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International Forest Policy – the instruments, agreements and processes that shape it

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Foreword

After more than fifteen years of discussions at various levels, this year the United Nations General Assembly adopted the first ever Non-Legally Binding Instrument on All Types of Forests. It is a historic milestone in international policy and provides the first internationally agreed articulation of sustainable forest management and sets clear priorities for government action at both the national and international levels. Most notably, governments agreed on four Global Objectives on Forests: to reverse the loss of forest cover, improve the contribution of forests to local livelihoods, increase the area of sustainably managed and protected forests, and enhance financial support for sustainable forest management.

Forests continue to disappear at an alarming rate around the world. This rich source of food, shelter, environmental and human health and spirituality is caught in a battle between short term needs and long term well-being. It is not that we lack the skills or the knowledge to conserve our forests in a way that meets our needs, but that we often have not been able to set up incentives and institutional structures at the national and international levels that promote the care and sustainable management of our forests for the benefit of both local communities and the rest of society. It is hoped that the Instrument on All Types of Forests will provide a paradigm shift in this regard, emphasizing policy measures that enhance the value and benefits garnered through sustainable forest management and thus ensure the long-term health and viability of this crucial asset and public good.

Negotiations of the Instrument and the Global Objectives on Forests started in 2005 when the United Nations Forum on Forests undertook a review of the international arrangement on forests. At that time, the Forum Secretariat decided to undertake an assessment of forest-related decisions taken in other fora. To assist us in this endeavor, we sought the help of three able experts, and the results of their labor of love can be found in this publication. I would like to extend my thanks Connie McDermott, Aran O'Carroll and Peter Wood for their hard work and dedication to this project.

The views conveyed in these papers are meant to spur discussion and do not necessarily reflect the views of the UN Forum on Forests Secretariat, the UN Forum on Forests, or its member States. The following chapters provide an in-depth assessment of the types of decisions taken by global and regional treaty bodies organized according to the seven thematic elements of sustainable forest management. It is meant to be used as a reference tool for both policy makers and practitioners. We hope that it will provide a better understanding of the range and scope of forest-related discussions held around the world and a means toward better international forest-related policy making.

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List of Acronyms

ACT	Amazon Cooperation Treaty
ACTO	Amazon Cooperation Treaty Organization
AFLEG	Africa Forest Law Enforcement and Governance
AHTEG	Ad hoc Technical Experts Group
ASEAN	Association of South East Asian Nations
ATBT	Agreement on Technical Barriers to Trade
ATO	African Timber Organization
C&I	Criteria and Indicators
CACB	Central American Convention on Biodiversity
CAFC	Central American Forest Convention
CBD	Convention on Biological Diversity
CBP	Cartagena Biosafety Protocol
CCAD	Central American Commission on Environment and Development
CDM	Clean Development Mechanism
CHM	Clearing House Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLRTAP	Geneva Convention on Long Range Transboundary Air Pollution
CMS	Convention on Migratory Species
COFO	FAO Committee on Forestry
COP	Conference of the Parties
CPF	Collaborative Partnership on Forests
CRCI	Costa Rica-Canada Initiative
CSD	Committee on Sustainable Development
East Asia FLEG	East Asia Forest Law Enforcement and Governance
ECOSOC	Economic and Social Council of the United Nations
EMS	Environmental Management System
ENA FLEG	Europe and North Asia Forest Law Enforcement and Governance
ENGO	Environmental Non-governmental Organization
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FBD	Forest Biodiversity
FLEGT	Forest Law Enforcement, Governance and Trade
FMU	Forest Management Unit
FSC	Forest Stewardship Council
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GEF	Global Environmental Facility
GHG	Green House Gases
GLOBE	Global Legislators Organization for a Balanced Environment
GM	Genetically Modified
GMO	Genetically Modified Organism
GPG	Good Practice Guidance
GRASP	Great Apes Survival Project
HCVF	High Conservation Value Forest
IAF	International Arrangement on Forests
IFF	Intergovernmental Forum on Forests
IF-WIAM	Integrated Framework for Wetland Inventory Assessment and Monitoring
IGO	Intergovernmental Organization
IIED	International Institute for Environment and Development
ILO	International Labor Organization
INGO	International Non-governmental Organization
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
ITFF	Interagency Task Force on Forests
ITTA	International Tropical Timber Agreement
ITTC	International Tropical Timber Council

ITTO	International Tropical Timber Organization
IUCN	International Union for the Conservation of Nature and Natural Resources
IUFRO	International Union of Forest Research Organizations
LBI	Legally binding instrument
LMO	Living Modified Organisms
LFCC	Low Forest Cover Countries
LULUCF	Land Use, Land Use Change and Forestry
MEA	Multi-lateral Environmental Agreement
MCPFE	Ministerial Conference for the Protection of Forests in Europe
MDG	Millennium Development Goal
NAAEC	North American Agreement on Environmental Cooperation
NAFTA	North American Free Trade Agreement
NAP	National Action Programme
NFP	National Forest Programme
NGO	Non-governmental Organization
NLBI	Non-legally Binding Instrument
NTFP	Non-timber Forest Product
ODA	Overseas Development Aid
OECD	Organisation for Economic Cooperation and Development
PAS	Protected Areas Strategy
PEFC	Programme for the Endorsement of Forest Certification schemes
PEOLG	Pan-European Operational Level Guidelines for Sustainable Forest Management
PfA	Proposals for Action
POW	Programme of Work
Ramsar	The Ramsar Convention on Wetlands
RFI	Resource Futures International and Associates
SADC	South African Development Corporation
SBI	Subsidiary Body on Implementation
SBSTTA	Subsidiary Body on Scientific Technical and Technological Advice
SFM	Sustainable forest management
SIDS	Small Island Developing States
SPS	Sanitary and Phytosanitary Measures
TKU	Traditional Knowledge and Use
TRIPS	Agreement on Trade-related Aspects of Intellectual Property Rights
UN	United Nations
UNCCD	UN Convention to Combat Desertification
UNCED	UN Conference on Environment and Development
UNCSD	UN Committee on Sustainable Development
UNCTAD	UN Conference on Trade and Development
UNDESA	UN Department of Economic and Social Affairs
UNDP	UN Development Programme
UNECE	UN Economic Commission for Europe
UNEP	UN Environment Programme
UNESCO	UN Educational, Scientific and Cultural Organisation
UNFCCC	UN Framework Convention on Climate Change
UNFF	UN Forum on Forests
WHC	World Heritage Convention
WSSD	World Summit on Sustainable Development
WTA	World Trade Agreement
WTO	World Trade Organization
WWF	World Wildlife Fund/Worldwide Fund for Nature
YAP	Yokohama Action Plan

EXECUTIVE SUMMARY

This report, commissioned by the Secretariat of the United Nations Forum on Forests (UNFF), seeks to provide a systematic assessment of how the world's multi-lateral instruments, processes and agreements address the major environmental, social and economic benefits that forests provide. In so doing, it aims to improve transparency and promote better coordination among existing international forest-related efforts.

This research builds upon a wealth of literature on international forest governance, including other comparative studies of forest-related multi-lateral environmental agreements. The unique contribution of this work is its detailed, systematic and comprehensive identification of specific substantive areas of overlap, duplication, contradictions and/or policy gaps, using a framework based on commonly accepted themes and associated criteria of sustainable forest management.

SCOPE OF THE REPORT

Seven thematic elements of forest management were used to frame this analysis:

1. Extent of forest resources
2. Biological diversity
3. Forest health and vitality
4. Productive functions of forest resources
5. Protective functions of forest resources
6. Socio-economic functions
7. Legal, policy and institutional framework

These themes were selected due to their widespread use within various international processes, and due to UNFF's recommendation that national governments adopt these themes as a framework for sustainable forest management (SFM) policy-making (UNFF 2004b). Hence they provide a useful overarching framework with which to assess the comprehensiveness and cohesion of existing multi-lateral forest-related international instruments.

Within this broad thematic framework, we have identified sub-themes or "criteria" that serve to further define the themes and enable detailed substantive analysis. The criteria were selected iteratively based on their common usage in Criteria and Indicator (C&I) processes and in the international instruments themselves.

The instruments that were selected for examination in this report fall within the following categories:

- Global, legally binding forest-related instruments (the major multi-lateral environmental agreements and trade agreements)
- Global, non legally binding forest instruments
- Regional approaches (criteria and indicator processes, regional agreements)
- Non governmental approaches (forest certification)

The global instruments were selected according to their direct relevance to the seven thematic elements, and the level of participation, particularly amongst nations with high levels of forest cover and/or trade in forest products. The sampling of regional instruments was aimed at representing all of the major forested regions, despite significant variation in the level of participation and productivity among regions. The analysis of forest certification systems was limited to those sharing common substantive forest management standards at the global level. Appendix B provides a complete list of the instruments, agreements and processes thus selected for systematic analysis in this report.

METHODOLOGY

The report's core methodology was the creation of a database that systematically categorizes international decisions of the selected instruments by forest theme and substantive criteria. The decisions addressed include those in the original agreements, as well as key guiding policy documents that have emerged in formal sessions and meetings of the parties after each instrument's entry into force, including those held prior to January 2007.

All of the agreements reviewed were given a criterion-by-criterion analysis, noting text relevant to each criterion. In the case of the global, legally binding instruments, all of the binding, or "directory" decisions that mandated a particular course of action, as well as general principles, guidelines and programs of work, were catalogued in the policy database. These decisions, principles, guidelines and programs were categorized by the jurisdictional level at which the requirement was aimed (i.e. international, regional, national, sub-national), and the nature of the policy tool (for example, action plan, information collection, behavioral targets, procedural approaches, etc.). Importantly, other non-binding decisions, such as those "encouraging", "recommending", or "urging"-- but not committing-- parties to action, were excluded from our analysis.

Due to the searchable nature of the database, we were able to quickly identify how each forest theme was, or was not addressed by each of the instruments. This allowed us to also identify areas of "benign" overlap, as well as areas where overlap posed the risk of policy conflict. Finally, we were able to identify forest-related issues that have yet to be addressed within these instruments.

The legally binding global-scale agreements were subjected to the most detailed analysis due both to their legal complexity and limitations in time and resources. Given the time and opportunity, a similar in-depth analysis could be applied to all global and regional agreements, both binding and non-binding.

KEY FINDINGS

Gaps, Overlaps and Conflicts by SFM Thematic Area

The number and diversity of forest-related international instruments, agreements, and processes is staggering and indicative of a tremendous degree of shared global concern. It is equally indicative of a lack of global consensus and coordination regarding who should shape the future of our forests, what our goals for those forests ought to be, and how those goals can best be achieved.

In the absence of a coordinated forest regime, numerous forest-related instruments have filled the void, each with a unique focus, such as climate change, biodiversity, or global trade. In some cases forest-related issues are embodied in founding agreements and policy documents. In others, forest-related content has emerged later in the instrument's development, whether through decisions made at successive Conferences of the Parties or work programs or guidelines. Overall, the focus on forests has continued to spread and disperse as part of a general broadening of mandates and growing preference for holistic approaches to sustainable development.

The majority of forest-related legally binding global instruments include very little directory language¹ addressing sustainable forest management. The most notable exceptions are the trade agreements under the World Trade Organization (WTO) and the commitments made under the International Tropical Timber Agreement (ITTA) for the sustainable trade of tropical timber. Of these two exceptions, the WTO commitments are accompanied by a greater capacity for enforcement. None of the instruments address the conundrum of balancing trade and global economic growth with environmental protection and local social benefit. Meanwhile, the pivotal issue of the appropriate transfer of resources from developed to developing countries continues to serve as a significant impediment to progress.

These broad policy challenges of balancing trade with environmental and social concerns, and balancing North-South financial obligations, are likely to remain as subjects of debate into the foreseeable future. Moving forward, therefore, must not be contingent on resolving these issues. Instead, tangible advancement may be achieved by focusing on specific substantive forest management challenges and better coordinating the strategies to address those particular challenges.

The following subsections, therefore, begin by summarizing our analysis of instruments according to the seven thematic elements of SFM. The criteria covered under each theme are indicated in bold text. These findings are then presented in a policy table, organized by substantive theme and criteria, and by instrument type.

¹ For the purposes of this report, "directory language" is defined as those decisions that represent commitments to a given action by all Party members, characterized by the use of terms such as "must" and "shall". This is contrasted with "discretionary language", which allows for a greater degree of freedom in interpretation and compliance (e.g. Parties are "invited" to perform a particular action; Parties "may" chose to comply with a given requirement, to the extent that it is consistent with their national objectives, etc.).

Theme 1 – Extent of Forest Resources

This theme addresses the management of the extent of forests. An important first step in addressing forest extent is to monitor and report changes in forest cover. Several global, legally binding instruments (LBIs) have instituted requirements for national-level inventory and reporting (UNFF 2004c: 7). The recently effective Kyoto Protocol requires the inventorying of land use-related deforestation, afforestation, and reforestation in developed country Parties. Two voluntary measures that overlap with the Kyoto obligations are the Ramsar Convention's encouragement of inventorying of forested wetlands and the Convention on Biodiversity's (CBD's) encouragement for inventorying of forest related biodiversity. These reporting requirements are bound by the limited, and yet overlapping substantive content of the conventions themselves.

In regards to governing the maintenance or expansion of forest extent, perhaps the most coherent and forceful global-scale measure has been the development of incentives under the Kyoto Protocol "Clean Development Mechanism" (CDM) to increase and/or maintain forest cover. The focus of the Land Use, Land Use Change and Forestry (LULUCF) measures of the Kyoto Protocol, however, is on emissions and removals of sequestered carbon arising from land use, which while potentially affecting the maintenance and expansion of forest extent requires more active coordination to support the environmental objectives of other global conventions, such as the conservations on biodiversity and wetland protection.

In regards to global non-legally binding instruments (NLBIs) on forests, the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF) produced numerous Proposals for Action (PFA) addressing forest inventory, afforestation, reforestation and deforestation. However these PFA have yet to be translated into cohesive and coordinated commitments to action.

The Food and Agriculture Organization of the United Nations (FAO) plays a key role in inventorying the extent of global forest resources. While the primary focus of this study is on multi-lateral agreements, rather than UN agencies, it is nevertheless important to acknowledge the FAO's work in soliciting and compiling national forest inventory data. MEAs are in a position to influence the quality of the data available to FAO by promoting high quality, consistent and comprehensive inventories among Parties to the agreement, and by coordinating inventory efforts across agreements.

All of the regional instruments analyzed in this report address the issue of forest cover and most contain provisions for the development of national-level and/or regional-level inventories of forest extent. In the case of the Central American Forest Convention, parties have made legally binding commitments to regionally coordinated forest inventory. Additionally, the various voluntary Criteria and Indicator (C&I) processes provide frameworks for national-level and forest management unit (FMU)-level inventory of the extent of forest resources. There is overlap, however, and coordination is limited among the inventory reporting obligations found in global, regional and C&I instruments (UNFF, 2004: 7).

In regards to afforestation, the regional instruments and C&I processes only weakly reinforce the Kyoto provisions. Reforestation is directly addressed under the MCPFE, Tarapoto, Lepaterique and African Timber Organization (ATO) C&I processes, while other regional and C&I processes address regeneration more indirectly through the inventory and monitoring of forest cover over time. The regional instruments and C&I processes almost universally address deforestation, but some focus only on tracking deforestation, others discourage forest conversion, and none prohibit conversion altogether.

In regards to non-governmental forest certification, the Forest Stewardship Council (FSC) International Principles and Criteria provide for inventories of the extent of forest resources, require reforestation, and prohibit deforestation by conversion (criteria 6.10). The Programme on the Endorsement for Forest Certification schemes (PEFC) endorses standards at the national level, drawing on the Montreal and MCPFE C&I and other international C&I processes as a method for integrating international priorities.

Theme 2 – Biodiversity

This theme addresses the management of forest biodiversity. The issue of forest biodiversity is relatively well covered under the CBD, as well as the somewhat overlapping Ramsar Convention on Wetlands, World Heritage Convention (WHC) and Convention on International Trade in Endangered Species (CITES). This coverage however is largely non-directory, often reflecting internal conflict in the relative priorities placed on environmental protection and development or "sustainable use". Potential conflicts exist, furthermore, between the WTO principle of non-discrimination and the ability of country Parties to impose import restrictions to address regional and/or global biodiversity concerns. This conflict surrounds the protection of endangered ecosystems, species and genotypes as well as the issues of genetically modified organisms (GMOs) and other biotechnology risks.

Of the three categories of biodiversity addressed as policy “criteria” in this report, i.e. ecosystem, species and genetic diversity, the conservation of genetic diversity has received the least direct attention. The attention that CBD has placed on genetics has largely been focused on the issue of access to genetic resources (i.e. addressing the issue of sustainable and equitable use).

The issue of Protected Areas is well covered in the CBD, Ramsar and WHC. However, this coverage is generally voluntary, and lacks provisions to ensure that protected areas are environmentally representative, and that they address the issues of connectivity, roadless areas, primary forests and other forests of high conservation value (with the exception of mangrove forests as highlighted under the Ramsar Convention).

The IPF/IFF PfA and UNFF have not provided any further clarification with regards to the potential conflict between MEA measures seeking to conserve biodiversity and those seeking to maintain unencumbered trade. The topic of the risks associated with biotechnology, specifically genetically modified trees, has not been formally addressed either, although it was the focus of debate at a side event held during UNFF 4. Gaps identified with regards to protected areas (ecological representativeness and connectivity) and maintenance of genetic diversity, are mentioned in the IPF and IFF Proposals for Action (PfAs), although these remain poorly addressed.

Not surprisingly, most of the C&I processes contain language that is much more detailed regarding the conservation of forest biodiversity. The Montreal and MCPFE C&I processes contain provisions addressing the maintenance of genetic diversity of tree seed sources and natural regeneration. The MCPFE C&I address gaps identified with regards to ecological representativeness, with an emphasis on protecting rare or vulnerable ecosystems, including primary forests. The African Timber Organization/ International Tropical Timber Organization (ATO/ ITTO) C&I take the strongest stance with regards to “risks associated with biotechnology” by banning the use of genetically modified organisms altogether.

Overall, the Northern regional instruments put a greater emphasis on the use of protected areas for in-situ conservation, while those of the South express a greater concern for development priorities.

In regards to forest certification, FSC standards contain substantially more detail regarding forest biodiversity conservation than many of the other processes and agreements examined here. However their focus on individual forest management units limits their ability to address landscape-level biodiversity concerns such as migratory corridors. The FSC’s requirement of identifying high conservation value forests (and requiring that these values are protected) represents a unique approach to preventing the loss and fragmentation of critical habitats, an issue currently not well addressed by the legally binding instruments. In regards to “risks associated with biotechnology”, an issue largely missing from intergovernmental agreements, the FSC takes a similar approach to that of the ATO/ ITTO C&I by prohibiting the use of genetically modified organisms. PEFC endorsed schemes incorporate regional C&I processes, but the schemes vary in the specific content of their performance standards.

