group of parameters adds terms to the certification vocabulary that are considered relevant for the evaluation of forest sustainability.

Parameters for empowering the poor and/or less-favored, labor rights, and other social benefits

This category formalizes the new paradigm elaborated in the *Brutland Report*. It is thought to incorporate concerns about existing inequities in the access and distribution of benefits of development to those segments of society contributing most to the production of goods. In addition, threats to the biological and cultural survivorship of indigenous groups and traditional communities dependent on forests and their resources were to be addressed under this topic. Moreover, concerns with slave and child labor had to be addressed, as identified by the International Labor Organization (ILO).

Parameters for ensuring financial profits and economic returns

This category deals with profits from the exploitation and commercialization of forest resources. For this group of parameters, certification initiatives should involve the business sectors, and should introduce language supporting financial profits and the measurement of sustainability through traditional mechanisms (i.e., constant volume of timber).

However, these parameters, proposed as measures to curtail destructive practices to maintain biodiversity and maintain the well-being of local populations, do not address the mechanistic links between socio-economic and ecological parameters. It is important to recognize that the values for species and healthy social and natural ecosystems appear to have driven the structure of existing forest certification protocols and are not based on objective data needs.

The point is not that human value-laden parameters are wrong or useless in this process, but rather to understand when they are, and when they are not, relevant to include in forest certification. There is a need to evaluate whether all parameters in a protocol of forest certification have to be included in an assessment of sustainable forest management (see 3.1.3, 4.2). This current approach in forest certification has been useful in identifying all the components integral to an ecosystem, but has not been very effective in determining how to weight the importance of the different information (see 5.1, 7.2). An approach that strives for uniformity in standards is not effective in (see 5.2):

- Analyzing and incorporating the heterogeneity that exists in ecosystems
- Assessing the legacies that may change how a system responds to a perturbation
- Determining how it recovers from management activities

Others see certification as a tool to improve forest-harvesting practices and forest management around the world. Their philosophy is that a certification label will result in increased market share for a private forestland owner. Their higher financial return should compensate for the increased costs incurred while improving harvesting practices and, at

the same time, increase the environmental services obtained from managed forests (Brockmann 1996, Viana et al. 1996). The certification label is useful only if it results in a more-informed consumer who will selectively buy those forest products that reflect his environmental values. For the producer, the ability to obtain a higher price, or to capture a market niche, should increase the financial returns from the marketplace. If this were to occur, forestland owners would definitely pursue certification.

For some, the need for certification has arisen because the distribution and marketing of forest products is so broad that the direct link between managing resources and the market has been lost. When consumers buy products, they have no way of knowing the quality of the natural resource management. The conflicts in forest harvesting methods and the public perceptions of abuses by the industry have resulted in a loss of trust between the public and the industry involved in managing and marketing forest products (see 3.2.2). Most of the certifiers see certification as a vehicle for decreasing conflicts concerning forest uses, and as a means of rebuilding the trust between the public and the forest industry (see 2.1, 2.2). This approach also assumes that only an independent third party can assess with any credibility the sustainability of natural resource management (see 2.3).

For some, certification is seen as a tool for easing the social friction between the public and the commercial forest industry (see 2.1). It is perceived that the certification label will allow the public to feel that their environmental values have been integrated into commercial forestry practices (Mater 1997). It is suggested that third-party certification systems might broker a new "social contract" between the suppliers of wood products and the consumers who buy them (Mater 1997).

Many of the differences between existing certification approaches occur at the level of what the standard forest condition should be on the ground, and how many other societal values should be obtained from these "working" forests (see 3.1). A number of the accredited certifying organizations, under the umbrella of the Forest Stewardship Council, have added many values they would like to achieve from privately held lands (see 3.2.2.2, 4.3). This places additional demands on private forestland owners and explains some of the difficulties small forestland owners have in pursuing certification (see 3.1, 7.4). The type of social agreement or contract that would allow forestland owners to manage their land in a productive and economical way, while still providing the public with the confidence that resources are being sustainably managed, is still an ongoing discussion.

Other certification protocols attempt to ensure that the values held by private forestland owners are not lost in the process of satisfying societal needs for a third-party assessment of forest management. Protocols, such as the Sustainable Forestry Initiative of the American Forests & Paper Association, reflect the values held by for-profit commercial entities and others who manage private forestlands. The primary goal of certification for "working" forestlands is to be able to extract products from forests while maintaining them in healthy conditions into the future (see 2.1, 2.2). When certification is pursued for working forestlands, its primary goal becomes the pursuit of good forest management on the ground, and the continued sustainable extraction of wood products (see 3.1.2).

Forestland owners may also pursue certification as a mechanism to decrease the amount of regulation they must satisfy (see 5.3.2, 5.3.3). Certification is perceived as a model that would replace the need to apply additional layers of strict regulations on forestland owners. For some consumers, the certification label would be sufficient to give them confidence that forests are being managed in a socially adequate and environmentally friendly manner. The idea behind this approach is that the imposition of more regulations on forestland owners would not result in a better-informed consumer. Past regulations have not produced an informed consumer, because the diversity of regulations has been difficult for a consumer to synthesize and evaluate whether forest sustainability has been achieved on the ground (see 3.1.2, 3.1.3).

Certification is also being provided as a tool that will more effectively stimulate forestland owners to change their field management practices. The idea is that people are more likely to be motivated to change their behavior (e.g., their field practices) by using the “carrot” instead of the “stick” approach. The carrot approach would work if certification encouraged people to pay a higher price for wood products or increased the producers’ ability to obtain a higher share of the marketplace, thereby increasing producer profits. The carrot approach uses an economic incentive (economic sustainability) to obtain ecological sustainability and socio-political sustainability. Higher profits would be the carrot that would induce forestland owners to modify their field practices. If wood prices were high enough, many practical improvements could occur in the management of forest resources that would satisfy the human values associated with these resources (however, see 7.9). For example, some management practices driven by economic factors that could be easily modified are:

- Longer rotations
- More coarse woody debris left after a forest harvest
- Better management of riparian habitats to improve wildlife habitat on commercial timberlands

It is too early to know whether people will be willing to pay a price premium for certified wood or how much of the wood-fiber needs around the world will be satisfied from certified wood sources (see 7.4, 7.6). Since the beginning of the forest certification debate, there has been the assumption that public outrage over environmental problems was powerful enough to produce a willingness for them to pay premium prices for wood products harvested from sustainable sources (Cabarle et al. 1995, Adamowicz et al. 1996, Brockmann 1996, Jenkins 1997). More recently, however, questions have been raised regarding whether consumers really are willing to pay a premium price for sustainably produced goods (see 2.1, 7.6). According to Drescher (1998), although consumers want standards to be imposed on how forest management is conducted, they do not want prices for wood products to increase (see 7.6, 7.7). If this is correct, certification’s main leverage in the marketplace will be its ability to determine where people buy their goods. There is concern that the public will become confused by the high number of labels and certification initiatives. There is the possibility that leverage in the marketplace may not materialize if the increased number of labels overwhelms the public, especially if the differences between labels are unclear (see 2.3).

In addition to the past reasons for pursuing certification, new uses are being developed. Certification is beginning to be recognized as an important tool to assess the trade-offs of global-level impacts of human activities. For example, certification is thought of as a tool to assess projects attempting to reverse large-scale impacts of humans on the global climate by sequestering carbon in forests (NRC 1998). This is an initiative to motivate industrial companies producing and releasing CO₂ into the atmosphere to balance their industrial outputs of C by sequestering an equivalent amount of C in forest biomass. Certification is the tool to ensure that these goals could be satisfied at the ground level, since companies would be allowed to continue to emit CO₂ at the industrial-plant level.

Roots of Forest Certification: Its Developmental History, Types of Approaches, and Statistics

Anna Fanzeres, Kristiina A. Vogt

2.1 Origins of the concept of forest certification

To establish a basis for the ongoing debate on forest certification, it is important to review some of the historical factors related to the growth of public environmental awareness. In order to make sense of the tremendous amount of information on this topic, the material will not be discussed in a continuous chronological sequence. It is hoped that the format used in this analysis will provide a more useful understanding of the issues relevant to this discussion. This analysis should be useful to those individuals who are already familiar with forest certification and for those who have more recently been confronted with this topic.

Forest certification is a remarkable social, economic, and historical phenomenon. Within a relatively short time, forest certification has solidified its place as an integral tool for addressing a diversity of forestry issues and has generated considerable controversy and debate as to its role in forestry. In fact, the fast pace at which it has become part of the dialogue and an integral part of numerous initiatives dealing with forests has been overwhelming and confusing at the same time (Wijewardana et al. 1997, Bruce 1998). The combination of media attention, public pressure, and market forces has created a web of interacting influences that can be quite complex. However, the goal of certification is simple: its purpose is to ensure that forests are managed in accordance with a set of standards considered environmentally appropriate, socially beneficial, and economically viable (Cabarle 1994, SGS 1994, Upton and Bass 1996, Viana et al. 1996, Elliott 1997). Certification recognizes that these values have been achieved in a forest by presenting a seal of approval that can be recognized by the public.