Theme 3 – Forest Health

This theme addresses the management of risks to the health of forests. There are many management challenges associated with global forest health and the global LBIs address some of these threats more thoroughly than others. The issue of alien species is covered under the CBD but in largely advisory language. Furthermore, WTO places the burden of conclusive proof of environmental harm on country Parties desiring to place import restrictions on potentially invasive alien species. Fire receives very little coverage, despite the damage caused by both human-induced fires and fire suppression on many forests of the world. Forest degradation is identified as a major concern of the United Nations Convention to Combat Desertification (UNCCD). The UNCCD’s non-hierarchical structure encourages regions and country Parties to develop their own priorities for forest rehabilitation. The impact of pollution on forests receives very little attention. The impacts of climate change on forest health are acknowledged in several conventions. However, there is a lack of coordinated efforts to monitor climate change impacts. Forest pests and diseases (other than alien species) are not well covered by global-scale agreements.

Aside from pollution, the IPF/IFF PfAs do little to cover the gaps associated with identified threats to forest health. Although the UNFF has discussed controlling pests and diseases, the resultant resolution essentially defers to existing WTO rules.

Most of the C&I processes contain much more specific language than the LBIs regarding pests, diseases and fire. Notably, some (such as the Montreal Process) address this with reference to the “range of historic variation”, acknowledging that natural disturbances contribute to a healthy forest ecosystem. Many of the C&I processes (including the ATO/ITTO C&I) include provisions to reduce or eliminate the use of pesticides.

Several of the regional agreements (such as the Central American Forest Convention) reflect regional strategies to address threats to forest health in the context of preventing transboundary harm, a widely accepted obligation within international environmental law.

Although limited by their voluntary nature, FSC standards provide relatively detailed guidance for the maintenance of ecological function and prevention of forest degradation during harvesting and road building. The standards also restrict the use of forest chemicals, and favor their elimination. PEFC endorsed schemes incorporate regional C&I processes, but the schemes vary in the specific content of their performance standards.

Theme 4 – Productive Functions

This theme addresses forest ecosystem productivity and productive capacity. Only two legally binding global instruments address this issue directly, and only through voluntary guidance. The ITTA provides information, outreach and individual project funding in support of sustainable management practices within tropical producing member countries. The CBD provides voluntary guidelines for “biodiversity use” and responsible tourism. The management of forests for non-timber forest products is not well covered by any of the legally binding global instruments. In terms of accounting systems for forest yields, global accounts of forest production are based on national reports and contain substantial gaps, particularly in respect to non-timber resources.

The IPF, IFF and UNFF all address the issues of forest productivity and have encouraged a broader accounting of forest-related values in decision-making for sustainable forest management, including not only timber production but also the management of non-timber forest products, recreation, and other forest uses.

Those legal and non-legal regional instruments in Europe, Central America and Africa that are specifically focused on forests, all include provisions aimed at sustaining forest economic productivity. A stronger emphasis is placed on non-timber values in these regional instruments than in the global ITTA. The Central American Forest Convention is unique in its emphasis on forest management for subsistence purposes.

Some regional instruments, such as the Central American Forest Convention, include directives calling for the accounting of the productive functions of forests. Likewise the C&I processes generally encourage the accounting of productive forest functions. However as illustrated in the first overview report of the Montreal Process C&I, there are capacity gaps in regional reporting efforts (MPCI 2003: 20).

The FSC standards include relatively comprehensive coverage of silvicultural practices, including the accounting of growth and yield. PEFC endorsed schemes incorporate regional C&I processes, but the schemes vary in the specific content of their performance standards.

Theme 5 – Protective Functions

This theme addresses the management of forests for the conservation of ecological services. The role of forests in the global carbon cycle and climate change are addressed by the Kyoto Protocol and LULUCF provisions. Desertification is covered by the UNCCD, through a focus on regional coordination and National Action Plans. Soils have received relatively little specific coverage, although CBD provisions to protect biodiversity provide an “umbrella” under which soil conservation logically fits. Water protection is covered by primarily discretionary text in the CBD, UNCCD, UNFCCC, ITTA, WHC and Ramsar. The role of forests in mitigating pollution (other than greenhouse gasses) is not addressed in the global instruments.

The IPF and IFF PfA's go a great deal further than the LBIs towards addressing the protective functions of forests and acknowledging the protective value of maintaining forest cover. However, very few countries have produced the required reports indicating the implementation of the PfAs, and the UNFF has yet to produce a resolution that addresses this theme directly.

The regional instruments go a long way to addressing the gaps identified in the legally binding instruments with regards to the protective functions of forests, particularly in terms of soil and water protection.

Although it is a small component of the Central American Convention, the call for environmental parameters to be incorporated into estimations of economic growth (accounting for the value and depreciation of forest resources and soils) is a meaningful step towards acknowledging the value of natural systems and their ecological services.

The Association of Southeast Asian Nations Agreement on the Conservation of Nature and Natural Resources (ASEAN Agreement) is the only agreement or process to acknowledge the pollution mitigation capacity of forests.

The C&I processes examined here are primarily concerned with the measurement of variables associated with protective functions, and do not contain specific requirements for on-the-ground action. They do, however, provide some innovative approaches to monitoring forest protective functions, such as using the historic range of water flow as a baseline with which to compare current water flow (Tarapoto and Montreal Processes).

FSC's requirements address many of the same gaps that the regional processes do with regards to the protection of water, soil and ecological functions. PEFC endorsed schemes incorporate regional C&I processes, but the schemes vary in the specific content of their performance standards.

Theme 6 – Socio-economic Benefits

This theme addresses the socio-economic benefits of forests. The WTO has instituted the most cohesive and forceful directory provisions related to socio-economic benefits, and these are focused on the reduction of barriers to global trade. The environmental conventions, in contrast, place emphasis on the protection of local benefits, support of indigenous knowledge, and the public participation of local peoples including women, although largely through advisory text. There are no provisions addressing the broader question of the impacts of WTO decisions on local welfare. However, the CBD has made efforts to collaborate with the WTO regarding intellectual property rights and genetic resources. None of the conventions address the broader issue of local and indigenous legal rights to land and resources.

In regards to forestry-specific concerns, the ITTA is the only LBI that directly addresses the economic viability of natural resource management and production. The emphasis of the ITTA is on industrial production. None of the global LBIs address forest management for subsistence uses, despite the fact that fuelwood accounts for the majority of wood harvest for many developing country parties. In terms of other non-timber uses, the approach is advisory at most, with the CBD providing voluntary guidance on sustainable tourism and several of the environmental conventions mentioning the importance of non-timber forest products.

Labor issues are not raised in these conventions. While it could be argued that labor concerns are the purview of the International Labor Organization (ILO), a holistic approach would require greater communication and recognition of the importance of forest-related labor to the welfare of rural communities.

Finally, the UNCCD is the only instrument that pays focused and consistent attention to the broader issue of rural poverty. The UNCCD, however, is limited to addressing drought and desertification, and thereby applies to only a limited segment of the world's forested areas. Considerable research has been done on the symbiotic link between rural poverty and forest degradation, suggesting that any international arrangement on forests must address either directly, or through linkages with other multilateral instruments, the issue of rural welfare as a whole. This undoubtedly would include greater attention to macro-economic forces, as well as economic incentives for sustainable forestry practices.

The IPF/IFF Proposals for Action provide guidance that, if followed, could help address some of the gaps in the legally binding global instruments.² For example, the PfA address resource rights issues beyond the particular concern of intellectual property rights covered by the CBD. They also address the environmental and social impacts of global trade, thereby linking global and local development efforts. Furthermore, the IPF/IFF PfA support the development of National Forest Programmes (NFPs) as a tool for integrating both national and global priorities into cohesive and holistic strategies for SFM. The NFPs may help to address the socio-economic functions of forests in those countries with the political will and capacity to develop effective forest strategies.

The regional instruments vary in the socio-economic issues emphasized. Instruments in developing regions address a number of issues relating to social welfare that are largely overlooked in global LBIs, such as land tenure, resource rights (beyond intellectual property rights), and the socio-economic

² The reader is reminded once again, that the analysis of legally binding instruments was restricted to assessment of original Agreement text and subsequent *directory* decisions, i.e. those decisions that represented commitments to a given action by all Party members.

impacts of industrial activities and global trade. The developed countries, in contrast, place a stronger emphasis on reporting requirements and pay relatively less attention to the distribution of benefits.

The FSC's international and regional forest certification standards have produced some very directive language addressing socio-economic issues, such as labor rights, the promotion of locally-based trade, and indigenous peoples' rights. PEFC endorsed schemes incorporate regional C&I processes, but the schemes vary in the specific content of their performance standards.

Theme 7 – Legal, Policy and Institutional Frameworks

This report was motivated by the continuing global debate over future needs for international arrangement(s) on forests. As yet, there is no agreement on the appropriate form and content of such arrangement(s). The existing legal, policy and institutional frameworks of the legally binding forest-related conventions together serve to disperse global forest strategies across a combination of issue-specific environment and trade-focused conventions. This has created considerable gaps and overlaps in some issue areas, and produced potential conflicts.

A matter of central debate among all LBIs has been the transfer of resources and technology from developed to developing countries. All of the legally binding global instruments under analysis have taken some action to address the issue of global resource, knowledge and technology transfer. The Global Environmental Facility (GEF) has provided funding for developing country parties within the CBD, UNFCCC and UNCCD. The WHC has recently increased its support for listing developing country World Heritage sites. ITTA has provided financing for hundreds of projects supporting SFM in developing tropical countries. Nevertheless, a lack of developing country resources remains a persistent barrier to achieving many of these conventions' goals. The UNCCD, in particular, has been chronically under-resourced.

At the country party-level, many of the global LBIs call for coordinated national planning and strategic development of national-level legal, policy and institutional frameworks needed to implement LBI objectives. However, as earlier noted, there is insufficient coordination among these and other MEAs. For parties signatory to many such agreements, this creates a major challenge to coordinated action.

The non-legally binding IPF, IFF and UNFF processes have all been fraught with debate regarding the appropriate institutional framework for internationally coordinated action on forests. To date, these instruments have played an advisory and facilitative role in the development of agreed upon forestry norms. The UNFF, as a member of the Collaborative Partnership on Forests (CPF), has supported the consolidation of information on SFM financing worldwide.

At the country level, the IPF, IFF and UNFF processes promote the development of National Forest Programmes to address national-level legal, policy and institutional strategies. This creates a holistic framework within which countries can develop their own forest management priorities. However, there is a lack of harmonization of such planning requirements with similar planning requirements among other MEAs.

In contrast to the existing global regime, there are a number of regional forest-related policy regimes that are relatively well coordinated and that possess self-reinforcing legal, policy and institutional frameworks. The Central American Forest Convention (CAFC), however, is the only legally binding, regional instrument focused exclusively on forests.

The global challenge of illegal logging and trade in illegal forest products has spawned the recent development of unique regional instruments known as "Forest Law Enforcement and Governance" (FLEG) processes. FLEG initiatives have been started in East Asia, Africa, Eastern Europe and Eurasia, as well as a FLEG Trade (FLEGT) initiative in the European Union. The FLEG processes are focused primarily on multi- and bi-lateral collaboration to improve market transparency and promote legal, policy and institutional capacity building at the domestic level.

The C&I processes provide a voluntary arena for developing clear and systematic measures of issues related to sustainable forest management available for adoption by LBIs, national governments, private organizations, or any other interested institutions. The level of participation in C&I processes and adoption of the C&I themselves however, varies considerably between regions and countries. Furthermore regional C&I, particularly in developed countries, tend to emphasize data collection while providing only very generalized language defining sustainable forest practices.

Non-governmental, voluntary forest certification systems provide yet another avenue for international coordination. The FSC's ten Principles and Criteria are by far the most prescriptive set of international forest practice policies of any of the instruments addressed in this report. The PEFC system

has taken a different approach, with a focus on national-level standards development integrated with regional C&I and other inter-governmental process outputs.

In general, the on-the-ground growth of forest certification is limited by its dependence on environmentally sensitive markets. To date only a very small portion of the world's productive forests have been certified, and most of the certified area is located in developed countries. Furthermore certification's focus on the individual forest management unit has led to a patchwork pattern of adoption across the landscape. Perhaps forest certification's greatest impacts so far have been its influence on international forestry norms and its synergistic interactions with other forest-related institutions at both domestic and international levels.

The following table summarizes the above report findings, organized by seven thematic areas of SFM, 35 associated criteria, and instrument type.

Thematic Summary Tables

Table 1 SFM 1 – Extent of Forest Resources: Summary of Gaps, Overlaps, and Conflicts

Inventory	Global LBIs	Forest inventory policies primarily consist of national-level reporting requirements that address issue-specific convention goals (i.e. biodiversity, carbon storage, desertification, wetlands). As with the goals of the legal instruments themselves, there are both considerable overlaps and gaps.
	Global NLBIs	IPF/IFF PfA call for forest inventorying. FAO assists in the coordination of reporting.
	Regional Agreements	Forest cover addressed in all regional processes, and many address forest inventory.
	Regional C&I	C&I provide frameworks for measurement and monitoring. Overlap and limited coordination among global, regional and C&I inventory reporting.
	Non-governmental	FSC standards require inventories of forest extent. PEFC endorsed standards incorporate regional C&I.
Afforestation	Global LBIs	Forest-related global instruments do not include directory policies for afforestation. However, the Kyoto protocol does establish an incentive to undertake afforestation for the purposes of mitigating climate change.
	Global NLBIs	PfA support afforestation.
	Regional Agreements	Only weak reinforcement of UNFCCC-related afforestation objectives.
	Regional C&I	Directly mentioned only in MCPFE.
	Non-governmental	Not covered in FSC standards. PEFC endorsed standards incorporate regional C&I.

Deforestation	Global, LBIs	UNCCD is the only legally binding forest-related instrument directly focused upon deforestation. However, many of the conservation-oriented provisions of other global LBIs indirectly address deforestation.
	Global NLBIs	PfA discourage deforestation.
	Regional Agreements	Almost universal coverage addressing deforestation. Some instruments focus only on tracking it, others discourage deforestation, but none forbid it. Prevention of deforestation is a primary objective of the CAFC.
	Regional C&I	Almost universal coverage addressing deforestation. Some C&I focus only on tracking it, others discourage deforestation, but none forbid it.
	Non-governmental	FSC standards prohibit deforestation. PEFC endorsed standards incorporate regional C&I.
Reforestation	Global LBIs	The legally binding global forest-related instruments do not impose obligations for reforestation. However the Kyoto protocol does create an incentive to reforest.
	Global NLBIs	PfA support reforestation.
	Regional Agreements	CAFC addresses reforestation and rehabilitation of degraded forests.
	Regional C&I	MCPFE, Tarapoto, Lepaterique and ATO C&I processes contain direct reference to reforestation. Others address reforestation more indirectly through inventory and monitoring of forest cover. ATO unique in requiring maintenance of natural regeneration.
	Non-governmental	FSC standards require forest reforestation after harvest. PEFC endorsed standards incorporate regional C&I.

Table 2 SFM 2 - Biodiversity: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Biodiversity (general)	Global LBIs	Well covered by CBD, albeit in largely discretionary terms (often reflecting internal conflict between conservation and sustainable use). The WTO principle of non-discrimination may conflict with national efforts to impose import restrictions for the purposes of protecting biodiversity.
	Global NLBIs	Biodiversity covered. However, no clarification is provided on harmonizing biodiversity conservation and global trade objectives in LBIs.
	Regional Agreements	In general, the Northern regional instruments put a greater emphasis on the use of protected areas for in-situ conservation, while those of the South place more emphasis on development priorities.
	Regional C&I	Most C&I processes contain more detailed language on the conservation of forest biodiversity than the global instruments.
	Non-governmental	FSC standards provide detailed coverage of forest biodiversity. However, the standards apply only to the forest management unit level with limited ability to address landscape-level concerns except on large operations. PEFC endorsed standards incorporate regional C&I.
Biodiversity (ecosystem)	Global LBIs	Mainly covered by discretionary provisions of the CBD; overlaps with discretionary provisions of the WHC (for areas of “outstanding universal value”) and Ramsar (for coastal and mangrove forests). The WTO principle of non-discrimination may conflict with national efforts to impose import restrictions for the purposes of protecting endangered ecosystems.

	Global NLBIs	Many PfA's address biodiversity conservation and refer to LBIs such as CBD.
	Regional Agreements	CAFC oversees a regional Protected Wildlife Areas system.
	Regional C&I	The MCPFE C&I address gaps identified with regards to ecological representativeness, with an emphasis on protecting rare or vulnerable ecosystems, including primary forests.
	Non-governmental	FSC requirement of identifying high conservation value forests (and requiring that these values are protected) represents a unique approach to preventing their loss and fragmentation. PEFC endorsed standards incorporate regional C&I.
Biodiversity (species)	Global LBIs	CBD discretionary provisions and CITES' limited mandatory provisions overlap with regards to protection of threatened species, and collaboration has occurred. The WTO principle of non-discrimination may conflict with national efforts to impose import restrictions for the purposes of protecting endangered species.
	Global NLBIs	Many PfA's address biodiversity conservation and refer to LBIs such as CBD.
	Regional Agreement	Addressed by most of the regional agreements.
	Regional C&I	Well covered.
	Non-governmental	FSC P&C contain many related requirements that protect individual species as well as their habitat. PEFC endorsed standards incorporate regional C&I.
Biodiversity (genetic)	Global LBIs	Addressed by CBD, in so far as genetic biodiversity falls within provisions referring to "biodiversity" in general, and mostly with regards to access and sharing of genetic resources. May present a gap, particularly with regard to maintenance of genetic variability of tree seed sources, native species selection in replanting stock, use of natural regeneration methods.
	Global NLBIs	PfA's mention maintenance of genetic diversity to be given a "special emphasis" within ecosystem based management and planning; many focus on sharing of benefits.
	Regional Agreements	Generally not well covered.
	Regional C&I	The Montreal and MCPFE C&I processes contain provisions addressing the maintenance of genetic diversity of tree seed sources and natural regeneration.
	Non-governmental	Not much guidance regarding the conservation at the genetic biodiversity level; supports the use of natural regeneration. PEFC endorsed standards incorporate regional C&I.
Protected Areas	Global LBIs	Well covered in general by CBD (although in highly discretionary language); overlaps with discretionary provisions of Ramsar for wetlands, and WHC for "outstanding" sites. Gaps include provisions ensuring that protected areas are ecologically representative; provisions for the maintenance of connectivity and roadless areas. No binding requirements to maintain primary forests or others associated with high biodiversity values.
	Global NLBIs	Protected areas (ecological representativeness, connectivity) mentioned in the PfAs, and is an IFF Programme Element.
	Regional Agreements	Well covered, particularly with regard to transboundary PAS
	Regional C&I	Well covered.

	Non-governmental	While FSC requires the protection of the habitat of rare, threatened and endangered species, this does not necessarily result in legal designation of a protected area, per se. PEFC endorsed standards incorporate regional C&I.
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Table 3 SFM 3 - Forest Health: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Alien species	Global LBIs	Mostly covered by the CBD, although language is largely advisory. May conflict with WTO requirements that place the burden of proof on the party that wishes to restrict the importation of a good based on concerns regarding alien invasive species.
	Global NLBIs	The PfAs do little to cover the gaps associated with identified threats to forest health.
	Regional Agreements	Several regional agreements (such as the Central American Forest Convention) address threats to forest health in the context of preventing transboundary harm.
	Regional C&I	Regional C&I mention monitoring and/or controlling exotic species.
	Non-governmental	FSC standards limit the use of exotic species. PEFC endorsed standards incorporate regional C&I.
Fire	Global LBIs	Very little coverage. CBD delegates this to SBSTTA; fire is part of complicated LULUCF calculations for UNFCCC; ITTA provides funding and expertise for tropical producers; if a “natural risk” threatens a WHC site, funding for mitigation is provided.
	Global NLBIs	Very little coverage; UNFF resolution encourages countries to develop forest fire management strategies
	Regional Agreements	Not well covered.
	Regional C&I	Most of the Criteria and Indicator processes contain much more specific language than the LBIs regarding fire. Notably, some (such as the Montreal Process) address this with reference to the “range of historic variation”, acknowledging that natural disturbances contribute to a healthy forest ecosystem.
	Non-governmental	FSC standards require the maintenance of “natural cycles that protect the forest ecosystem”. Fire is not specifically mentioned. PEFC endorsed standards incorporate regional C&I.
Degradation	Global LBIs	A number of CBD provisions address this, as well as the FBDPOW, albeit in non-specific and discretionary terms. Impacts of fragmentation and forest harvesting operations not covered (no mention of maintenance of structural diversity, standing and downed dead wood). ITTA also addresses the issue, but in purely advisory language and only applicable to tropical forests. UNCCD is concerned with degradation in the form of desertification, and this is addressed according to its own criterion (Reference to section on Desertification under Theme 5). Incentives for reforestation under the Kyoto Protocol also may serve to mitigate forest degradation.
	Global NLBIs	Addressed in general terms (a UNFF-3 resolution to increase capacity to identify and address threats to forest health).
	Regional Agreements	Mentioned in many regional agreements. CAFC prioritizes rehabilitation of degraded forests.

	Regional C&I	Strong coverage within C&I processes
	Non-governmental	FSC standards provide relatively detailed guidance for the maintenance of ecological function and prevention of forest degradation during harvesting and road building. PEFC endorsed standards incorporate regional C&I.
Pollution	Global LBIs	Very little mention in any of the LBIs, except as identified as a "major threat" to biodiversity in the CBD Strategic Plan, and the FBDPOW (non-binding goals/objectives associated with each). No mention of fertilizers as pollutants.
	Global NLBIs	PfA's address mitigating pollution.
	Regional Agreements	Mentioned in ASEAN Agreement.
	Regional C&I	Some consideration within C&I processes.
	Non-governmental	Not covered in the FSC international standard. PEFC endorsed standards incorporate regional C&I.
Climate change	Global LBIs	CBD, UNCCD and UNFCCC all consider the effects of climate change on forests, including increased fires, susceptibility to pests, and species loss. However, there is little in the way of requiring parties to monitor the impacts of (or facilitate adaptation to) climate change.
	Global NLBIs	Little mention within PfAs or UNFF resolutions
	Regional Agreements	Although there is strong consideration of the role that forest can play in mitigating climate change, there is little mention of the impacts of climate change on forest health
	Regional C&I	Emphasized in Northern C&I processes.
	Non-governmental	Not covered in the FSC international standard. PEFC endorsed standards incorporate regional C&I.
Pests and disease	Global LBIs	Very little legally binding coverage aside from that directed at alien species.
	Global NLBIs	UNFF has discussed controlling pests and diseases. Resultant resolution defers to existing WTO rules.
	Regional Agreements	Forest pests and diseases not well covered.
	Regional C&I	Most of the Criteria and Indicator processes contain much more specific language than the LBIs regarding pests and diseases. Notably, some (such as the Montreal Process) address this with reference to the "range of historic variation", acknowledging that natural disturbances contribute to a healthy forest ecosystem. Many of the C&I processes (including the ATO/ITTO C&I) include provisions to reduce or eliminate the use of pesticides.
	Non-governmental	The standards also restrict the use of forest chemicals, and favour their elimination. PEFC endorsed standards incorporate regional C&I.

Biotech Risks	Global LBIs	Potential conflict between the Cartagena Biosafety Protocol and WTO requirements, particularly the Sanitary and Phytosanitary Measures Agreement. Use of GMO trees under the UNFCCC and UNCCD may also raise issues (use of modified trees for carbon-sequestering through the CDM, drought resistance, respectively).
	Global NLBIs	Topic of biotechnology risks, and specifically genetic modification, not formally addressed. Debated in side event of UNFF4.
	Regional Agreements	Not addressed.
	Regional C&I	ATO/ ITTO C&I prohibit the use of genetically modified organisms.
	Non-governmental	FSC prohibits the use of genetically modified organisms. PEFC endorsed standards incorporate regional C&I.

Table 4 SFM 4 – Productive Functions: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Forest Productivity	Global LBIs	There are no directory decisions that address the management of forests for the sustainable production of forest resources. The ITTA provides voluntary support for sustainable tropical timber management, and the CBD provides voluntary guidelines for sustainable “biodiversity use” and tourism. Non-timber forest product production not well covered.
	Global NLBIs	IPF, IFF and UNFF all address forest productivity and accounting. UNFF has called for incorporation of non-timber values into accounting efforts.
	Regional Agreements	Legal and non-legal instruments in Europe, Central America and Africa specifically focused on forests all include provisions aimed at sustaining forest productivity. These regional forest instruments place a stronger emphasis on non-timber values than the global ITTA. The CAFC is unique in its emphasis on forest management for subsistence purposes.
	Regional C&I	Well covered.
	Non-governmental	FSC standards require that harvest volume does not exceed levels that can be permanently sustained. PEFC endorsed standards incorporate regional C&I.
Accounting	Global LBIs	Global accounts are based on national-level reports that have considerable gaps, particularly as it regards accounting for non-timber values.
	Global NLBIs	IPF, IFF and UNFF have encouraged a broad accounting of forest-related

		values, including not only timber production but also the management of non-timber forest products, recreation, and other forest uses.
	Regional Agreements	Covered in some agreements but capacity gaps in regional reporting efforts.
	Regional C&I	C&I processes generally encourage accounting of productive forest functions.
	Non-governmental	Principle 5 of the FSC standards addresses accounting. PEFC endorsed standards incorporate regional C&I.

Table 5 SFM 5 – Protective Functions Forest: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Carbon cycle/ climate change	Global LBIs	Primarily addressed through UNFCCC, Kyoto Protocol and the LULUCF guidance document; emphasis on forests as carbon sinks may (but will not necessarily) conflict with CBD and conservation of biodiversity and obtaining multiple benefits.
	Global NLBIs	IPF and IFF reports mention the role of forests within the carbon cycle and climate regulation, but there are no related PfAs
	Regional Agreements	Mentioned in some agreements.
	Regional C&I	Addressed well within C&I processes, including well developed methods of evaluating the contribution of forests to climate regulation.
	Non-governmental	Not covered by FSC international standards. PEFC endorsed standards incorporate regional C&I.
Desertification	Global LBIs	Covered mostly by UNCCD, with some overlap with CBD and to a lesser extent, UNFCCC.
	Global NLBIs	Several PfA's address desertification and safeguard water supplies in drought-prone areas
	Regional Agreements	Protection of water and soil are well addressed, but no explicit mention of preventing desertification.
	Regional C&I	Protection of water and soil are well addressed, but no explicit mention of preventing desertification.
	Non-governmental	FSC's requirements address many of the same gaps that the regional processes and agreements with regards to the protection of ecological functions. Desertification is not expressly mentioned in the international FSC standards. PEFC endorsed standards incorporate regional C&I.
Soil	Global LBIs	A gap, in terms of specific or directory provisions, although CBD's many provisions seeking to protect biodiversity and biological resources may provide an umbrella under which this criterion is protected. Overlap with UNCCD (addressing soil degradation) and UNFCCC (maintenance of soil as carbon sink).
	Global NLBIs	IPF and IFF PfA's further than the LBIs towards addressing the protective functions of forests.
	Regional Agreements	The regional instruments help to fill gaps in global LBI in regards to soil protection. CAFC calls for environmental parameters to be incorporated into estimations of economic growth (accounting for the value and depreciation of forest resources and soils).
	Regional C&I	The Pan European Operational Level Guidelines require that forests providing protective functions be explicitly designated as such on relevant maps, and that machines not be permitted on sensitive soils.

	Non-governmental	FSC's requirements address many of the same gaps that the regional processes and agreements in regards to the protection of soil. As such, they provide an alternative non-governmental framework that could complement regional inter-governmental efforts and/or foster redundancies depending on the level of implementation and coordination. PEFC endorsed standards incorporate regional C&I.
Water	Global LBIs	Mostly covered by discretionary language within CBD (Inland Waters POW), overlap with UNCCD, UNFCCC, ITTO (watershed protection in tropical forests), WHC (limited to outstanding sites) and Ramsar (limited to mangroves).
	Global NLBIs	PfA on protection of water supplies in drought-prone areas, UNFF resolution on forests and safe drinking water.
	Regional Agreements	The regional instruments help to fill gaps in global LBI in regards to the protection of water resources.
	Regional C&I	The Tarapoto and Montreal Processes call for monitoring water flow using the historic range of water flow as a baseline.
	Non-governmental	FSC's requirements address many of the same gaps that the regional processes and agreements do in regards to the protection of water. This could complement regional inter-governmental efforts and/or foster redundancies depending on the level of implementation and coordination. PEFC endorsed standards incorporate regional C&I.
Pollution Mitigation	Global LBIs	Gap: while pollution is mentioned as a threat to forests, the maintenance of forests as providers of air/water remediation services is not considered.
	Global NLBIs	Not mentioned.
	Regional Agreements	The ASEAN Agreement is the only agreement or process to acknowledge the pollution mitigation capacity of forests.
	Regional C&I	Forests' role in pollution mitigation not covered.
	Non-governmental	Not covered in FSC international standards. PEFC endorsed standards incorporate regional C&I.

Table 6 SFM 6 - Socio-economic functions of forests: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

General Socio-economic Benefit	Global LBIs	All global LBIs focus on issues of relevance to the socio-economic functions of forests. However, coverage is piecemeal and potentially conflicting. The issue of forest employment is not well covered.
	Global NLBIs	The IPF/IFF Proposals for Action provide guidance that, if followed, could help address some of the gaps in the legally binding global instruments. ³
	Regional Agreements	The regional instruments vary in the socio-economic issues emphasized. Instruments in developing regions address a number of issues relating to social welfare that are largely overlooked in global LBIs.
	Regional C&I	Developing country C&I place greater emphasis on socio-economic benefit. Developed country C&I are limited to reporting requirements.
	Non-governmental	FSC standards include strong directory language addressing socio-economic issues. PEFC endorsed standards incorporate regional C&I.

³ The reader is reminded once again, that the analysis of legally binding instruments was restricted to assessment of original Agreement text and subsequent *directory* decisions, i.e. those decisions that represented commitments to a given action by all Party members.

Economic Development	Global LBIs	The ITTA is the only global legally binding instrument that directly addresses forest products production, trade and forest-related employment. The ITTA's geographic focus is limited to the industrial trade of tropical timber. Forest trade from temperate and boreal forests, trade in non-timber forest products and services, and non-industrial forestry receive little attention. Little coordination between the WTO and the Rio Conventions or other environmental instruments to ensure a harmony of objectives. Lack of decisions addressing the socio-economic impacts of global trade.
	Global NLBIs	The PfA address the environmental and social impacts of global trade, thereby linking global and local development efforts.
	Regional Agreements	Instruments in developing regions address a number of issues relating to social welfare that are largely overlooked in global LBIs, including the socio-economic impacts of industrial activities and global trade.
	Regional C&I	Covered.
	Non-governmental	FSC standards emphasize local benefit and do not address economic development more generally. PEFC endorsed standards incorporate regional C&I.
Local Benefit	Global LBIs	The CBD, Ramsar and UNCCD have all enacted decisions as well as advisory guidelines and/or programs emphasizing local benefit from natural resource use. These instruments do not address larger-scale economic development issues. Lack of attention, both within and between instruments, to integrating the objectives of local benefit and global development. Management for subsistence uses, including fuelwood, not addressed. Local employment, and worker rights and benefits not addressed.
	Global NLBIs	The PfA address the environmental and social impacts of global trade, thereby linking global and local development efforts.
	Regional Agreements	All of the regional processes assessed, with the exception of ASEAN, address the issue of local benefit.
	Regional C&I	The strongest and most specific language is found in the ATO C&I that require that local populations "benefit preferentially from opportunities in employment, training and other services."
	Non-governmental	FSC standards place priority on local-level benefits from forest production and trade. PEFC endorsed standards incorporate regional C&I.
Resource Rights	Global LBIs	Intellectual property rights relatively well covered by CBD and WTA. Lack of decisions addressing broader issues of clear and equitable tenure and resource rights. Potential conflict between CBD objectives of local access and benefit sharing of genetic resources, and WTO rules aimed at the protection of technological innovation for the purposes of genetic manipulation.

	Global NLBIs	The PfA address resource rights issues beyond the particular concern of intellectual property rights covered by the CBD.
	Regional Agreements	Instruments in developing regions address a number of issues relating to social welfare that are largely overlooked in global LBIs, including resource rights (beyond intellectual property rights).
	Regional C&I	Covered.
	Non-governmental	FSC standards include directive language addressing local community and indigenous peoples' rights. PEFC endorsed standards incorporate regional C&I.
Traditional Knowledge and Use	Global LBIs	Relatively well covered in the CBD, UNCCD and Ramsar Convention. Potential conflict between CBD objectives of local access and benefit sharing of genetic resources, and WTO rules aimed at the protection of technological innovation for the purposes of genetic manipulation.
	Global NLBIs	The IPF, IFF and UNFF have all produced advisory decisions supporting the protection of traditional knowledge and use.
	Regional Agreements	All regional processes except ASEAN include language protecting indigenous knowledge and use either indirectly, through protection of rights and culture, or through direct mention of traditional knowledge and use.
	Regional C&I	Covered.
	Non-governmental	FSC standards include directive language on compensating indigenous peoples for use of their traditional knowledge. PEFC endorsed standards incorporate regional C&I.
Public Participation	Global LBIs	Covered by all instruments except the WTO. Questions remain regarding the capacity and commitment of the various conventions to implement existing provisions for public participation.
	Global NLBIs	Public participation is emphasized in the IPF/IFF PfA as well as in UNFF-4.
	Regional Agreements	All of the regional processes include language promoting stakeholder participation in SFM decision-making.
	Regional C&I	Covered.
	Non-governmental	The FSC standards require public participation in forestry decision-making. PEFC endorsed standards incorporate regional C&I.
Non-consumptive/ Recreational Use	Global LBIs	Sustainable tourism covered by advisory guidelines under the CBD and Ramsar.
	Global NLBIs	The PfA emphasize cultural survival, but do not mention tourism. UNFF-4 has since called for the promotion of eco-tourism.
	Regional Agreements	Level of focus on non-consumptive uses varies. Recreation and/or tourism is covered in many regional processes, as is the protection of "cultural values".
	Regional C&I	Covered.
	Non-governmental	FSC standards call for management of forests for a "wide range of benefits". PEFC endorsed standards incorporate regional C&I.
Health and Well-being	Global LBIs	Addressed primarily in the UNCCD. Limited to areas suffering from drought and desertification. Serious lack of funds for implementation. Worker safety not addressed in directory decisions and adopted goals.
	Global NLBIs	The IPF, IFF and UNFF all call for the integration of poverty alleviation with goals for SFM, thereby filling a significant gap in the global LBIs.

	Regional Agreements	All regional processes help to fill gaps in global LBIs by addressing worker safety as well as poverty alleviation and/or general community welfare.
	Regional C&I	Covered.
	Non-governmental	FSC Principle 4 requires that forest management “maintain or enhance the long-term social and economic well-being of forest workers and local communities.” PEFC endorsed standards incorporate regional C&I.

Table 7 SFM 7- Legal, Policy and Institutional Frameworks: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Legal Frameworks	Global LBIs	There is no overarching legal framework for forests. The CBD could assume such a responsibility but it lacks full support and participation by parties key to global forest biodiversity, production and trade. There is some evidence that the WTA's trade liberalizing objectives conflict with other global legally binding forest-related instruments; however, the extent of the conflict is not fully apparent nor are there mechanisms in place for addressing such conflicts. Lack of coordination of national-level plans and programmes as required by different LBIs for strengthening country-level legal frameworks.
	Global NLBIs	The IPF, IFF and UNFF processes are not themselves legally binding. They support National Forest Programmes that address national-level legal frameworks, but there are challenges in coordinating NFPs with other national planning requirements in other MEAs.
	Regional Agreements	A number of regional, forest-related instruments are legally binding. The CAFC is the only regional LBI focused exclusively on forests. CAFC supports strengthening forest governance. The FLEG processes involve voluntary international collaboration in improving forest law enforcement and governance. FLEGT aims to reduce trade in illegally produced timber.
	Regional C&I	Regional C&I are not legally binding. They address the importance of effective forest governance systems.
	Non-governmental	Forest certification is a voluntary instrument. FSC requires forest manager compliance with legal requirements. PEFC endorsed standards incorporate regional C&I.
Policy Frameworks	Global LBIs	Policy frameworks are sporadic and insufficiently coordinated. The CBD's policy framework overlaps significantly with the IPF/IFF/UNFF forest policy dialogue. Lack of coordination of national-level plans and programmes as required by different LBIs for strengthening country-level policies.
	Global NLBIs	The non-legally binding IPF, IFF and UNFF processes have played an advisory and facilitative role in the development of agreed upon forest policies and norms. They support National Forest Programmes that address national-level policy frameworks, but there are challenges in coordinating NFPs with other national planning requirements in other MEAs.
	Regional Agreements	Regional instruments vary in the policy instruments used. The FLEG processes involve international collaboration on the development of forest policies.