The concept of sustainable forest management can be traced back to the Middle Ages in Germany and France (see 3.1.3). Not all forestlands were set aside to be managed (Winters 1974, Shabecoff 1993, Jordan 1995), however, many forests were managed for specific products (e.g., wildlife, water, etc.). Besides the primary need to ensure the supply of timber, the practice of forest management was driven by a need to guarantee the availability of other resources (e.g., water) associated with, or originating in, forests (Hays 1959, Gottlieb 1993, Grove 1997). In some cases, concern for game availability or the desire for exclusive hunting grounds determined that forested areas were not converted to agriculture or other uses (Winters 1974, Gilbert 1979, McCormick 1989). Forests were also historically used for supplying firewood, timber, and for raising domestic animals; all

activities depended on being granted permission from kings, nobility, or locally ruling religious leaders (Gilbert 1979, Linnard 1982, Neeson 1991, Elliott 1996).

Recently, the traditional paradigm of sustainable forest management has been questioned (Cabarle 1994, Colfer 1995, Elliott 1996, Evans 1996, Gordon 1996, Granholm 1996, Merino 1996, Toman and Ashton 1996, Prabhu et al. 1996, Wijewardana et al. 1997, Barthod 1998). These past approaches to sustainable forest management, which focused exclusively on assuring constant yields, did not help to reduce environmental degradation (Winters 1974, McCormick 1989, Wilman 1990, Ludwig 1993). The new trend in forest management explicitly links forest ecosystem health and the achievement of sustainable development objectives (Waring 1985, Norton 1991, Constanza et al. 1992, Hammond 1992, Haskell et al. 1992, Kessler 1992, Norton 1992, Schaeffer 1992, Belsky 1995, Margules 1996, O'Laughlin 1996, Smith 1996, Drengson and Taylor 1997, Vogt et al. 1997). Scientists and managers are trying to move beyond ensuring constant yields of timber, or any other forest product of interest, to including other values held by the public (see 3.2.2). One factor contributing to this changed management strategy appears to be society's perception that the availability of forestlands, forest resources, and species might be threatened by increased deforestation rates worldwide.

The use of forest certification as a potential tool to deal with deforestation rates can be traced back to the late 1980s. However, the 1992 United Nations Conference on Environment and Development (UNCED) can be identified as the watershed event (Princen and Finger 1994) for the environmental movement as a whole, and the point at which certification became a reality. The United Nations Conference on Environment and Development (UNCED), the Rio Earth Summit, held in June 1992, was the first worldwide attempt to reach consensus on forest issues. Forestry issues became part of the international political agenda with ECO 92, when efforts were increased to determine how forests should be managed worldwide. After UNCED, the first sets of principles, criteria, and indicators were released on how sustainable forest management should be conducted and evaluated for forest certification (see 4.2.1, Heuvelink 1994, Ervin 1996, Crossley 1996, Bruce 1998, SFF 1998).

However, the driving forces behind the development of the idea of certification can be traced to when society started changing its views on how it perceived its environment (especially in developed countries). Some authors suggest that forest certification is a consequence of the growth of environmental awareness in the late 1960s and early 1970s (Granholm 1996, Hansen 1997). A pivotal book forcing the public to recognize the consequences of industrial growth and the harmful legacy it could produce for the present and future generations was Rachel Carson's *Silent Spring* (Carson 1965). For many, this book launched worldwide the concept of an environmental movement (McCormick 1989, Dobson 1990, Gottlieb 1993, Shabecoff 1993, Jordan 1995, MacDonald 1998, Cuomo 1998). Nonetheless, most writers in forest certification prefer to attribute the development of this idea to the late 1980s (Cabarle 1994, SGS 1994, Baharuddin 1995, Brockmann 1996, Lyke 1996, Upton and Bass 1996, Viana et al. 1996, Kiekens 1997, Bruce 1998).