	Regional C&I	Regional C&I provide a voluntary framework around which governments can develop policies for SFM.
	Non-governmental	FSC standards take a relatively prescriptive approach to SFM. PEFC endorses national-level standards, requiring incorporation of regional, inter-governmental C&I.
Institutional Frameworks	Global LBIs	The global forest-related institutional framework is “divided and contested”, despite progress toward coordinating the administration of various institutions through UNEP and sharing a common funding agency. Lack of coordination of national-level plans and programmes as required by different LBIs for strengthening country-level institutions.
	Global NLBIs	The non-legally binding IPF, IFF and UNFF processes have all been fraught with debate regarding the appropriate institutional framework for internationally coordinated action on forests. IPF/IFF/UNFF have supported National Forest Programmes that address national-level institutional frameworks, but there are challenges in coordinating NFPs with other national planning requirements in other MEAs.
	Regional Agreements	Regional instruments vary in institutional structure. Some involve legal commitments and/or high level governmental participation (such as MCPFE and CAFC) suggesting strong levels of political commitment.
	Regional C&I	C&I processes provide a conceptual framework for SFM for voluntary adoption by LBIs, national governments, private organizations, or any other interested institutions. Participation in C&I processes is variable, as is uptake.
	Non-governmental	Forest certification is a voluntary, market-based system. As such, it has been able to by-pass government stalemate regarding a number of key SFM issues. On-the-ground growth of forest certification is limited by its dependence on environmentally sensitive markets. Few forests certified, especially in developing world. Focus at forest management unit level constrains ability to address landscape-level issues. Greatest impacts on forestry norms and synergistic interactions with other forest-related institutions at both domestic and international levels.
Global Finance	Global LBIs	The Global Environmental Facility (GEF) has funded developing country parties of CBD, UNFCCC and UNCCD. WHC increased emphasis on developing country World Heritage sites. ITTA finances SFM projects in tropics. Lack of developing country resources remains a persistent problem. The UNCCD, in particular, is chronically under-resourced.
	Global NLBIs	UNFF, as member of Collaborative Partnership on Forests, supports FAO publication consolidating information on global SFM financing.
	Regional Agreements	Developing country regional processes often lack adequate funding.
	Regional C&I	Regional C&I in developing regions lack adequate funding. The ITTO has provided significant funds for the development and implementation of ITTO endorsed C&I.
	Non-governmental	Forest certification standards do not address global finance. At the forest management unit level, standards have been adopted to lessen the costs for small and low intensity operators. Nevertheless, forest certification constitutes a significant financial burden for many operators, particularly in developing countries.

Part I Introduction

This report was commissioned by the Secretariat of the United Nations Forum on Forests (UNFF) to assess current progress in international forest-related policy.⁴ Considerable literature already exists on the development of international forest governance⁵, including analyses of global political dynamics (Cashore 1999; Esty and Ivanova 2002; Humphreys 1999; Porter and Brown 2000; etc.), as well as comparative assessments of forest-related institutions and processes (Chaytor 2001; Tarasofsky 1999a; UNCSO 1998; UNFF 2004b). This report adds to this existing work through its use of seven thematic elements of sustainable forest management as a framework to assess gaps, overlaps and conflicts within key global and regional-level instruments and processes.

There is considerable debate surrounding the appropriate instrument type(s) and decision-making scale(s) for addressing global forestry challenges. This study is driven, however, by two relative points of agreement: 1) that effective global forest governance requires a holistic approach to the environmental, social and economic factors shaping the world's forests, and 2) that greater transparency and coordination are needed to address gaps and avoid conflicting efforts. Hence the primary objective of this study is to increase the transparency of international forest-related policy by assessing the degree to which existing forest-related instruments address a holistic set of thematic elements for sustainable forest management (SFM). In so doing, it may also shed light on what kinds of institutional structures are likely to address different elements of SFM.

It could be argued that the greatest challenge of forest governance is rooted in the very definition of SFM as the balance of environmental, social and economic goals. As briefly discussed in the following historical overview section of this report, global governance was initially focused on issues of security and economic development. These development priorities fostered and were fostered by the participation of certain groups of actors and particular institutional structures. Over the years, however, new environmental and social paradigms and different actors have increasingly entered the global political arena. There are several ways in which forestry governance could accommodate these changing actors and priorities: 1) through the integration of environmental and social objectives into existing development and trade-related forums, 2) through the creation of a "counterbalance" of environmental and social forums with authority and capacity equal to existing economic development instruments, or 3) through the creation of issue-specific auxiliary instruments. Forest governance has developed primarily along the third path, involving the creation of a diffuse and diverse array of instruments and processes. This has resulted in both considerable complexity as well as substantial innovation.

There is currently no single "forest convention" or legally binding instrument focused primarily on forests. Instead, an array of instruments and processes has developed that varies in substantive focus, geographic scale, and institutional type. The substantive focus of forest-related instruments ranges from the protection of biodiversity, to climate change mitigation, to the expansion of global trade. The geographic scope of the instruments varies from global-scale conventions with hundreds of signatories to smaller-scale regional processes involving only a few neighboring states. The distribution of membership is also variable, with some processes lacking participation from key states and/or favoring certain world regions or forest types.

Differences in institutional structure, however, constitute perhaps the most complex source of variation. There is a wide range of multilateral mechanisms that influence forest policy, whether through authoritative rule making or through funding and loan choices and other indirect channels. From this

⁴ The term "policy" as used in this report is defined broadly as "a purposive course of action or inaction that an actor or set of actors takes to deal with a problem" (Anderson 1984; Cabbage, O'Laughlin, and III 1993; Heidenheimer, Hecllo, and Adams 1983). Such a broad definition is appropriate for the purposes of this report given the importance of both state and non-state actors and institutions in shaping global "governance" (see the footnote below on the term "governance").

⁵ The term "governance" is increasingly used by political scientists and other theorists to address both state and non-state systems of authority and communication (Bass and Guéneau 2007; Cashore, Auld, and Newsom 2004; Cutler 2001; Falkner 2003; Rhodes 1996; Rosenau 1995) For the purposes of this report, "governance" is defined as the exercise of recognized and organized authority to achieve a given set of objectives. Such authority may or may not be formally recognized by state-based institutions, and may rely on the legitimacy it is afforded by those intended to be governed.

perspective, an analysis of global “progress” must consider not only formal, inter-governmental executive decisions but also the actions and policies of non-legally binding instruments and processes, multilateral institutions such as the World Bank, and non-governmental partnerships and initiatives such as forest certification.

A complete assessment of all relevant multi-lateral activities, however, is not feasible. Instead, this report focuses on a selection of key instruments and processes within the following categories: 1) legally binding global-scale agreements, 2) non-legally binding global forestry processes, 3) regional approaches (including legally and non-legally binding instruments and Criteria and Indicator processes) and 4) forest certification as an example of a non-governmental approach. The most detailed analysis is focused on the legally binding global agreements. Other instruments and processes are then analyzed in terms of their role in addressing the gaps, overlaps and contradictions identified in these key global agreements.

This report is primarily focused on substantive challenges, rather than on an institutional analysis of appropriate structures for multilateral forest governance. Other authors have provided considerable insight into the feasibility or predictability of particular institutional outcomes (Dimitrov 2004; Humphreys 2003; Humphreys 2005; Pülzl, Rametsteiner, and Tarasofsky 2004; etc.). Nevertheless, this report’s identification of substantive gaps, overlaps and conflicts should greatly aid in future institutional debates as well, by grounding discussions in specific forestry challenges. The authors in fact suggest that the current global impasse can best be surmounted through the development of diverse strategies tailored to meet well-defined forest management problems.

Overview of the structure of the report

The remainder of this introductory section will provide a review of existing literature relevant to this topic, followed by a brief historical overview of global, regional and non-state forest-related governance. A historical perspective is key to understanding fundamental differences in structure, approach and purpose. Those instruments, institutions and processes introduced in bold text were also selected for detailed thematic analysis in Part III of this report.

Part II outlines the methodology employed in the report’s assessment of instruments according to the seven thematic elements of sustainable forest management (SFM) acknowledged and used by the UNFF and other inter-governmental processes and organizations. This begins with an overview of these seven themes followed by a description of the criteria used to select the global and regional instruments under analysis. A brief synopsis of each chosen instrument is also provided.

Part III presents the results of the thematic analyses, divided into seven chapters corresponding to the SFM thematic elements. Each chapter analyzes the progress of select instruments and processes in addressing key SFM themes and criteria.

Part IV will conclude by discussing the significance of our findings, suggesting possible implications, and identifying further research needs.

Research to date on global forest governance

The following paragraphs provide an overview of four other comparative studies focused on the substantive coverage of SFM under existing multilateral instruments and processes. This overview is not intended to be exhaustive but rather to point the reader to other studies of interest prepared at different stages in the development of a global forest-related regime. The focus of this overview is on substantive analyses and does not include studies primarily concerned with the institutional structures of existing and potential future international arrangements on forests (Pülzl, Rametsteiner, and Tarasofsky 2004; Scholz 2004; etc.).

The Costa Rica-Canada Initiative (CRCI) was formed to aid the IFF by identifying possible elements and developing consensus on an international arrangement on forests. As part of this effort, an interim report prepared for the CRCI initiative identified key gaps and overlaps in the existing international forestry regime. The themes and associated criteria framing this gap analysis were selected based on literature and expert consultation, and included: 1) the international forest regime infrastructure, 2) capacity building, 3) environmental issues, 4) forest management issues, 5) economic issues, and 6) social and equity issues. For each of these six thematic areas, five to thirteen sub-themes or “issues” were also identified. A series of “hard law”, “soft law”, and “civil society” instruments were assessed for their coverage of these six themes. Among the studies findings, were observations common to many comparative assessments, including the lack of a global forest fund, a fragmentation of forest-related governance across multiple instruments, lack of attention to land tenure and to economic incentives for sustainable management (RFI 1998).

A background document prepared for the IFF in 1998 also provides a useful analysis of existing gaps and overlaps in global forest-related governance (E/CN.17/IFF/1998). The instruments covered in this report include ten global and seven regional legally binding instruments, as well as the Forest Principles, Agenda 21 and the IPF PFA. The report observes that most of the “functions and roles of forests have been regulated to some extent” but that there is an overall lack of coordination and fragmentation of instruments addressing forest-related issues. It concludes that forest conservation issues are generally covered, but that the instruments lack a coordinated and holistic approach to SFM. The document also includes a table indicating the degree to which 16 elements of forest management are addressed by the major instruments under analysis.

The International Union for the Conservation of Nature (IUCN) has conducted a detailed analysis entitled “Assessing the Forest Regime” (Tarasofsky 1999b). This study assesses a number of legally binding and non-legally binding global instruments regarding their progress towards addressing key IPF Proposals for Action under each of the IPF PFA's four major Programme Elements.⁶ Major gaps identified include the lack of coverage of the underlying causes of deforestation, agrarian land reform for landless peasants, indigenous entitlements, environmental aspects of mining, activities of Transnational Corporations, the lack of international mechanisms for addressing illegal trade in forest products, and inadequate developed country financing for developing country efforts. The report suggests that overlapping efforts is not a major problem, given the different emphasis of each instrument. Nevertheless, instruments could benefit from increased harmonization. In particular, the report's authors emphasize the potential for conflict between international trade law and sustainable development.

The International Institute for Environment and Development (IIED) commissioned a report that summarizes existing legal and institutional frameworks for global forest policy (Chaytor 2001). This report identifies several issues as of key importance in the multilateral regulation of forests. These are attention to the causes of deforestation, a focus on SFM not just timber production, the equitable treatment of forest dwellers and local communities, inter-governmental support, and the implementation of existing legal instruments. The report focused its analysis on the UNCED Forest Principles, the IPF and IFF, the three Rio Conventions (CBD, UNCCD, UNFCCC) and the ITTA. Three primary reasons were identified regarding why the current international forestry regime has failed to slow “the destruction of ecosystems” and protect “the socio-economic interests of producer countries”. The first reason is the North/South split of forestry problems, with consumption in the North and forest destruction in the South. The second are differing development priorities in the North and the South. The third is the weakness of existing global forest governance institutions, due in part to increasing fragmentation, a lack of coordination, and inadequate financing.

A brief historical summary of the instruments assessed

Global instruments

The conclusion of World War II marked the beginning of a new era of global governance. International attention at this time was focused on post-war recovery and the promotion of a rapidly expanding global economy. The World Bank was established in 1944 followed by the United Nations (UN) in 1945. The first Global Agreement on Tariffs and Trade (GATT) was ratified in 1948 by 23 of the world's developed countries, promoting the elimination of national import and export restrictions in favor of expanded global trade in goods and services. Environmental issues received relatively little attention in these early multi-lateral processes. However two specialized agencies within the UN, the Food and Agricultural Organization (FAO), and the Educational, Scientific and Cultural Organization (UNESCO), included environmental issues in their original mandates. Of these, the FAO has played a particularly important role in addressing global forestry issues. The FAO includes a Forestry branch designed to serve as “a facilitator, or neutral forum, for policy and technical dialogue; as a source of global information; and as a provider of policy advice and technical assistance (FAO 1999).”

The growth of large-scale multi-lateral environmental negotiations occurred nearly 25 years later, spearheaded by the UN Conference on the Human Environment in Stockholm in 1972. The United Nations Environment Program (UNEP) was established that same year, as a UN programme primarily focused on environmental protection. Key agreements ratified in the 1970s include the **Ramsar**

⁶ The four Programme elements of the IPF PFA are: I. Implementation of Forest-related Decisions of UNCED; II. International Cooperation in Financial Assistance and Technology Transfer; III. Scientific Research, Forest Assessment and the Development of Criteria and Indicators for Sustainable Forest Management; IV. Trade and Environment in Relation to Forest Products and Services.

Convention on Wetlands (adopted in 1971 and entered into force in 1975), the **World Heritage Convention** (WHC) (adopted in 1972 and entered into force in 1975), the Convention on Migratory Species (CMS) (adopted in 1979), and the **Convention on International Trade in Endangered Species** (CITES) (adopted in 1973 and entered into force in 1975). These early conventions had relatively narrow foci, with an emphasis on the listing and protection of globally significant sites and species.

Meanwhile, inter-governmental and industry processes began to pay increasing attention to global-scale forest governance. In 1973, the FAO established its Committee on Forestry (COFO), which is composed of senior government representatives who provide guidance to FAO on its forestry-related work. In 1986, the first International Tropical Timber Agreement was adopted, along with the establishment of the International Tropical Timber Organization (ITTO). The primary mandate of the ITTO is to promote world trade in sustainably managed tropical timber.

The UN Conference on Environment and Development (UNCED), colloquially termed the Earth Summit or the Rio Summit, held in Rio de Janeiro, Brazil in 1992, represented another major step forward in multi-lateral environmental agreements. The Rio Summit marked the first concerted attempt to link priorities for economic development with environmental protection under the rubric of “sustainable development”. It was at the Rio Summit, furthermore, that a globally coordinated strategy for forests first emerged.

A number of governmental and non-governmental participants at the Rio Summit pushed for the creation of a legally binding convention on forests. No such agreement was reached, however. Instead, the Summit produced a number of voluntary instruments that addressed forest management, including Chapter 11 of Agenda 21 on human impacts on the environment, and the “Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests” (otherwise known as the “Forest Principles”). These guiding documents set the stage for continued negotiations on forest arrangements.

Initially, this global forest dialogue was carried forward under the UN Commission on Sustainable Development (CSD). In 1995 the **Intergovernmental Panel on Forest (IPF)** was established as an expert body under the auspices of the UN CSD with a mandate to analyze priority forest issues. The IPF was allotted a two-year term and an ambitious work program to combat deforestation and forest degradation. At the end of its two years, the IPF had created over 150 Proposals for Action (PFA) to address a wide range of global challenges to sustainable forestry.

Three major global environmental conventions, known as the “Rio Conventions”, were also created around the same time as the IPF. All of these conventions contained mandates of direct relevance to forests. These agreements, which are all housed within the UN, are the **Convention on Biological Diversity (CBD)** (adopted in 1992 and entered into force in 1993), the **Framework Convention on Climate Change (UNFCCC)** (adopted in 1992 and entered into force in 1994), and the **Convention to Combat Desertification (UNCCD)** (adopted in 1994 and entered into force in 1996). The CBD is concerned with forests as habitat for a large number of the world’s plant and animal species. The UNFCCC recognizes forests as carbon “sinks” capable of mitigating the effects of the human pollutants contributing to climate change. Finally, the UNCCD recognizes the role of forests in preventing desertification and drought. The IPF’s Proposals for Action call upon all of these global conventions to aid in the implementation of global priorities for forest protection.

Politically, the three Rio Conventions involve a wide diversity of actors, and this diversity is clearly reflected in their differing language and priorities. The UN Convention to Combat Desertification is worthy of special note in this regard, as the first multilateral environmental agreement primarily driven by developing countries.

The Tehran Process, initiated in 1999, constitutes another unique collaborative effort of the 1990s. This non-legally binding agreement promotes international cooperation regarding the specific needs of low forest cover countries (LFCC). Included among the objectives of the Tehran Process is to ensure that the needs of low forest cover countries are considered in other international forest-related forums.

Meanwhile, while these diverse multilateral legal and non-legal instruments and processes were emerging, world trade negotiations continued to proceed on a parallel track. In 1994, the governance of international trade was further institutionalized with the enactment of a new **World Trade Agreement (WTA)** and the establishment of the World Trade Organization. That same year, a new **International Tropical Timber Agreement** was signed, also with a strong focus on increasing global trade.

Throughout this rapid development of multilateral environmental and trade agreements in the 1990s, debate continued regarding the need for a legally binding agreement focused primarily on forests.

Once the term of the IPF was completed in 1997, a new expert body, the **Intergovernmental Forum on Forests (IFF)** was established under the auspices of the CSD to deal with many critical issues left un-addressed by the IPF. After three years of negotiations, agreement was reached on additional PfAs, bringing the total number of PfAs to 270. The IFF also proposed the terms of reference for a new international arrangement on forests through the CSD to the UN Economic and Social Council (ECOSOC). In October 2000, ECOSOC created the **United Nations Forum on Forests (UNFF)**, thereby providing a more permanent home for the international dialogue on forests with a substantially higher level of political authority.

The UNFF was established under the aegis of the UN Economic and Social Council (ECOSOC), and as such operates according to the rules of procedure of ECOSOC Functional Commissions. Yet, unlike the other Commissions, its membership includes all UN member states. While this formalization of the international forestry dialogue thus supported broad state-level participation, it also arguably served to diminish the ability of non-governmental organizations to influence the negotiations. Under ECOSOC rules, NGO's must be accredited by ECOSOC to obtain "general consultative", "special consultative" or "roster" status (Eastwood 2005).

The UNFF's stated objective is to "promote the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end", to facilitate the implementation of forest-related agreements, and to foster a common understanding regarding sustainable forest management (SFM). This is to be done "in a manner consistent with and complementary to existing international legally binding instruments relevant to forests" (UN ECOSOC, 2000). Furthermore, ECOSOC directed the UNFF "to consider with a view to recommending to ECOSOC, and through it to the UN General Assembly, the parameters of a mandate for developing a legal framework on all types of forests" (UN ECOSOC, 2000) during its initial five year Program of Work.

The currents of global governance have been shifting yet again since the Rio Summit in the 1990s. The World Summit on Sustainable Development (WSSD), held in 2002, represents an increased emphasis on the social issue of global poverty reduction. Since that time, international forestry dialogue has responded by emphasizing linkages between poverty and forest health (Maini 2004).

In sum, there currently exist a multitude of forest-related global instruments each with different histories, actors and objectives. Such diversity is easily understandable and perhaps even necessary. At the same time, it presents a formidable challenge to effectively addressing global forestry threats. The degree to which this complex web of global instruments complement or contradict progress towards SFM, either through parallel or coordinated action, is a major focus of the thematic analysis covered in Part III of this report.

Regional instruments and C&I processes

Concurrent to the development of global-scale collaborative efforts, a wide variety of "regional" agreements and processes have been emerging as well.⁷ These regional initiatives offer a number of potential advantages. One obvious strength is their ability to prioritize issues of regional concern. Similarly, regional initiatives involve a relatively small number of parties with many interests in common, and hence face fewer obstacles to consensus. Regional-scale processes also reduce transaction costs, including travel, translation, etc. (Martin 2004). On the flip side, the inter-dependence, proximity and power dynamics of neighboring countries may also lead to conflict and/or domination by some countries. Furthermore, regional initiatives lack incentives for addressing impacts that extend beyond regional boundaries.

There are three common "types" of regional institutions included in this analysis. These are: 1) legally binding treaties and conventions; 2) non-legally binding ministerial conferences; and 3) Criteria and Indicator processes for sustainable forest management.

Legally binding regional instruments function in many ways that are similar to their global counterparts. However, the level of collaboration and enforcement of individual regional instruments depends in part on the region's overarching environmental, social and economic governance capacity. Mirroring gaps at the global level, few regions have developed legally binding agreements that directly

⁷ Regional" instruments are here defined as those involving a group of countries selected on the basis of close geographic proximity and/or shared socio-economic or ecological characteristics. This definition of region is consistent with that of FAO, as outlined in: (Martin 2004).

address SFM. Instead, Ministerial processes have become increasingly common. These processes generally involve the participation of ministers in collaborative goal setting and monitoring initiatives, aimed at the development of a regionally coordinated approach to SFM.

Criteria and Indicator (C&I) processes have also gained considerable momentum since the 1992 Rio Summit. There are currently nine major intergovernmental C&I processes that cover virtually all of the world's major forest eco-regions. These processes involve multilateral collaboration and negotiation to identify and implement a set of Criteria defining the meaning of sustainable forest management. Indicators are then developed to measure the achievement of those Criteria. The resulting Criteria and Indicators (C&I) are then to be used to harmonize national-level measurement and aid in the monitoring of progress towards sustainable forestry.

Following is a brief region-by-region overview of some key forest-related developments in intergovernmental treaties, ministerial processes and C&I processes. The list of instruments and processes is by no means exhaustive, but rather is meant to highlight the diversity of instrument types and levels of collaboration. As in the above global overview, those instruments and processes that are introduced in bold highlight are subject to more detailed analysis in later sections of this report.

North America currently lacks any legally binding regional forest agreement. However the 1993 North American Free Trade Agreement (NAFTA) and its accompanying North American Agreement on Environmental Cooperation (NAAEC) are of relevance to forestry. The NAAEC was created to address the environmental impacts of NAFTA as well as to promote the enforcement of existing environmental law.⁸ Among the actions taken by the NAAEC thus far, is the development of a Strategic Plan for North American Cooperation in the Conservation of Biodiversity.⁹

In terms of non-legally binding approaches, North American countries have also been active in the development of the **Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests** (Montreal Process C&I). The Montreal Process currently involves twelve member countries worldwide, and has been among the most active of the C&I processes in harmonized forest reporting (UNFF 2004d).

Central America has been considered a world leader in the development of regional forest-related governance (Tarasofsky 1999b). The Central American Commission on Environment and Development (CCAD) serves as the region's environmental coordinating body, thereby providing a strong institutional base for effective collaboration (Tarasofsky 1999b). This Commission, formed in 1989, is composed of the ministries and agencies responsible for environmental policy in all seven Central American countries. CCAD is responsible for the implementation of the 1991 Central American Tropical Forest Action Plan, which includes the **Regional Convention for the Management and Conservation of Natural Forest Ecosystems and the Development of Forest Plantations**. This Convention stands as the world's first regional forest treaty. In addition to legally binding instruments and coordinating institutions, Central America also has initiated its own C&I process, known as the **Lepaterique Process**.

The **Amazon Cooperation Treaty**, created in 1978, is South America's key legally binding forest-related instrument. This treaty is holistic in focus, encompassing economic, social and environmental cooperation within the Amazon basin. The Amazon region has developed its own C&I initiative referred to as the **Tarapoto Proposal**. The Montreal Process C&I, meanwhile, include the temperate forests of Chile, Argentina and Uruguay.

There are no legally binding instruments focused exclusively on European forests. However the **Ministerial Conference for the Protection of Forests in Europe (MCPFE)** constitutes a non-legally binding process of relevance throughout the region. An important output of the MCPFE has been the **MCPFE Pan-European Criteria and Indicators for Sustainable Forest Management**, which build upon the earlier work of the Helsinki Process. Russia participates in both the MCPFE and Montreal Process C&I.

⁸ North American Agreement on Environmental Cooperation Between the Government of Canada, the Government of the United Mexican States and the Government of the United States of America, 32 ILM 1480 (1993), is available on-line at http://www.cec.org/pubs_info_resources/law_treat_agree/naaec/index.cfm?varlan=english (Feb., 2, 2005).

⁹ Strategic Plan for North American Cooperation in the Conservation of Biodiversity, available on-line at http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1088 (Feb. 4, 2005).

The **EU Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT)** is a European regional process geared at addressing global problems of illegal logging and trade in illegal timber. FLEGT provides a framework for the development of partnership agreements between the EU and developing country partners, aimed at stemming the flow of illegal timber into the EU. Thus far, several EU member states have been involved in bi-lateral partnership negotiations. Similarly the **Europe and North Asia Forest Law Enforcement and Governance (ENAFLEG)** process provides a forum for addressing illegal logging in northern Eurasia.

There are no legally binding forest conventions in Asia. However, the Association of Southeast Asian Nations (ASEAN) has established an environmental convention aimed at the conservation of natural resources known as the **ASEAN Agreement on the Conservation of Nature and Natural Resources**. The **East Asia Forest Law Enforcement and Governance Initiative (East Asia FLEG)** was established in 2001 as an inter-governmental process aimed expressly at addressing problems of illegal logging and illegal trade in East Asia. C&I processes active in the region include the Near East Process, the Regional Initiative for the Development and Implementation of National Level Criteria and Indicators for the Sustainable Management of Dry Forests in Asia, and the Montreal Process. China is a member of both of the two latter processes.

Key legal instruments in Africa include the South African Development Community's (**SADC Forestry Protocol**), established in 2002. The Congo Basin Forest Treaty, signed in 2005, represents Africa's first forest treaty. Important non-legally binding bodies in the region include the **African Timber Association (ATO)**. The **Africa Forest Law Enforcement and Governance initiative (AFLEG)** addresses challenges to forestry governance in Africa. Key C&I processes in Africa include the Dry-Zone Africa Process on Criteria and Indicators for Sustainable Forest Management, and the **ATO/ITTO principles, criteria, and indicators for the sustainable management of African natural tropical forests**.

The ITTO, meanwhile, was an early pioneer in the development of criteria and indicators for tropical forests worldwide. Since 1992, the ITTO has published C&I for natural tropical forests, for plantation forests, for secondary and degraded forests, for biodiversity conservation, for fire management and, as mentioned above, for African natural tropical forests. This report's analysis focuses on the third version of the ITTO C&I for natural tropical forests (ITTO 2005).

Non-governmental approaches

Non-governmental private and civil society initiatives have been playing an increasing role in what has been termed the "non-state governance" of global environmental issues (Arts 2004; Bernstein and Cashore 2000; Meidinger 2001). Non-state initiatives of particular relevance to global forest-related governance are those that involve negotiations among diverse interests ranging from industry to environmental groups to rural communities and indigenous peoples. These initiatives may in some cases be uniquely suited to address issues around which government processes have stalled.

The analysis of non-governmental approaches in this report is limited to forest certification. Forest certification is a market-based initiative involving the labeling of forestry and forest products that meet an agreed upon set of environmental, social and/or economic standards. This labeling of forestry operations is intended to provide market recognition and hence economic rewards for forestry that meets standards approved by a balance of forestry interests. This report focuses on forest certification as a non-state process of particular significance due to its broad substantive and geographic scope, widespread interest group participation, and internal "governance" structure complete with voluntary standards or "rules" and enforcement procedures.

Environmental international NGOs (INGOs) were among the first proponents of forest certification. In the 1980s, the ITTO hosted international discussions between INGOs and industry representatives on the development of an environmental labeling system for tropical forest products. The ITTO was unable to reach consensus on the issue, (Elliot 1999). Instead, the World Wildlife Fund (WWF) and a number of other non-governmental actors initiated their own, independent certification process. This process, entitled, the Forest Stewardship Council, was initiated in 1993, with the participation of 130 individuals and organizations from 26 countries worldwide. The Forest Stewardship Council (FSC) now includes over 600 members from roughly 80 countries and has certified 84 million hectares of forest.¹⁰

¹⁰ Data on past and current membership and certified area is available on the Forest Stewardship Council website at: <http://www.fsc.org>. The figures quoted here were downloaded May 4, 2007.

Since the establishment of the FSC, a number of other forest certification systems have developed at regional and national levels with their own standards and systems for certifying “responsible” or “sustainable” forest management. Unlike the FSC, many of these alternative certification schemes have allowed for the direct participation of government actors in designing programs and/or setting forestry standards. Recently, a European-based initiative has developed a globally coordinated system of “mutual recognition” for many of these individual schemes. This global umbrella organization, known as the Programme for Endorsement of Forest Certification Schemes (PEFC), endorses those systems that meet its criteria for effective certification programs. To date, the PEFC has endorsed 18 different certification systems accounting for over 196 million hectares of certified forest, making it currently the world’s most expansive forest certification “system”.¹¹

The International Organization for Standardization (ISO) is a non-governmental organization that has produced yet another type of certification system of relevance to forestry. ISO, first formed in 1947, is a relatively long-standing consortium of national standard-setting bodies that is recognized by the WTO for its work on technical standardization. In the 1990s, ISO developed its 14000 series for the certification of “environmental management systems (EMS)”. Certification under ISO 14001 involves the assessment of a firm’s ability to achieve its own company objectives for environmental protection. Numerous forestry companies worldwide have been certified to the ISO 14001 standard.

In sum, non-state governance systems such as forest certification have emerged among diverse groups of actors and have adopted a wide range of institutional structures. It has been suggested that such systems constitute viable alternatives for addressing the controversial issues that have hindered inter-governmental processes. However, non-governmental processes face their own unique challenges of “legitimacy”, regarding such critical issues as representativeness, transparency and accountability (Cashore 1999; Elliot and Schlaepfer 2003; Meidinger 2001). Hence there is considerable ongoing debate regarding the “appropriate” role of non-state processes in forest-related governance.

¹¹ PEFC, Members and Schemes, web site: http://www.pefc.org/internet/html/members_schemes/4_1120_59.htm. The figures quoted here were downloaded May 4, 2007.

Part II Methodology

The comparative framework of seven SFM themes

The unique contribution of this report is the detailed and systematic classification of key forest-related instruments according to seven thematic elements and associated sub-themes or “criteria” for sustainable forest management. These themes and criteria are used to identify gaps, overlaps and conflicts between international instruments in addressing critical elements of sustainable forestry.

The seven thematic elements that frame this comparison have been identified as common to all regional and international criteria and indicator processes (FAO 2003a). These themes are:

1. Extent of forest resources
2. Biological diversity
3. Forest health and vitality
4. Productive functions of forest resources
5. Protective functions of forest resources
6. Socio-economic functions
7. Legal, policy and institutional framework

The UNFF has subsequently acknowledged these themes and recommended them to national governments as a framework for the development of sustainable forest management policies (UNFF 2004b). Hence the seven SFM thematic elements also provide a useful framework with which to assess the current level of comprehensiveness and cohesion of existing forest-related international instruments.

While these seven thematic elements provide a commonly recognized framework for SFM, they lack sufficient definition and detail regarding their translation into substantive action. The authors chose not to adopt any single set of existing organizational or region-specific criteria and indicators in order to avoid perceptions of political or regional bias. Instead, we identified our own set of sub-themes or “criteria” for each of the thematic elements. In total, 35 criteria were selected iteratively based on their common usage in C&I processes and in the international instruments themselves.

The first priority in selecting the criteria was to ensure that they encompass all issues of direct relevance to sustainable forest management. This enables an analysis of gaps, overlaps and conflicts that should yield similar results regardless of the particular criteria selected to organize those results.

Two relatively comprehensive sources of forest management concerns are the IPF/IFF Proposals for Action, and the comparative work of Holvoet and Muys. The IPF/IFF Proposals for Action address national and multi-lateral forest management priorities. Holvoet and Muys provide a reference forest management standard based on 164 different standard-setting processes worldwide (Holvoet and Muys 2004). The IPF/IFF PFA together with the Holvoet and Muys reference standard constitute a comprehensive catalogue of forest-related issues on which to base our evaluative criteria and assess areas of gap and overlap in multi-lateral forest related agreements.

Classification and assessment of multi-lateral decisions

Once a framework of thematic areas and criteria was established, it was used to systematically categorize decisions within each instrument, drawing on primary policy documents. The documents assessed include the original agreements, as well as key guidance documents that have emerged in formal sessions and meetings of the parties occurring after the instrument’s inception.

In the case of the legally binding instruments, all of the binding, or “directory” decisions that mandated a particular course of action by the Secretariat, executive bodies and/or all Parties to the agreement were catalogued in a policy database. Non-legally binding guidance documents that are of direct relevance to SFM, including general principles, guidelines and programs of work, were also assessed. The database was used to classify all decisions, principles, guidelines and programs according to a number of criteria, including the jurisdictional level at which the requirement was aimed (i.e. international, regional, national, sub-national), and the nature of the policy tool (for example, action plan, information collection, behavioral targets, procedural approaches, etc.). Other non-binding decisions, such as those “encouraging”, “recommending”, or “urging”-- but not committing-- parties to action, were excluded from the analysis.

Due to the searchable nature of the database, we were able to quickly identify how each forest theme was, or was not addressed by each of the instruments. This allowed us to also identify areas of “benign” overlap, as well as areas where overlap posed the risk of policy conflict. Finally, we were able to identify forest-related issues that have yet to be addressed within these instruments.

Non-legal global mechanisms, regional approaches, and non-governmental processes were subject to more abbreviated analyses. These additional assessments focus on the role of non-legally binding and/or sub-global mechanisms in addressing the gaps, overlaps and conflicts identified in the legally binding global instruments.

The more detailed analysis of global, legally binding instruments is due both to their legal complexity and limitations in time and resources. Given the time and opportunity, our policy database could be expanded to facilitate more detailed study of non-binding and regional decisions.

Selection and overview of forest-related instruments

The seven thematic chapters of this report are each organized into four subsections, consisting of: 1) legally binding global instruments, 2) global-scale, voluntary arrangements on forests, 3) regional approaches, and 4) non-governmental approaches. The report’s most detailed analyses are covered in the first subsections, which address the eight key legally binding forest instruments.

The following sections present the criteria used for the selection of instruments and processes addressed in the thematic analyses. This methodological description is followed by a brief synopsis of the history, purpose, composition and structure of each instrument and process under analysis.

Legally Binding Forest-related Global Instruments

Eight key legally binding global forest-related instruments were selected for detailed thematic analysis. The criteria used to select these instruments are: 1) their centrality to the seven SFM thematic elements of sustainable forest management, and 2) the membership of at least fifty country Parties, including a majority of the world’s top ten countries in terms of forest cover and value of forest products trade.

The instruments selected include the “three Rio conventions” - the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD). Three older conventions were also selected, consisting of the Convention on the International Trade in Endangered Species (CITES), the World Heritage Convention (WHC), and the Ramsar Convention on wetlands. In addition to these environmental agreements, two key global trade-oriented instruments were selected, consisting of the World Trade Agreement (WTA) and the International Tropical Timber Agreement (ITTA).

A survey of the literature confirms that the chosen instruments are central to the global forestry dialogue (FAO 2003b; Hunter, Salzman, and Zaelke 2002; Perlis 2001; Salim and Ullsten 1999; Sands 2003; Steiner 2001; Tarasofsky 1999a; UNFF 2004b; Vander Zwagg and MacKinlay 1996).

All of these instruments have been briefly introduced in the historical overview of global forest governance provided in the introduction of this report. Below they are listed again with some further background information, together with tables summarizing data relevant to their selection as key instruments.

Convention on Biological Diversity (CBD)

Table 1 Parties to the CBD and Primary SFM Themes Covered

MEA/Protocol	# of Parties	Top 10 countries worldwide in forest cover*	Top 10 countries worldwide in forest trade**	Primary SFM Thematic elements
CBD	188	Parties: 9/10 Russian Federation, Brazil, Canada, China, Australia, DRC, Indonesia, Angola, Peru Not Parties: 1/10 US	Parties: 9/10 Canada, Germany, China, France, Finland, Japan, Sweden, UK, Italy Not Parties: 1/10 US	SFM 2 Biodiversity SFM 6 Socio-economic
Cartagena Protocol on Biosafety	125	Parties: 3/10 Brazil, Indonesia, Peru Not Parties: 7/10 Russia, Canada, US, China, Australia, DRC, Angola	Parties: 7/10 Germany, France, Finland, Japan, Sweden, UK, Italy Not Parties: 3/10 US, Canada, China	SFM 2 Biodiversity

Source: CBD. Parties to the Convention on Biological Diversity / Cartagena Protocol on Biosafety. (Web page; cited February 8, 2005). Available from <http://www.biodiv.org/world/parties.asp>

* This column lists which of the world's top 10 countries in area under forest cover are parties to the MEA/Protocol and which are not (FAO 2003c).