In the 1980s, the high awareness of the loss of tropical forests played a pivotal role in stimulating the development of forest certification as a tool to control deforestation rates. The media attention given to the impact of deforestation and forest fires in the tropics made people aware of what was being potentially lost from these forests. This helped to create awareness of these activities and the need to stop them. For people living in developed countries, deforestation in the tropics was linked to destroying potential cures for diseases, food crops and numerous other valuable products, and the livelihood of native peoples. On one hand, this stimulated an ethical drive by some to preserve nature (and all natural things, including native peoples) because of its intrinsic value (Wilson 1988, Callicott 1989, Burks 1994, Guruswamy and McNeely 1998). For others, the issue

was more utilitarian. For those, the quality of life in the developed world would be endangered if this pace of forest loss was allowed to continue (Dobson 1990, Crossley 1996, Guruswamy and McNeely 1998). The public in developed countries was outraged by the high rates of deforestation that were occurring and demanded immediate solutions to this problem (Dobson 1990, Shabecoff 1993). The public perception was that this unacceptable model of land use was taking place because regulatory mechanisms were either non-existent or not enforced. For most people, this problem was recognized to be more acute in developing countries where most tropical forests are located. In developed countries, the loss of forests was also linked to a serious disrespect for the human rights of indigenous groups, which were perceived to exist in a harmonious relationship with nature (Posey and Balée 1989, Posey and Duffield 1997).

All these viewpoints were important catalysts for environmental groups (more strongly in Europe) to use in their campaign to boycott the purchase of tropical forest products (Ozane and Smith 1993, Brockmann 1996, Viana et al. 1996). In response to these campaigns, the solutions proposed were regulatory in nature (unilaterally or not), and were delivered as policy statements or laws that focused on controlling the trade of imported tropical timber (Box 2.1). Those governments, where society strongly participated or influenced decision making, were quick to respond to the pressures being exerted by their citizens. Their response was to begin proactive measures to deal with these issues. Industrialized, tropical timber-consuming countries issued national or local ordinances to curb the importation of tropical wood altogether, or only accepted those supply sources that were certified as sustainable (Crossley 1996, Viana et al. 1996).

Box 2.1

Some governmental initiatives to respond to public pressure against deforestation

The Muntingh Proposal was launched in 1988. Under this framework, the European Community (EC)-member countries would “only import tropical hardwood products produced under forest management and protection programs, and that such products be certified” (Crossley 1996).

The Austrian government in 1992, responding to growing pressure from local NGOs, passed legislation prohibiting the importation of tropical woods produced unsustainably. Indonesia, the major supplier to Austria at the time, filed a protest with the World Trade Organization (WTO) using the argument that this legislation was a barrier for international trade and an unfair practice. The Austrian government suspended the measure in 1996 (Crossley 1996, Viana et al. 1996).

Dutch Working Group of Experts — Deskundigenwerkgroep Duurzaam Bosbeheer Standards (DDB). This initiative was an effort by the Dutch government to determine what the standards for sustainably managed tropical forests would be. Once these standards were accepted by the Parliament, legislation was to be enacted forbidding any importation of tropical timber (starting in 1995) unless it could be shown to have been harvested from sustainable sources. The legislation was suspended, however, before it could be enacted, due to strong denunciations at the General Agreement for Tariffs and Trade and the European Union (Prabhu et al. 1996, SF&CW 1999).

Initiative Tropenwald (Germany) — In 1993, a group of concerned scientists, some NGOs, and representatives of governmental agencies initiated a process to develop criteria for an evaluation of sustainable management of tropical forests. These guidelines would guide German trade on tropical timber (Heuveldop 1994).

Indonesian Lembaga Ekolabel — This initiative developed in response to growing pressure from timber-buying countries (e.g., Austria). In 1992–93, a well-connected ex-government official, Emil Salim, called for a working group to design the framework for what would be called the Indonesian Ecolabeling Institute, and to develop the standards by which sustainable forest management should be conducted. The Institute opened in 1998 and has already developed a protocol for evaluating production in natural forests. A number of concessions in Indonesia are being tested under these criteria and indicators. This process has received much criticism from environmentalists as a mechanism to ensure that the large concessionaires would continue to have the freedom to conduct their usual practices.

During the time that some governments were attempting to regulate sources of timber from tropical countries, several international governmental organizations also began to be quite active in this arena. In the 1980s, the number of multilateral or bilateral projects began to proliferate, which promoted the preservation, or more efficient utilization, of forest resources. In 1983, the United Nations Food and Agriculture Organization (FAO), through its World Forest Appraisal Programme, expanded its inventory of forests worldwide by systematically gathering quantitative and qualitative data on forests. As part of this program, human impacts on forest conditions became officially incorporated in these international datasheets (FAO 1983). This new approach led to the release of FAO's statistics on deforestation rates. This report generated a worldwide debate on the extent of forestland loss and on tools for implementing sustainable forest management on the ground.