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The objectives of the 1993 Convention on Biological Diversity (CBD) are threefold, consisting of "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources" (CBD, Article 1). The general scope of the CBD, however, has been expanding, leading observers to comment that the, "CBD... appears to be focusing increasingly on the management and use of forest resources rather than on biological diversity in forest ecosystems per se" (FAO 2003d: 46-47).^{12, 13} The CBD COP has thus far held eight sessions, the most recent taking place in March 2006.

Key guiding documents of current application for the CBD are the CBD Strategic Plan and 2010 Biodiversity Target, both endorsed in COP 6 in 2002.

¹² Expanded Programme of Forest Biodiversity, COP-6, dec. VI 22, is available on-line at <http://www.biodiv.org/decisions/default.aspx?m=COP-06&id=7196&lq=0> (Feb. 2, 2005).

¹³ The CBD secretariat is accessible on-line at <http://www.biodiv.org/> (Feb. 2, 2005). The CBD secretariat operates a forest web portal, which is accessible on-line at <https://www.biodiv.org/programmes/areas/forest/portal/home.shtml> (Feb. 2, 2005).

Framework Convention on Climate Change (UNFCCC)

Table 2 Parties to the UNFCCC and Primary SFM Themes Covered

MEA/Protocol	# of Parties	Top 10 countries in forest cover *	Top 10 countries in forest trade**	Primary SFM Thematic elements
UNFCCC	194	Parties: 10/10 Russian Federation, Brazil, Canada, US, China, Australia, DRC, Indonesia, Angola, Peru	Parties: 10/10 US, Canada, Germany, China, France, Finland, Japan, Sweden, UK, Italy	SFM 1 Extent SFM 5 Protective
Kyoto Protocol	155	Parties: 6/10 Russia, Brazil, Canada, China, Indonesia, Peru Not Parties: 4/10 US, Australia, DRC, Angola	Parties: 9/10 Canada, Germany, China, France, Finland, Japan, Sweden, UK, Italy Not Parties: 1/10 US	SFM 1 Extent SFM 5 Protective

Source: UNFCCC. Parties & Observers. (Web page, cited September 3 2005). Available from http://unfccc.int/parties_and_observers/items/2704.php; UNFCCC. Kyoto Protocol: Status of Ratification. Web page and PDF document; accessed September 3, 2005. Available from http://unfccc.int/essential_background/kyoto_protocol/status_of_ratification/items/2613.php

* This column lists which of the world's top 10 countries in area under forest cover (FAO 2003c) are parties to the MEA/Protocol and which are not.

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The 1994 United Nations Framework Convention on Climate Change (UNFCCC), which strives to limit atmospheric greenhouse gas emissions, has direct and potentially significant impacts on forests - as sinks or reserves for carbon storage.¹⁴ Of particular importance are the forest-related decisions on land-use, land-use change and forestry initiated at the 2001 Marrakesh Accord to the 2005 Kyoto Protocol, including the electable provisions regarding "forest management" (art. 3.4) (Rosenbaum, Schoene, and Mekouar 2004).¹⁵ ¹⁶ The UNFCCC COP has thus far held eleven sessions, the last occurring in November/December 2005.

¹⁴ UNFCCC Secretariat is accessible on-line at <http://unfccc.int/secretariat/items/1629.php> (Feb. 2, 2005).

¹⁵ Kyoto Protocol to the Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 (1998), available on-line at <http://unfccc.int/resource/docs/convkp/kpeng.pdf> (Feb. 2, 2005).

¹⁶ An account of the Land-Use, Land-Use Change and Forestry decisions (LULUCF) of the Marrakesh Accord (COP-7) is available on-line at http://unfccc.int/methods_and_science/lulucf/items/3063txt.php (Feb. 2, 2005).

Convention to Combat Desertification (UNCCD)

Table 3 Parties to the UNCCD and Primary SFM Themes Covered

MEA	# of Parties	Top 10 countries in forest cover *	Top 10 countries in forest trade**	Primary SFM Thematic elements
UNCCD	191	Parties: 10/10 Russian Federation, Brazil, Canada, US, China, Australia, DRC, Indonesia, Angola, Peru	Parties: 10/10 US, Canada, Germany, China, France, Finland, Japan, Sweden, UK, Italy	SFM 1 Extent SFM 3 Health SFM 6 Socio-economic

Source: UNCCD. Status of Ratification and Entry into Force. (Web page; updated June 1, 2004; cited February 8, 2005). Available from <http://www.unccd.int/convention/ratif/doiif.php>.

* This column lists which of the world's top 10 countries in area under forest cover are parties to the MEA/Protocol and which are not (FAO 2003c).

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The 1996 United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) has significance to forests threatened by desertification.¹⁷ The UNCCD is leading emerging efforts to coordinate global afforestation and reforestation initiatives with the CBD and UNFCCC (Downes 1999: 91-93; UNCCD 2004).¹⁸ To date, the UNCCD COP has held seven sessions, with the most recent taking place in October 2005.

¹⁷ United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1954 U.N.T.S. 3, available on-line at <http://www.UNCCD.int/convention/text/convention.php> (Feb. 2, 2005).

¹⁸ UNCCD Secretariat is accessible on-line at <http://www.cites.org/> (Feb. 2, 2005).

Convention on International Trade in Endangered Species

Table 4 Parties to CITES and SFM Themes Covered

MEA	# of Parties	Top 10 countries in forest cover *	Top 10 countries in forest trade**	Primary SFM Thematic elements
CITES	167	Parties: 9/10 Russian Federation, Brazil, Canada, US, China, Australia, DRC, Indonesia, Peru Not Parties: 1/10 Angola	Parties: 10/10 US, Canada, Germany, China, Finland, France, Japan, Sweden, UK, Italy	SFM 2 Biodiversity

Source: CITES. Member Countries. (Web page; cited February 8, 2005). Available from <http://www.cites.org/eng/disc/parties/index.shtml>

* This column lists which of the world's top 10 countries in area under forest cover are parties to the MEA/Protocol and which are not (FAO 2003c).

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The 1975 Convention on the International Trade in Endangered Species (CITES) strives to ensure that international trade does not threaten certain listed species. Forest-related flora and fauna are listed under the convention and CITES has recently extended its jurisdiction to Big-Leaf Mahogany (*Swietenia macrophylla*), a tree species of significant timber value (Downes 1999: 84-85).^{19, 20, 21} To date, the CITES COP has held 13 meetings, with the most recent in October 2004.

¹⁹ CITES Secretariat is accessible on-line at <http://www.cites.org/> (Feb. 2, 2005).

²⁰ CITES Secretariat, News Release, "CITES trade controls to take effect for Mahogany" (Nov. 11, 2003), available on-line at http://www.cites.org/eng/news/press/031111_mahogany.shtml (Feb. 2, 2005)

²¹ COP10, dec. 10.13, "Implementation of the convention for timber species", available on-line at http://www.cites.org/eng/resols/10/10_13R13.shtml (Feb. 2, 2005).

World Heritage Convention

Table 5 Parties to WHC and primary SFM Themes Covered

MEA	# of Parties	Top 10 countries in forest cover *	Top 10 countries in forest trade**	Primary SFM Thematic elements
WHC	177	Parties: 10/10 Russian Federation, Brazil, Canada, US, China, Australia, DRC, Indonesia, Angola, Peru	Parties: 10/10 US, Canada, Germany, China, Finland, France, Japan, Sweden, UK, Italy	SFM 2 Biodiversity SFM 6 Socio-economic

Source: WHC. Ratification Status. (Web page, updated April 30, 2004; cited September 3, 2005). Available from <http://whc.unesco.org/nwldrat.htm>.

* This column lists which of the world's top 10 countries in area under forest cover are parties to the MEA/Protocol and which are not (FAO 2003c).

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The 1975 Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention) is of significance to forests due to its mechanism for listing and protecting sites of key cultural and/or "natural" value. Some forested areas have already been designated as World Heritage sites with potential for many more such listings. The executive body of the Convention is the World Heritage Committee (WHC). The WHC has held 30 sessions as of July 2006.

The Ramsar Convention on Wetlands

Table 6 Parties to Ramsar and Primary SFM Themes Covered

MEA	# of Parties	Top 10 countries in forest cover *	Top 10 countries in forest trade**	Primary SFM Themes
Ramsar	144	Parties: 9/10 Russian Federation, Brazil, Canada, US, China, Australia, DRC, Indonesia, Peru Not parties: 1/10 Angola	Parties: 10/10 US, Canada, Germany, China, Finland, France, Japan, Sweden, UK, Italy	SFM 2 Biodiversity SFM 5 Protective

Source: Ramsar Convention. Contracting Parties to the Ramsar Convention on Wetlands. (Web site; updated January 31, 2005; cited February 8, 2005). Available from http://ramsar.org/key_cp_e.htm.

* This column lists which of the world's top 10 countries in area under forest cover are parties to the MEA/Protocol and which are not (FAO 2003c).

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The 1971 Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention) is of particular importance to mangrove forests (Downes 1999: 66-68).²² Recently the CBD and Ramsar Conventions have collaborated on a number of issues of common concern. To date, the Ramsar COP has held nine sessions, the most recent in 2005.

²² Ramsar Convention Secretariat, the Ramsar Bureau, is accessible on-line at <http://www.ramsar.org/> (Jan. 28, 2005).

International Tropical Timber Agreement (ITTA)

Table 7 Parties to ITTA and Primary SFM Themes covered

Trade Agreement	# of Parties	Top 10 countries in forest cover *	Top 10 countries in forest trade**	Primary SFM Themes
ITTA	59	Members: 8/10 Brazil, Canada, US, China, Australia, DRC, Indonesia, Peru Not Members: 2/10 Russian Federation, Angola	Members: 10/10 US, Canada, Germany, China, Finland, France, Japan, Sweden, UK, Italy	SFM 4 Productive SFM 6 Socio-economic

Source: ITTO. ITTO Members. (Web page; cited September 3, 2005). Available from <http://www.itto.or.jp/live/PageDisplayHandler?pageId=233&id=224>

* This column lists which of the world's top 10 countries in area under forest cover are parties to the MEA/Protocol and which are not (FAO 2003c).

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The first International Tropical Timber Agreement (ITTA) was adopted in 1983, followed by successor agreements in 1994 and 2006. The ITTA established the International Tropical Timber Organization (ITTO) to promote international trade in tropical timber. The International Tropical Timber Council (ITTC) is the executive body for the ITTA, and the ITTO serves as the Secretariat.²³ As of the writing of this report, there have been 41 meetings of the ITTC. This report's analysis focuses primarily on ITTA 1994, as the latest decision entered into force, and the Yokohama Action Plan 2002-2006. In addition, analysis is provided of the changes embodied in the new ITTA 2006, adopted January 27, 2006.

The ITTO has spearheaded the development and implementation of one of the earliest criteria and indicator processes worldwide. The ITTO C&I Process at present involves nearly 31 tropical countries (FAO 2003a). This report covers the ITTO C&I together with other C&I processes under the heading "regional approaches".

²³ International Tropical Timber Organization is accessible on-line at <http://www.itto.or.jp> (Feb. 2, 2005).

World Trade Agreement (WTA)

Table 8 Parties to WTA and Primary SFM Themes covered

Trade Organization	# of Members	Top 10 countries in forest cover *	Top 10 countries in forest trade**	Primary SFM Themes
WTO	148	Members: 9/10 Brazil, Canada, US, China, Australia, DRC, Indonesia, Angola, Peru Not Members: 1/10 Russian Federation	Members: 10/10 US, Canada, Germany, China, Finland, France, Japan, Sweden, UK, Italy	SFM 6 Socio-economic

Source: WTO. Members and Observers. (Web page; updated October 13, 2004; cited February 10, 2005). Available from http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm

* This column lists which of the world's top 10 countries in area under forest cover are parties to the MEA/Protocol and which are not (FAO 2003c).

** This column lists which of the world's top 10 countries in terms of their dollar value of import/export forest trade in 2002 (FAOSTAT 2004) are parties to the MEA/Protocol and which are not.

The World Trade Agreement in 1995 marked the establishment of the World Trade Organization (WTO). The purpose of the WTO is to promote global trade liberalization. As such it has "many serious implications for forests, some direct and others indirect, some positive and others negative" (Chalifour 2000: 615; see also, Downes 1999: 73-80).²⁴ The WTA included the incorporation under the WTO of three principal forest-related subsidiary institutions and instruments. These are the 1994 General Agreement on Tariffs and Trade (GATT),²⁵ the Agreement on Technical Barriers to Trade (ATBT),²⁶ and the 1994 Committee on Trade and the Environment (CTE).²⁷ The analysis of the WTA decisions in this report is limited to those directly related to the issue of environment and trade.

²⁴ World Trade Organization is accessible on-line at <http://www.wto.org/> (Feb. 3, 2005).

²⁵ General Agreement on Tariffs and Trade, 1994, available on-line at http://www.wto.org/english/docs_e/legal_e/06-gatt.pdf (Feb. 3, 2005).

²⁶ Agreement on Technical Barrier to Trade, available on-line at http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf (Feb. 5, 2005).

²⁷ Committee on Trade and the Environment, available on-line at http://www.wto.org/english/tratop_e/envir_e/wrk_committee_e.htm#top (Feb. 3, 2005).

Non Legally Binding Global Forest Instruments

This report's thematic analyses address primarily two key non-legally binding global mechanisms, the IPF/IFF Proposals for Action (PfA) and decisions of the United Nations Forum on Forests (UNFF). The IPF/IFF and UNFF processes were selected as the only existing global-scale, intergovernmental instruments expressly designed to address SFM²⁸. Their role is to provide guidance and support to legal initiatives and other relevant global efforts.

The FAO, a UN agency, and CPF, a collaborative partnership, are also mentioned in some instances due to the important roles they play in facilitation, assessment, and the generation and provision of forest-related information. The primary focus of this report is on inter-governmental instruments and C&I processes, however. Time and resources do not allow a full assessment of the activities of UN agencies, international NGOs and other forms of institutionalized international cooperation.

IPF/IFF Proposals for Action

As discussed in the introduction to this report, the Intergovernmental Panel on Forests (IPF) was established in 1995 to further the development of a global forest strategy as initiated under the Forest Principles and Chapter 11 of Agenda 21 of the Rio Earth Summit. By the time of its closure in 1997, the IPF had developed a set of Proposals for Action and ECOSOC established the Intergovernmental Forum on Forests (IFF) as a continuation of the process. The IFF concluded its work in 1999, with additional Proposals for Action (PfA), bringing the total number PfAs to 270.

This report examines the IPF/IFF PfA in light of their coverage of the seven thematic elements of sustainable forest management. Given that the IPF/IFF represent collaboratively developed goals in their own right, this report's "assessment" of the PfA is not intended as an evaluation of their adequacy. Rather, it is aimed at examining the relationship between the IPF/IFF PfA and the gaps, overlaps and/or conflicts identified within current legally binding global instruments.

Included among the key outputs of the IPF/IFF PfA is the promotion of National Forest Programmes, involving comprehensive national planning for the achievement of SFM (IPF PfA 17 (a)-(i)). National Forest Programmes (NFP) constitute both a very holistic, as well as a de-centralized approach that is relevant to all seven of the SFM thematic elements covered in this report.

The United Nations Forum on Forests

The United Nations Forum on Forests (UNFF) was established in 2000 under the ECOSOC to serve as a high level political body and promote the implementation of the IPF and IFF PfAs.

In its First Session in 2001, the UNFF adopted a Multi-year Program of Work outlining the topics to be addressed in its next four annual sessions. The First session also endorsed a plan of action and initiated its work with the inter-agency Collaborative Partnership on Forests (CPF). Sessions Two through Four focused on progress towards specific themes of the IPF/IFF PfA. The Fifth Session, held in 2005 was dedicated to reviewing effectiveness of the current international arrangement on forests and establishing plans to move forward.

Regional Approaches

This report's regional-level analyses are designed to assess the role of regional processes in addressing gaps, overlaps and conflicts of global forest-related governance. As discussed in the introduction to this report, regions vary considerably in both the level of multilateral collaboration and the institutional mechanisms they employ. This report organizes its regional analysis by geographic region rather than by instrument type, in order to gain a more holistic understanding of forest-related multi-lateral activities as they interact within a given region.

Included among the regional instrument or process "types" are both legally and non-legally binding instruments, ministerial conferences and criteria and indicator processes for SFM. Hence our analyses look not only at substantive breadth, but also variations in the level of commitment entailed by the different instrument types.

²⁸ In April 2007, the UNFF developed a Non-Legally-Binding Instrument on All Types of Forests. However, this occurred after the reference date chosen for the completion of this report, and has not been included here.

The definition of “region” varies between instruments and processes. A region may cover contiguous countries within a commonly recognized socio-economic boundary, such as “Southeast Asia”, or it may encompass countries sharing biogeoclimatic features, such as “temperate and boreal forests”. In some cases (for example, the “Treaty for Amazonian Cooperation”) the boundaries of the agreement are primarily biological rather than political and do not encompass the entirety of the participating nation states.

Below is the list of regional forest-related multilateral mechanisms addressed in this report. This list is far from exhaustive. However, it includes a number of the world’s most active regional agreements and processes and as such serves to illustrate the current and potential role of regional initiatives in achieving SFM around the globe.

Non-European Temperate and Boreal Forests

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

The Montreal Process Criteria and Indicators for sustainable forest management covers the largest geographic range of any C&I process worldwide, including 12 temperate and boreal forest countries in North and South America, Asia and Oceania. The “Santiago Declaration” in 1995 marked the official acceptance of the Montreal Process C&I by participating countries. This C&I Process is relatively well evolved, with all participating countries thus far utilizing the C&I for purposes of both national and international reporting. The Montreal Process First Overview Report 2003, includes data from all country members on seven key indicators taken from these C&I (UNFF 2004a). The Montreal C&I are focused exclusively at the national level.

Central America

The Regional Convention for the Management and Conservation of Natural Forest Ecosystems and the Development of Forest Plantations (The Central American Forest Convention)

The central coordinating agency responsible for environmental governance in Central America is the Central American Commission on Environment and Development (CCAD). This Commission, formed in 1989, is composed of the ministries and agencies responsible for environmental policy in all seven Central American countries. CCAD is responsible for the implementation of the 1991 Central American Tropical Forest Action Plan, which included the **Regional Convention for the Management and Conservation of Natural Forest Ecosystems and the Development of Forest Plantations** (known also as the Central American Forest Convention). This Forest Convention, signed in 1993, established the Central American Council on Forests and Protected Areas to work closely with CCAD in implementing the Convention. This original forest council has since merged to form the **Central American Council for Forests and Protected Areas (CCAB-AP)**.

Lepaterique Process of Central America on Criteria and Indicators for Sustainable Forest Management

The Lepaterique Process was formally initiated in 1997 to develop Criteria and Indicators for SFM in the seven countries of Central America. The Lepaterique Process includes both regional and national-level C&I. Efforts have been made to coordinate this process with the implementation of the Central American Forest Convention (FAO 2003a). Work has also been done on developing guidelines to aid countries in their assessment and measurement of the C&I (FAO 2001b). In addition, individual countries have incorporated C&I into national commitments. For example, the forest law of Honduras calls for the use of C&I based on the Lepaterique Process as a basis for reporting on progress towards its national forest program (UNFF 2004a).

South America

Amazon Cooperation Treaty

The **Amazon Cooperation Treaty (ACT)** was established in 1978 with the participation of eight South American countries. The purpose of the ACT is to coordinate economic development and environmental protection across the roughly 3 million square miles of the Amazon Basin. The Amazon Cooperation Treaty Organization (ACTO) is the body responsible for fulfilling the ACT’s various objectives.

Tarapoto Proposal of Criteria and Indicators for Sustainability of the Amazon Forest.

The Tarapoto Proposal C&I, initiated in 1995, aim to address forestry issues at the global, national and management unit levels. Currently, the initiative is in its second phase, "Tarapoto II". As yet there has been limited implementation of the C&I although Brazil has developed national C&I based on the regional process (FAO 2003a).

Europe and Eurasia

Ministerial Conference for the Protection of Forests in Europe

The **Ministerial Conference for the Protection of Forests in Europe (MCPFE)** was founded in 1990. This conference consists of high-level ministers from roughly 40 European countries and the European community. The executive decisions of the MCPFE are made at periodic Ministerial Conferences. Four Ministerial Conferences have been held thus far, including the First Ministerial Conference in Strasbourg in 1990, the Second Ministerial Conference in Helsinki in 1993, the Third Ministerial Conference in Lisbon in 1998, and the Fourth Ministerial Conference in Vienna in 2003. Decisions enacted during these Ministerial Conferences are developed through expert meetings.

MCPFE Pan-European Criteria and Indicators for Sustainable Forest Management

The MCPFE has produced a set of **Pan-European Criteria and Indicators for Sustainable Forest Management**, as well as the **Pan-European Operational Guidelines for Sustainable Forest Management**.

FLEGT Forest Law Enforcement, Governance and Trade (FLEGT)

The **Forest Law Enforcement, Governance and Trade (FLEGT)** process is an EU-initiated regional effort to address global problems of illegal logging. FLEGT provides a framework for the development of partnership agreements between the EU and developing country partners, aimed at stemming the flow of illegal timber into the EU. Thus far, several EU member states have been involved in bi-lateral partnership negotiations.

This report's analysis of FLEGT is contained exclusively under the Regional and C&I Processes subsection of Thematic Area VII.

ENAFLEG Europe and North Asia Forest Law Enforcement and Governance

The **Europe and North Asia Forest Law Enforcement and Governance (ENAFLEG)** is a ministerial process that involves governments, NGOs and the private sector in addressing problems of illegal logging in Eurasia. ENAFLEG is hosted by developed and developing country governments and the World Bank.

This report's analysis of ENAFLEG is contained exclusively under the Regional and C&I Processes subsection of Thematic Area VII.

Asia

ASEAN Agreement on the Conservation of Nature and Natural Resources

The **Association of Southeast Asian Nations (ASEAN)** has played an important role in promoting cooperation in environmental issues in Southeast Asia. ASEAN first formed in 1967 to promote regional economic and social goals. In 1985, ASEAN produced an environmental agreement entitled, "**Agreement on the Conservation of Nature and Natural Resources**". This treaty encompasses a broad range of natural resource issues, including biodiversity, water, air, soils and "vegetation cover and forest resources" (ASEAN 1985).

East Asia FLEG (East Asia Forest Law Enforcement and Governance)

The **East Asia Forest Law Enforcement and Governance Initiative (East Asia FLEG)** was established in 2001 as a ministerial process aimed expressly at addressing problems of illegal logging in East Asia. Developed and developing country governments and the World Bank host East Asia FLEG.

This report's analysis of East Asia FLEG is contained exclusively under the Regional and C&I Processes subsection of Thematic Area VII.

Africa

SADC Forestry Protocol

The roots of the **Southern African Development Community (SADC)** trace back to the establishment of the Southern African Development Coordination Conference in 1980. As the name implies, the original objective of this organization was to coordinate regional economic development. The original Coordination Conference took its current shape as the SADC in 1992. The SADC currently includes thirteen member countries, consisting of Angola, Botswana, the Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe.²⁹ The SADC developed a **Forestry Protocol** in 2002 that outlines ambitious environmental, social and economic objectives for forest management in the region.

African Timber Association (ATO)

The **African Timber Organization (ATO)** was established in 1976 to promote the responsible production and trade of African timber. The ATO includes 14 member countries which together account for over 75% of Africa's tropical forest cover. The ATO has provided training and outreach to its member countries and, more recently, worked together with the ITTO to produce the **ATO/ITTO principles, criteria, and indicators for the sustainable management of African natural tropical forests** (ATO/ITTO 2003). The ATO/ITTO C&I address forestry issues both at the national and forest management unit levels.

AFLEG Africa Forest Law Enforcement and Governance

The **Africa Forest Law Enforcement and Governance initiative (AFLEG)** is a ministerial process that aims to improve forest law enforcement and governance in Africa. Developed and developing country governments and the World Bank host AFLEG.

This report's analysis of AFLEG is contained exclusively under the Regional and C&I Processes subsection of Thematic Area VII.

International Tropical Timber Organization (ITTO) C&I

The ITTO has spearheaded the development and implementation of one of the earliest criteria and indicator processes worldwide. The ITTO C&I Process at present involves nearly 31 tropical countries (FAO 2003a). ITTO C&I are designed for both the national and forest management unit levels.

Since 1992, the ITTO has published three editions of C&I for natural tropical forests, as well as the above-mentioned C&I for African natural tropical forests. The original ITTO C&I focused primarily on sustainable management for timber production but the latest "update covers the full range of forest goods and services" (ITTO 2005). The ITTO has also created guidelines for forest management in natural forests, plantation forests, secondary and degraded forests, as well as guidelines for biodiversity conservation and fire management. This report's thematic regional analysis focuses primarily on the third version of the ITTO C&I for natural tropical forests (ITTO 2005).

Non-governmental organizations and processes

This section introduces a number of the major forest certification systems currently in existence. All of these systems have contributed to the international dialogue on forest certification as a form of non-state forest management. The FSC, however, is the only system with global-level standards that cover the seven substantive themes addressed in the thematic section of this report. As a result, only the FSC standards are covered in this report's thematic analyses. The reader should keep in mind, however, that other certification systems are also contributing to substantive forestry management at a sub-global level.

The Forest Stewardship Council (FSC)

The Forest Stewardship Council is a global-scale non-governmental system of "forest certification" which was launched in 1993 with the active participation of major international environmental groups including the Worldwide Fund for Nature (WWF). Forest certification is a voluntary marketing system, involving the labeling of forestry, and or forest products derived from forestry, that meet an agreed upon set of environmental, economic and/or social standards. This report includes a brief analysis of the

²⁹ The South African Development Community (SADC) website: <http://www.sadc.int/index.php>. (April 20, 2005)

Criteria and Indicators of the FSC standards as an international non-state system that has arguably played an important role in shaping the evolution of global forestry governance as a whole (Bernstein and Cashore 2000).

The FSC international Principles and Criteria form the baseline for certification under the FSC system. These international standards cover the wide range of environmental, social and economic issues deemed to contribute to “responsible” forest management. In addition to its international Principles and Criteria, the FSC also endorses national and sub-national standards referred to as “regional standards”, designed to address the particular contexts and concerns of a given region. The development of all FSC standards requires the participation of a diverse array of non-governmental stakeholders.

International Organization for Standardization (ISO)

The International Organization for Standardization was first established in 1947 for the purpose of developing global-scale, voluntary technical standards in support of world trade. ISO is organized as an international consortium of roughly 100 national standards organizations worldwide. Since its establishment, ISO certification systems have been developed to cover a wide range of goods and services. More recently, ISO has also developed certification standards to address the management “systems” that govern the production of goods and services. Included in these “systems” certification processes is the ISO 14001 series, which assesses “environmental management systems” (EMS) in their capacity to implement defined environmental goals. ISO 14001, first operationalized in 1996, is a generic standard that does not establish substantive goals for environmental management but rather assesses the adequacy with which companies develop and implement their own environmental goals. Numerous forestry firms worldwide have adopted ISO 14001 either as their sole environmental certification system or in conjunction with other certification systems specifically designed to assess forest management.

Programme for the Endorsement of Forest Certification Schemes (PEFC)

The Programme for the Endorsement of Forest Certification Schemes (PEFC) originated in Europe as the Pan-European Forest Certification system. The PEFC endorses national certification schemes and standards that meet its criteria for “mutual recognition” of credible certification systems. To date, a total of 18 national certification systems have been endorsed by the PEFC.³⁰ Among the requirements for PEFC endorsement, is the promotion of sustainable forest management as defined by the relevant international C&I processes active in the given region. Principles for standard-setting include the separation of standard-setting and auditor accreditation and a decision-making process based on multi-stakeholder consensus (PEFC 2004).

National forest certification systems

Beginning in the 1990s, numerous national-level forest certification systems have been emerging in diverse countries around the world. These national certification systems are of relevance to international governance to the extent that they incorporate and implement international priorities as well as serve to influence the development of those priorities.

National forest certification systems vary considerably in their institutional structure, level of government involvement, and the range and degree of stakeholder support. For example, Canada’s national forest certification system was developed within the country’s existing national standards organization, the Canadian Standards Association (CSA). In the U.S., the national Sustainable Forestry Initiative (SFI) first emerged from within an industry association, the American Forest and Paper Association (AF&PA). The Brazilian CERFLOR system was initiated by the Brazilian Silvicultural Society and developed in collaboration with Brazil’s national standardization forum, the Brazilian Association for Technical Standards.

It is beyond the scope of this report to compare and assess the substantive content of national certification systems. However, there is a growing body of literature focused on such assessments (Cashore, Auld, and Newsom 2004; Elliot 1999; Holvoet and Muys 2004).

³⁰ PEFC, Members and Schemes, web site:
http://www.pefc.org/internet/html/members_schemes/4_1120_59.htm. (April 21, 2005)

Other key processes

The instruments listed above represent many of the key global and regional instruments of direct relevance to forests. The list, based on the selection criteria already discussed, is far from exhaustive however. A number of other key instruments, some of which are mentioned as relevant within the following seven thematic sections include:

1959 Agreement for a Latin American Forest Research and Training Institute

1989 ILO 169 Indigenous Peoples Convention

1982 World Charter for Nature

The East Asian Forest Law and Governance Process

The Africa Forest Law and Governance Process

1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context

1992 The European Habitat Directive

1993 The North American Free Trade Agreement and associated North American Agreement on Environmental Cooperation

1998 The Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters

1999 The International Meeting of Experts on the Special Needs and Requirements of Developing Countries with Low Forest Cover and Unique Forests (Tehran Process)

The Model Forest Network

The Congo Basin Forest Partnership

The Asia Forest Partnership

The Western Hemisphere Convention

2002 The Millenium Development Goals of the World Summit on Sustainable Development

2004 The Antalya Declaration On Cooperation in Wildland Fire Management in the Balkans, Eastern Mediterranean, Near East and Central Asia

Part III Thematic Analysis

Introduction—Global forestry challenges

The focus of this report is on gaps, overlaps and conflicts as embodied in the written decisions enacted by multilateral forest-related institutions and processes. The ultimate test of effective governance, however, is its impact on the ground. It is hoped this report will help inform future field-based studies that link multilateral decisions with environmental, social and economic impacts.

Existing evidence is sufficient, however, to conclude that forest-related governance has not been adequate in addressing global forest-related problems. Deforestation, forest degradation and rural poverty continue to plague many world regions. Between 1990 and 2000, forests disappeared at an average rate of 0.24% per year (FAO 2005a) and one-fifth of the earth's population lived in extreme poverty (UNDP 2001).³¹

Environmental and social challenges are very unequally distributed between countries and between regions. In general, developing countries continue to lose forestlands while some developed nations have made slight gains in forest cover (FAO 2005a). Rural poverty, a problem in virtually every country, is most severe in lesser-developed countries and regions. In Africa, for example, 44% of the region's population lives in extreme poverty.³² The gap between rich and poor both within and between countries, meanwhile, has been widening (UNDP 2001). Global inequity has in fact been pinpointed as a key underlying "driver" of global-scale environmental and social problems (Chaytor 2001).

Comparative studies of global forest-related governance consistently identify three major gaps in current governance systems that stem directly from the above-identified global "development" challenges. The first gap involves the inadequate transfer of resources to finance efforts towards sustainable forest management in lesser-developed regions. This lack of burden sharing stalls progress at the initial level of negotiations as well as at the level of agreement implementation (Dimitrov 2003; Humphreys 1999; Sanwal 2004; Tarasofsky 1999b).

The second major governance gap is the failure to address the "underlying causes" of deforestation, forest degradation and rural poverty (Chaytor 2001; Humphreys 1999; Tarasofsky 1999b). While the causes are complex and not perfectly understood, research and monitoring of land use changes are sufficient to reveal major patterns. In the 1990s, an estimated 70% of global forest cover loss in the 1990s was due to agricultural conversion (FAO 2001a). The "causes" of agricultural conversion can be traced to various systemic factors such as higher rates of return for commercial agriculture, land use policies, population growth, and displacement of subsistence farmers from more fertile agricultural lands (Geist and Lambin 2002).

The failure to address these known causes of deforestation and forest degradation is not simply a matter of oversight. Rather it is evidence of deep-rooted political contention and uncertainty regarding the appropriate means to achieve sustainable development. Hence it has been claimed that the very inter-sectoral nature of forestry challenges has contributed to the stalling of global forestry governance (Dimitrov 2003).

The "fragmentation" of forest-related instruments constitutes the third commonly identified "major gap" in global forest policy (Chaytor 2001; RFI 1998; Ruis 2001; UNCSD 1998). This fragmentation presents major challenges to globally coordinated priority-setting and effective action.

The findings of this report, in general, agree with the above commonly identified barriers to successful forest-related global governance. These broad inter-sectoral issues represent over-arching challenges that affect all of the thematic elements of SFM assessed in the following seven chapters of this report.

³¹ The World Bank has measured "extreme poverty" based on a definition of "less than \$1 per day" (adjusted for local dollar value). The World Bank's figures for extreme poverty have been heavily contested based on various concerns such as the methods of calculation and the focus on cash income rather than human needs, requirements or capabilities. Many argue that the poverty figures should be much higher (Reddy and Pogge 2003). The World Bank measure is included here only as a very rough, and commonly used indication of extreme poverty, with the purpose of highlighting how poverty remains a major global concern.

³² Ibid.

While awareness of these broad and seemingly intractable barriers is important, it is equally necessary to develop a more nuanced and in-depth understanding of precisely where progress has, or has not, been achieved if we are to find our way forward. The following chapters, therefore, will present a detailed and systematic analysis of global dialogue regarding the seven thematic elements central to the achievement of sustainable forestry.

Each thematic chapter begins by identifying substantive "criteria" that further define the given SFM theme. The legally binding global forest-related instruments are then assessed for their coverage of the identified criteria. This criterion-by-criterion assessment is followed by a table, summarizing major gaps, overlaps and conflicts between instruments. The next sections then analyze non-legally binding global forest instruments and their role in addressing the gaps, overlaps and conflicts identified among the legal instruments. This gap analysis is then also performed for regional instruments and processes and, finally, for forest certification as an example of a non-state governance system.

Thematic Element I: Extent of Forest Resources

The extent of the world's forest resources constitutes a central concern — as well as a key point of contention -- within global forest policy dialogue. While there is general agreement on the importance of maintaining adequate global forest cover to regulate climate, conserve biodiversity, and generally maintain valued forest products and functions, much debate still exists regarding the sovereign right of nations to clear forests for the purpose of economic development. This debate is further complicated by the fact that many developed countries have historically exploited their frontier forests without impediment, leading to arguments that developing countries should be allowed to do the same to fulfill their own priorities for economic development (Porter and Brown 2000).

Criteria

This chapter organizes its assessment of multilateral decisions related to forest extent according to four sub-themes or "criteria", consisting of: "inventory", "afforestation", "deforestation" and "reforestation". A worldwide assessment of standards for sustainable forest management captured a similar set of indicators under the heading "forest estate statistics" (Holvoet and Muys 2004).

The criterion of "forest inventory" is intended to capture the various requirements that arise from legally binding forest related global instruments to measure and monitor the extent of forest resources. The development of accurate and comprehensive forest inventories is clearly crucial to any long-term monitoring and assessment of forest extent.

The criterion of "afforestation" addresses the conversion of non-forested lands to forested lands. Afforestation may be promoted for diverse reasons, including the rehabilitation of historically forested areas and/or the mitigation of climate change via the use of forests as sinks or reservoirs of carbon.

"Deforestation", or the conversion of forests to non-forested land cover, is an issue that has been a primary driving force of the global forest debate (Sands 2003-547) (UNCED 1993) (Chapter 11 – "Deforestation"). While there is a conspicuous lack of global consensus regarding where and how much deforestation may be justified by national priorities, there is widespread recognition for the need to mitigate undesirable losses in forest cover.

Finally, the criterion "reforestation" addresses the need for proactive forest management that ensures that forests continue to adequately regenerate. Reforestation policies may encourage human planting and/or natural regeneration.

Legally Binding Forest-Related Global Instruments

Inventory

The legally binding, forest-related global instruments that address forest-extent-related inventory requirements include: CBD, UNFCCC, UNCCD, WHC, Ramsar and the ITTA.

The CBD establishes obligations for the inventorying of forest-related resources. The convention imposes a blanket direction on parties to "as far as possible and appropriate" identify and monitor biological diversity (arts. 7(a) and (b) and Annex 1) and periodically report on implementation of the CBD (art. 26). In the conference work of the CBD, it has recommended the establishment of national-level inventories of forest biodiversity (COP-4, dec. IV/7, annex, para. 42) and called upon the Global Environment Facility (GEF) to fund the development of those inventories in developing nations (dec. IV/7, para. 6). The CBD's current expanded forest biological diversity programme of work (FBDPOW) identifies the assessment and monitoring of forest biological diversity as a major programme element and voluntary reports are invited from the parties on FBDPOW (dec. IV/22, annex, ele. 3).