That same year, the FAO report triggered the International Tropical Timber Organization (ITTO) to launch an agreement for its member countries to voluntarily comply with a cooperative system between tropical timber producing and consuming countries (ITTO 1997). As described by Upton and Bass (1996), ITTO "launched the first commodity agreement with political commitments to ensure that all trade in tropical timber would only come from sustainably managed sources by the year 2000." In May 1990, ITTO published the *ITTO Guidelines for the Sustainable Management of Tropical Forests*. This was followed by two other publications: *Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests*, and *Guidelines on the Conservation of Biological Diversity in Tropical Production Forests* (ITTO 1997).

In 1985, the Tropical Forestry Action Plan (TFAP) was promoted by the World Bank as part of a joint effort with the United Nations Development Program (UNDP) and the World Resources Institute of Washington. The main goal of TFAP was to respond quickly and efficiently to the escalating rate of tropical deforestation (WRI and UNDP 1985). The preamble to TFAP expressed their philosophy of a utilitarian purpose for forests (i.e., they protect soil and water resources and provide habitat to half the world's species of plants and animals). This initiative aimed at identifying successful enterprises that were using forest resources sustainably (and also unsuccessful ones to learn from past mistakes), in order to promote worldwide projects that protected tropical forests and to improve the quality of life for local populations.

All these efforts by environmental organizations and governmental agencies were severely criticized by opposing groups. For example, the use of boycotts was denounced as a mechanism for controlling trade (e.g., GATT — General Agreement in Trade and Tariffs) using discriminatory and protectionist measures. Despite the fact that boycotts were voluntary and were being aimed at individual consumers (Carbale 1995), this perception occurred because they were adopted by governmental authorities. Many economists helped to fuel the dissatisfaction with boycotts that was being expressed by traders

of tropical timber products, and other consumer countries. They alleged that the lack of market value for rainforests would lead to further and faster conversion of forests to alternative land uses (Carbale 1995, Viana 1994). The Southern-Northern equity trade/resource-use issue was a strong argument that was reinforced by the corroboration that deforestation was also taking place in temperate and boreal regions (Viana et al. 1996). The lack of trustworthy mechanisms to ensure the effectiveness of claims and the obvious self-interests that appeared to be inherent in many of these programs discredited them with nongovernmental organizations (NGOs).

In the case of ITTO and TFAP, the public and a growing number of NGOs shared a deep distrust of claims made by large-scale businesses and Third World governments regarding environmental and human rights issues. Gabus et al. (1993) revealed a weakness of the ITTO scheme: "Once a member country shows efforts towards implementing policies, regulations, and management plans that ensure substantial progress towards the year-2000 target...all tropical timber products of that country will be certified as sustainably produced." Thus, the ITTO scheme almost became irrelevant to the current ongoing debate on forest certification (Crossley 1996, Prabhu et al. 1996). The main reason for this was the lack of trustworthy mechanisms to ensure the effectiveness of claims and the obvious self-interest invested in the process (Crossley 1996, Prabhu et al. 1996). The TFAP also received considerable criticism. NGOs and some funding governments saw that TFAP was, in fact, increasing deforestation rates due to its promotion of logging projects in primary forest areas (Colchester and Lohmann 1990).

All these initiatives and the counter-pressure movements they generated led to the development of an alternative compromise proposition (i.e., forest certification). However, the agenda behind the proposition for certifying forests was still being driven by developed nations attempting to ensure access to forest resources.

To satisfy the goals of forest certification, there was a need to develop evaluation tools that would be credible and widely accepted globally. A set of principles and criteria was needed that could be used to independently assess sustainable forest management (see 3.1.2, 3.1.3, Cabarle 1994, Baharuddin 1995, Prabhu et al. 1996, Upton and Bass 1996, Viana et al. 1996, FAO 1997, Wijewardana et al. 1997). The proposed format used to define principles and criteria of sustainable forest management included ecological, social, and economic parameters. This approach closely tracked the sustainable development concept articulated by the United Nations report, *Our Common Future*, also known as the *Brutland Report* (WCED 1987, Viana 1994). The theoretical perspective for this developmental model was based on the need to address environmental and social problems, while satisfying the need for continued economic growth (McCormick 1989, Dobson 1990, Simonis 1990, Shabecoff 1993, Jacob 1994, Smith 1994, Williams and Haughton 1994, Dahl 1996, Henderson 1996, Doorman 1998).

As previously mentioned, society in developed countries became more aware of environmental problems, starting in the late 1960s. During the same time, social issues were also becoming a growing public concern (McCormick 1989, Dobson 1990, Gottlieb 1993, Shabecoff 1993). The younger generation began to question the status-quo — despite being middle-class, having university degrees, and being the biggest beneficiaries of the social and material security achieved by their parents (McCormick 1989, Dobson 1990, Shabecoff 1993). Moreover, health conditions and *social pollution*, or degradation, was being linked to the state of the environment; although, for many, these latter issues were still considered applicable only to poor, less-developed countries (Goldsmith 1972, Shabecoff 1993, Jamison 1996). At this time, there was a renewed interest in the population debate, which focused on poor and technologically underdeveloped countries (Ehrlich 1968, McCormick 1989). Other social issues also became prominent, starting in the 1950s. For example, discussions on poverty, racism, and gender started to mobilize an increasing number of people. These discussions continued into the 1970s with antiwar and nuclear protests

(McCormick 1989, Dobson 1990, Gottlieb 1993, Shabecoff 1993, Jamison 1996). Demonstrations of civil resistance and discontentment spilled into the environmental arena, as well. This is illustrated by the commemoration in the United States of the first Earth Day in April 1970, that had hundreds of thousands of participants (McCormick 1989, Gottlieb 1993, Shabecoff 1993, Cuomo 1998).

Even the United Nations' agencies reflected the changes that were happening in society during this period. In 1968, the Biosphere Conference, held in Paris, produced recommendations regarding the need for more and better research on ecosystems, human ecology, pollution, genetic and natural resources, and also on conducting inventories and on monitoring resources. However, more importantly, this meeting introduced the concept that "deterioration of the environment was the fault of rapid population growth, urbanization, and industrialization" (McCormick 1989). The United Nations Economic and Social Council (ECOSOC), part of the United Nations original structure, was created in cooperation with FAO to address the "social and economic rehabilitation" of the postwar world.

In response to many governments' fears of social unrest during the Cold War era, a United Nations Conference on the Human Environment was held in Stockholm in 1972 (McCormick 1989, MacDonald 1998). At this conference, the paradigm of sustainable development (later published in the *Brundtland Report*) was officially introduced. It called for "the management and conservation of the natural resource base and the orientation of technological and institutional changes in such a manner as to ensure the attainment and continued satisfaction of human needs for the present and future generations" (WCED 1987). That same year, growing pressure from society to bring environmental issues more to the forefront of international attention prompted the creation of the United Nations Environmental Agency (UNEP). An important reason for the creation of UNEP may have been the need to enforce the UN system's legitimacy in dealing with international issues (McCormick 1989). This UN agency aimed to bring the design of environmental-related policies to an international framework, and to provide assistance for developing countries through information sharing and technology transfer.

Therefore, this new level of public consciousness resulted in the development of many new efforts in both the social and environmental arenas. Along with the social concerns described above, the unprecedented rate of perceived plant and animal species extinction resulted in this becoming an important topic in ecology (Myers 1984, Wilson 1988, Primack 1993, Pearce 1994, Raven 1998). Buzzwords such as *biodiversity maintenance* (and sometimes—enhancement) increasingly appeared in governmental documents and media publications. The development of the discipline of *conservation biology* has been heavily influenced by another discipline, *environmental ethics*, which was inspired by the same forces pushing for social ethics (Jordan 1995). Primack (1993) gave evidence of these early links when he outlined the principles of the former discipline:

- The diversity of organisms is good because humans enjoy watching biodiversity and a variety of potential products increases human survivorship rates;
- The untimely extinction of populations and species is bad unless it is part of a natural process of evolution;
- Ecological complexity is good and only in natural environments it is fully expressed;
- Evolution is good because it leads to new species and, thus, more biological diversity; and
- Biological diversity has an intrinsic value, despite whether humans make use of it or not (*and because it could always gain value in the future*).

The rationale behind the discipline of conservation biology and ecology is that a more diverse complex of plants and animals will contribute to a more stable and healthy system (Dobson 1990, Pearce 1994). However, many authors have presented arguments which contest the theory that a direct correlation existed between species diversity and ecosystems stability (see 3.2.1, May 1972, Calow 1992, Johnson et al. 1996, Bengtsson 1997). This unresolved controversy between species and ecosystem function does not, however, diminish the importance of biodiversity as a value for human societies (Guruswamy and McNeely 1998). In general, most of society and policy-makers are still responding to value-based drivers that have developed during the environmental movement, where the priority is on the maintenance of valued species. The culmination of this viewpoint can be highlighted by the United Nations Convention on Biological Diversity (CBD), one of the products of the 1992 UNCED (Box 2.2).

Box 2.2

A brief overview of the Convention on Biological Diversity (CBD)

Summary: The CBD was negotiated by the United Nations Environment Programme (UNEP). It was signed at UNCED and made active on December 29, 1993, ninety days after its ratification. As of October 1998, more than 170 countries had become parties to this convention. The three goals of the CBD are: to promote the conservation of biodiversity; the sustainable use of its components; and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. The CBD secretariat is located in Montreal, Canada. The Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA), which advises the Conference of the Parties (COP), promoted four meetings:

COP-1 took place in Nassau, the Bahamas, from November 28–December 9, 1994. Its decisions were: adoption of the medium-term work programme; designation of the Permanent Secretariat; establishment of the Clearing House Mechanism (CHM) and the SBSTTA; and designation of the Global Environment Facility (GEF) as the interim institutional structure for the financial mechanism.

COP-2 met in Jakarta, Indonesia from November 6–17, 1995. Its decisions were: designation of the permanent location of the Secretariat in Montreal, Canada; agreement to develop a protocol on biosafety; operation of the CHM; designation of the GEF as the continuing interim institutional structure for the financial mechanism; consideration on marine and coastal biodiversity; issues of Plant Genetic Resources for Food and Agriculture (PGRFA); and agreement to address forests and biodiversity, including the development of a statement from the CBD to the Intergovernmental Panel on Forests (IPF) of the Commission on Sustainable Development.

COP-3 met in Buenos Aires, Argentina, from November 4–15, 1996. Its decisions were: a work programme on agricultural biodiversity and a more limited one on forest biodiversity; agreement to hold a workshop on traditional knowledge (Article 8(j)); application by the executive secretary for observer status to the World Trade Organization (WTO) Committee on Trade and the Environment; and a statement from the CBD to the Special Session of the UN General Assembly (UNGASS) to review implementation of Agenda 21.

COP-4 took place from May 4–15, 1998 in Bratislava, Slovakia. Delegates addressed, inter alia: inland water, marine and coastal, agricultural and forest biodiversity; the clearing-house mechanism; biosafety; implementation of Article 8(j) (traditional and indigenous knowledge); access and benefit sharing; a review of the operations of the

convention; and national reports. Delegates also conducted a review of the financial mechanism.

Source: <http://www.iisd.ca/linkages/biodiv/cbdintro.html>

Those searching for a new paradigm for sustainable forest management were very aware of the importance to society of conserving plant and animal species. This can be shown by their use of *biodiversity maintenance* as one of the key components in all protocols being developed (see 3.2.1, 4.2.1). However, the only problem that has arisen is the expectation that societal values can be heavily relegated to private landowners (see 7.2). This expected social role clashes with another strong social and economic value (at least in most developed countries): private property rights (Westman 1990). Furthermore, this scenario is even more complicated for the small-scale forest management initiatives being pursued in developing countries characterized by common use of land and resources. *The Tragedy of the Commons*, by Garrett Hardin, has been extensively cited as the rationale for the need for private landowners to contribute to achieving societal values (Feeny 1990, Williams and Haughton 1994, Jordan 1995, Henderson 1996, Doorman 1998). For these authors, only privatization of the land would lead to the level of commitment necessary to ensure sustainability. Others prefer to defend the idea that the recognition of intellectual property rights of traditional communities will generate the necessary mechanisms for sustainable development (McCay 1987, Posey and Dutfield 1997).

The growing public awareness of environmental problems and concerns over societal inequalities set the stage for the solutions proposed by the *Brutland Report* and later reinforced at UNCED. This entire societal shift was also echoed in the economic arena. The discipline of *environmental economics* or *ecological economics* started growing exponentially and became the backbone of the sustainable-development model (Daly 1980, Constanza 1991ab, Constanza et al. 1991, Hardin 1991, Dahl 1996, Adamowicz et al. 1996). Numerous indexes of environmental and human welfare started to appear that contemplated this social dissatisfaction but ensured that business would continue as usual (Jacob 1994, Williams and Haughton 1994, Henderson 1996, Borgström 1997).

In the 1950s, because of the technological achievements that had occurred during WWII in many areas of human knowledge (e.g., medicine, transportation, communication, and information gathering), the world was geared to accept a technocratic model of development. The Allied nations wanted to ensure that development would be based on fast industrial growth and that the main beneficiaries would be the winners of the war. However, many less-developed nations would also be allowed to participate in this vision of a good future. For them, their good future would be the fulfillment of their roles as suppliers of natural resources and/or consumers of industrial goods (Keynes 1980a, Keynes 1980b, McCormick 1989, Gottlieb 1993, Schild 1995). Developing industrial capability was seen as fundamentally important in improving the present living conditions and in securing power and independence, even if it meant depleting resources and generating pollution (MPCG 1968). The Gross National Product (GNP) and the Gross Domestic Product (GDP), units for measuring industrial output, became the favorable indexes for the evaluation of development. Thus, the quality of life was linked to consumption (Clark 1991, Farber 1991, Jordan 1995). The world began to be ruled by trade values (Goldsmith 1997, Chichilnisky 1998).

In this context, the belief among politicians and decision-makers was that to become sustainable, the world economy just needed to more clearly incorporate social and

ecological factors. The re-casting of the National Accounts System and continuous expansion of the economy towards more environmentally correct and socially equitable activities would bring everybody to sustainability (Williams and Haughton 1994, Henderson 1996). The United Nations Development Programme (UNDP) has pursued an example of this solution formula, not directly related to forest certification, but to forestry in general. In the late 1980s, this agency made a great effort to develop the methodology and to convince member governments to adopt *environmental accounting*. This new approach incorporated the role of the environment in economic activities, both as a resource base and as receptacle of the residues from production and consumption processes. In developing countries, indicators (i.e., GNP and GDP) incorporating the side effects of production and consumption activities were perceived by UNDP to be essential to incorporate into any environmental accounting approach (Landerfield 1985, Bartelmus 1987, Repetto 1987, Peskin 1989, Tongeren 1990). This need was identified because developing countries frequently have growth produced at the expense of future incomes. More recently, starting in 1990, UNDP has annually published the *Human Development Index*, which measures the level of development in different countries in accordance with their population's access to education, health, freedom, and other value-oriented parameters (UNDP 1990).

Forest certification can be interpreted as an exercise to make this model operational within the forestry sector, where human-laden values dictate the rules by which forest resources are accessed, used, and preserved (see 3.2.2). This alternative does not contradict or conflict with the neoliberal dogma of economic growth (Simonis 1990, Constanza 1991, Jacob 1994, Williams and Haughton 1994, Adamowicz et al. 1996, Henderson 1996, Goldsmith 1997, Chichilnisky 1998, Doorman 1998, Reid 1998, Sagoff 1998). Since questions about patterns of natural resource uses and consumerism of processed goods were not alternatives that society (especially in developed nations) was willing to hear, forest certification has become a very palatable option.

Thus, the role of the economic sector cannot be ignored in the ongoing debates on sustainable forestry. The market issue for some supporters of sustainable forest management is that financial rewards are a consequence of achieving better management practices. For others, the ultimate pursuit of new market niches or higher profit margins are the driving forces behind implementing such an approach (Crossley et al. 1994, Cabarle 1995, Adamowicz et al. 1996, Brockmann 1996, Jenkins 1997).

The pressures imposed by environmental NGOs also contributed to the rise in forest certification among the economic sector. Some of the impetus resulted from a lack of credibility when verifying claims that timber sources were being obtained from sustainably managed forests. For example, in the early 1990s, World Wildlife Fund – U.K. found that most claims of sustainable timber sources could not be supported. The results of a survey they conducted showed that only three companies out of 80 working with tropical timber could back their claims that their wood sources were from sustainably managed forests (Read 1994). In response to the reactions to this survey, some large lumber and furniture businesses (e.g., U.K.-based DIY retail chain B&Q) became subscribers to the World Wildlife Fund program, 1995 *Buyers Group* (Elliott 1997, Bruce 1998). The participation of the U.K. Timber Trade Federation and the Scottish Hardwoods Charter helped to further push the idea of creating a system to assess claims of sustainable practices. The representatives from these two forest industries, encompassing nearly 100 companies, quickly adopted the WWF target for achieving sustainable consumption of wood. For the subscribers to this program, the target date for achieving sustainable consumption of wood was later changed to the year 2000.