The UNFCCC and the Kyoto Protocol require the inventorying and monitoring of forest resources but only for parties in the developed world (Annex 1), as does the UNCCD. The Kyoto Protocol requires parties to develop and maintain national-level inventories of green house gases (GHG) emissions and removals, which may include emissions and removals attributed to deforestation, afforestation and reforestation (COP-9, dec. 13) (Rosenbaum, Schoene, and Mekouar 2004) (5). Kyoto further directs parties to, "promote the maintenance and the development of systematic observation systems" at the national-level (art. 10(d)).

The UNCCD requires parties to the convention, to "integrate and coordinate the collection, analysis and exchange of relevant short term and long term data and information to ensure systemic observation of land degradation" and to "facilitate and strengthen... a global network of institutions and facilities for the collection, analysis and exchange of information, as well as for systematic observation" (art. 16). These obligations in the UNCCD apply to the degradation of forest ecosystems of parties that are affected or threatened by desertification, or party-countries with so-called "drylands" (art. 1). The

UNCCD has a Committee on Science and Technology that is tasked with overseeing the UNCCD's participation in inventory work (COP-6/CST/7). In 2005, emphasis was placed on monitoring and assessment of biophysical aspects of desertification, including benchmarks and indicators, as "the most urgent activity for the next two year period" (UNCCD dec. XII/17 and XII/20).

The WHC, similar to Ramsar, does not contain an explicit requirement for the inventorying of natural and cultural resources. However, the obligations placed on WHC Parties regarding the duty to identify natural heritage sites, while lacking in precision, could be construed as necessitating an inventory of natural and cultural resources (arts. 4 and 5). Regardless of its potential role in this regard, however, the WHC is not currently contributing to the multilateral coordination of forest inventories.

The Ramsar Convention on Wetlands, which is aimed at the conservation of both forested and non-forested wetlands, is silent on the need for inventorying wetland resources (art. 1). The Ramsar Conference of the Parties (COP), however, has interpreted their mandate to require inventorying of wetland resources and have recently developed a voluntary "Framework for Wetland Inventory" (Finlayson and Spiers 1999) (COP-8, res. 6, annex). The Ramsar strategic plan (2003-2008) established wetland inventories as a priority activity for implementation of the Convention (COP-8, res. 25, para. 56(2)) (Ramsar 2002) (obj. 1.1 and 1.2), and subsequently an Integrated Framework for Wetland Inventory Assessment and Monitoring (IF-WIAM) was developed (COP-9, res 1, Annex E).

The International Tropical Timber Organization (ITTO) is required to produce an annual review and assessment of the world's tropical timber situation (ITTA, art. 30(1)-(3)) e.g. (ITTO 2003), which contains largely forest trade-related statistics. The data is collected from ITTA parties on a voluntary basis and the ITTO reports a lack of responses and a high percentage of mediocre quality response from countries (CPF 2004: 5).

Major Gaps, Overlaps, Conflicts:

Several global forest-related instruments have instituted requirements for national-level reporting (UNFF 2004c: 7). These reporting requirements are bound by the limited, and yet overlapping substantive content of the conventions themselves.

The recently effective Kyoto Protocol requires the inventorying of GHG-related deforestation, afforestation, and reforestation in developed country Parties. Two voluntary measures that overlap with the Kyoto obligations are the Ramsar measures encouraging the inventorying of the extent of forested wetlands and the CBD's broad encouragement for the inventorying of forest related biodiversity. These issue-specific efforts focused on carbon sequestration, wetlands and biodiversity lack integration and fall short of a comprehensive framework for inventorying of the nature, condition and extent of global forest resources (FAO 2002b).

Afforestation

The legally binding, forest-related global instruments that address issues of afforestation include: CBD, UNFCCC, and UNCCD.

The text of the CBD convention does not provide any direct encouragement for afforestation. However the CBD's voluntary forest biological diversity programme of work (FBDPOW) recommends afforestation strategies as a part of ecosystem management of forest biodiversity (dec. IV/22, annex, ele. 1), which is intended to, in part, satisfy the overall objectives of the convention vis a vis forest biodiversity.

The Kyoto Protocol to the UNFCCC endorses afforestation as climate change mitigation measure (art. 3(3)), which in the context of the commitments that developed country-parties (Annex 1) have made to reduce GHG emissions potentially creates a positive incentive to undertake afforestation. The Protocol further advises the parties to the convention to consider developing or refining national-level policies regarding such matters as afforestation to facilitate action (art. 2(1)(a)(ii)). Recently, progress has been made in simplifying modalities and procedures for small-scale afforestation and reforestation activities under the clean development mechanism (dec. X/14).

The UNCCD convention also does not explicitly endorse afforestation although afforestation is a recognized strategy for addressing land degradation. The UNCCD secretariat, however, is leading efforts to coordinate global afforestation and reforestation initiatives with the CBD and UNFCCC (Downes 1999; IISD 2004: 91-93).

Major Gaps, Overlaps, Conflicts:

There are no legally binding afforestation directives to be found amongst the provisions of forest-related global instruments. However, the Kyoto Protocol creates a discretionary incentive to undertake

afforestation for the purposes of mitigating climate change, which coincides with programme work being undertaken by the CBD and UNCCD.

Deforestation

Deforestation, or the conversion of forests to non-forested land cover, is an issue that has been a primary driving force of the global forest policy dialogue (Sands 2003-547) (UNCED 1993) (Chapter 11 – “Deforestation”). Despite this fact, there is little direct regulation of deforestation. The legally binding, forest-related global instruments which address deforestation, either directly or indirectly, include: Ramsar, CBD, UNCCD, and UNFCCC.

The CBD does not have a specific directory prohibition against deforestation. However, deforestation is a priority issue for the Conference of the Parties (Hague Ministerial Declaration (para. 13) (CBD 2005: 1454). In keeping with this, the CBD's current strategic plan identifies the reduction in the loss of habitat as a priority in its strategic plan (COP-7, dec. VII/30, para. 1(a)(i)).

The Kyoto Protocol to the UNFCCC includes deforestation activities in the calculation of a parties GHG emissions (art. 3(3)), which in the context of the commitments that developed country-parties (Annex 1) have made to reduce GHG emissions, potentially creates a positive incentive to avoid deforestation.

The UNCCD is the only legally binding forest-related global instrument with provisions directly focused upon deforestation. The convention, as mentioned, is aimed at mitigating desertification, which is defined broadly to encompass land degradation by the loss of forests in drylands (art. 1(a) and (f)). The Convention's primary policy approach for achieving this objective is the provision of a framework for “national action programmes” (NAPs). This framework includes general directives for country Parties to develop their own national-level priorities that “incorporate long-term strategies to combat desertification and mitigate the effects of drought...” (art. 10.2(a)). Country Parties are further directed to “...give particular attention to the implementation of preventative measures for lands that are not yet degraded or which are only slightly degraded...” (art. 10.2 (c)).

The Ramsar convention contains a directory obligation on parties to promote the conservation and adequate “wardening” of wetlands (art. 4), but it does not directly address deforestation. However, the protection of listed-forested wetlands from conversion under Ramsar, de facto prevents deforestation within these specially designated sites. Similarly, the WHC indirectly limits deforestation by protecting listed-forested natural heritage from development pressures. Also in a related manner, CITES, when applied to forest-related tree species, may reduce species-specific deforestation pressures by limiting international trade in those species.

Major Gaps, Overlaps, Conflicts:

The only legally binding forest-related global instrument directly focused upon deforestation is the UNCCD, which is aimed at mitigating desertification (or land degradation by the loss of forests in drylands). The UNCCD's primary policy approach is the provision of a framework for National Action Programmes, whereby Parties to the Convention are tasked with establishing their own national-level priorities for addressing this issue. In addition, many of the conservation oriented provisions of instruments such as Ramsar, WHC, CITES, and the CBD, do indirectly mitigate deforestation. Additionally, the Kyoto Protocol creates a discretionary incentive to limit deforestation.

Reforestation

The legally binding, forest-related global instruments which address reforestation include: CBD, UNFCCC, UNCCD and ITTA.

The text of the CBD convention does not provide any direct encouragement for ensuring adequate reforestation of lands that have lost forest cover through forest harvest or other disturbances. However, the CBD's current expanded forest biological diversity programme of work (FBDPOW) states a goal to “protect, recover, and restore forest biodiversity” (dec. VI/22, annex, ele. 1, goal 3), which encompasses the issue of maintaining forest cover after harvest or other human-induced disturbance.

The Kyoto Protocol to the UNFCCC endorses active measures to ensure reforestation after a forest disturbance as a climate change mitigation measure (art. 3(3)) within the context of the commitments that developed country-parties (Annex 1) have made to reduce GHG emissions creates a positive incentive to undertake reforestation. The UNFCCC advises parties to the convention to, amongst other things, “implement and/or further elaborate policies and measures... such as, promotion of... reforestation” at the national-level (art. 2(a)(ii)) (emphasis added). Recently, progress has been made in simplifying modalities and procedures for small-scale afforestation and reforestation activities under the clean development mechanism (dec. X/14).

The UNCCD text does not provide any direct encouragement for reforestation. However the Secretariat has recognized reforestation as a strategy to combat desertification and is therefore leading efforts to coordinate global reforestation initiatives with the CBD and UNFCCC (UNCCD 2004)(Downes, 1999: 91-93).

The ITTA has an objective of encouraging parties to “support and develop industrial tropical timber reforestation” (art. 1(j)). To that end, the ITTO has established a Committee on Reforestation and Forest Management tasked with, amongst other things, encouraging technical assistance for reforestation.

Major Gaps, Overlaps, Conflicts:

The legally binding, forest-related global instruments do not establish an obligation to reforest after a human-induced forest disturbance. The Kyoto Protocol, however, creates a discretionary incentive to undertake reforestation for the purposes of climate change mitigation. In addition, the ITTA has an objective of supporting and developing tropical reforestation (article 1(j)).

Table 9 SFM 1 – Extent of Forest Resources: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Inventory	Forest inventory policies primarily consist of national-level reporting requirements that address issue-specific convention goals (i.e. biodiversity, carbon storage, desertification, wetlands). As with the goals of the legal instruments themselves, there are both considerable overlaps and gaps.
Afforestation	Forest-related global instruments do not include directory policies for afforestation. However, the Kyoto protocol does establish an incentive to undertake afforestation for the purposes of mitigating climate change.
Deforestation	The only legally binding forest-related instrument directly focused upon deforestation is UNCCD. However, many of the conservation oriented provisions of other global instruments indirectly mitigate deforestation.
Reforestation	The legally binding global forest-related instruments do not impose obligations for reforestation. However the Kyoto protocol does create an incentive to reforest.

Non Legally Binding Global Forest Instruments³³

There are a number of IPF and IFF proposals for action related to the inventory of forest extent, both at the national-level and the international-level (IPF 78(a) (organization and financial institution development; improved data-sharing on national forest programmes (NFPs), ODA, finance, and transfer of technology), 78(b) (improving access to international information), 78(c) (Inter-Agency Task Force on Forestry to improve the flow of information, including databases) on NFPs, policy development, best management practices, finance strategies), 89 (d, e, g) (FAO plan for Global Forest Resource Assessment 2000, coordination to avoid overlap), and 115(e) (use C&I in reporting); IFF, paragraphs 18 (verification and dissemination of information), 19(a) (harmonized reporting formats, C&I), 30(d) (collection and analysis of financial flows in the forest sector), and 142(c) (governmental guidance to IGOs and NGOs to cooperate in enhancing data systems and dissemination).

The UNFF has been coordinating efforts to achieve these proposals and to address the overlaps and gaps related to the issues of the inventory of forest extent identified above (UNFF-4, res. 3) (Patosaari 2004).^{34, 35}

³³ The analyses in this section are limited to the IPF, IFF and UNFF. However, it should also be noted that the FAO as an institution has an obligation to “collect, analyze, interpret and disseminate information relating to... forestry and primary forest products” (Basic Texts of the FAO, art. 1(1)) and it has produced a series of biennial state of the world’s forest reports *e.g.*(FAO 2003c) and global forest resource assessments *e.g.* (FAO 2000) which report forest-extent-related inventory statistics. The Food and Agriculture Organization of the United Nations (FAO) 2002 expert consultation on Global Forest Resources Assessments noted that, “significant gaps in information and timeliness of information have been identified by FRA 2000 for many countries” (FAO 2002a).

The IPF (paras. 27(a)-(c), 29(a) and (b) and 30(a)), IFF (paras. 64(a) and (e), 67, 115(c) and (e), 122(c), and 142(a)) and UNFF (UNFF-2, res. 2(A)) PfAs encourage countries to take a broad array of actions to combat deforestation, including studying the role of tenure in deforestation, creating awareness, studying underlying causes and developing national-level policies and strategies. The IPF (para. 58) and IFF (paras. 30(b) and 129(c)) both urge countries with low forest cover to take positive action on afforestation and reforestation.

Major Gaps, Overlaps, Conflicts:

The IPF, IFF PFA and UNFF resolutions provide normative guidance supporting forest inventory, afforestation, and reforestation, and discourage deforestation.

Regional and C&I Approaches

Non-European Temperate and Boreal Forests

The voluntary Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests has developed a set of indicators for a suite of criteria that roughly tracks the consensus SFM themes that form the basis for the seven thematic chapters of this report. This includes indicators addressing issues of forest inventory, including extent of various forest resources (crit. 1(a)-(d)), extent of allocated timber productive forests (crit. 2(a)), extent of forest-related carbon resources (crit. 5(a)), and a range of indicators related to monitoring and measuring these issues (crit. 7).

Europe

The non-legally binding high-level European political initiative known as the Ministerial Conference on the Protection of Forests in Europe (MCPFE) has established a pan-European network of permanent sample plots to improve forest-related inventories (res. S1) and has encouraged further work to improve the tracking of the extent of forest resources (res. V4, para. 13). The parties to the MCPFE have committed to collaborate on afforestation and reforestation efforts to combat deforestation (res. H1, para. 14) and have additionally pledged to "prevent and mitigate" biodiversity loss due to the conversion of forestlands to non-forest uses (res. V4, para. 11).

The MCPFE's Pan-European Criteria and Indicators for Sustainable Forest Management address the inventory-related matters of the extent of forest cover, growing stock, age distribution, and forest-related carbon (ind. 1.1-1.4). Additionally, there are indicators for forest extent-related issues such as the tracking of reforestation and forest damage (ind. 4.2 and 2.4).

The Amazon

The Treaty for Amazonian Cooperation does not address matters regarding the extent of forest resources. The Amazon Cooperation Treaty Organization (ACTO) has developed a strategic plan (2004-2010) however, which acknowledges the problem of deforestation and calls for the monitoring of forest land use to assist in tracking the problem (ACTO 2004) (19-20).

ACTO has also developed criteria and indicators for sustainability of the Amazon forest under a process known as the "Tarapoto Proposal". These C&I include a suite of indicators at the global, national and FMU-level. The inventory related indicators measure the extent of timber productive forests (ind. 3.1), the extent of protected forests (inds. 4.1 and 10.1) and the extent of natural disturbance processes (inds. 4.4 and 10.3). Additionally the Tarapoto Proposal has indicators of the rate of regeneration (inds. 4.5 and 10.4) and forest conversion (ind. 4.6).

Central America

The Regional Convention for the Management and Conservation of Natural Forest Ecosystems and the Development of Forest Plantations (the "Central American Forest Convention") has a main objective

³⁴ The UNFF has summarized all the related IPF and IFF proposals for action related to monitoring and reporting (UNFF 2004c).

³⁵ It would be remiss not to observe that there are a number of non-legally binding global forest initiatives related to the monitoring of forest extent – the Millennium Ecosystem Assessment of Ramsar, CBD, UNCCD, and others (Reid et al. 2005) and the Forest Resources Assessment of the FAO

discouraging deforestation. To that end it establishes a directory provision requiring the establishment of regional-level dynamic inventories of forests resources (art. 3(e)). This directive has been addressed largely through the collaborative use of geographic information systems (Aguilar and Gonzalez 1999: 116-117).

The Lepaterique Process of Central America on Criteria and Indicators for Sustainable Forest Management establishes both regional and national-level indicators. The indicators related to the extent of forest resources include regional and national-level inventory measures of the extent of forest, the extent of protected forest and the extent of forest land use (ind. 2.1 and 2.2), including the extent of both natural and anthropogenic disturbances (reg. ind. 2.8; nat. ind. 3.2 and 3.3). Additionally, at the regional-level the extent of forest-related carbon is measured (ind. 2.6). Reforestation is tracked at the national-level (ind. 3.1) and deforestation is tracked at both the national (ind. 2.1) and regional levels (ind. 2.1).

Southeast Asia

The Association of South East Asian Nations' (ASEAN) Agreement on the Conservation of Nature and Natural Resources is a wide-ranging conservation treaty that includes a range of generalized directory provisions to discourage deforestation. The Agreement requires parties to conserve habitats (art. 3(2)(a), and to "take all necessary measures" to conserve forest cover (art. 6(1)), including natural forests (art. 6(2)(f) and (g)).

Africa

The Southern African Development Community (SADC) Forestry Protocol establishes a comprehensive forest management regime for southern Africa country partners. It includes a suite of directory provisions regarding the inventory of forest resources. The Protocol has a stated objective of encouraging the monitoring of forest resources (art. 3(1)(c)) and to encourage this end it requires parties to employ criteria and indicators designed to evaluate forest resources (art. 8(4)(a)), to participate in the development of a regional-level database that, amongst other things, tracks forest resources (art. 10(1)) and report on the management of their forests (art. 21).

The SADC Forestry Protocol also has a collection of directory provisions regarding deforestation. The protocol prohibits the long-term degradation of forest resources (art. 4(3)), requires parties to mitigate the causes of deforestation (art. 4(8)) and develop national-level prohibitions on the destruction of forests (art. 11(1)(g)), and adopt measures to control human activities that threaten forests and to implement strategies for the conservation of forests (art. 15(2)(a) and (b)).

The African Timber Organization C&I include measures of forest inventory (sub-ind. 1.5.1.1), including area under exploitation (sub-ind. 1.5.1.2) and the extent of non-timber forest products (sub-ind. 1.5.1.4). Additionally, inventory maps are required at the FMU-level of, amongst other things, vegetation, topography, soil, hydrology, and flora and fauna (ind. 3.1.1). The ATO is the only C&I process to expressly promote natural regeneration and include directory language requiring its implementation on harvested sites (ind. 3.4.3). Indicators are also included that call for the control and limiting of forest conversion (i.e deforestation), both in the national (sub-ind. 1.5.5.1) and FMU-level (sub-ind. 2.2.6.5) C&I.

International Tropical Timber Organization C&I

Criterion 2 of the ITTO C&I deals specifically with the extent and condition of forests, and is congruent in approach and prescriptiveness with other C&I processes mentioned above. Indicators measure the area of land covered by each forest type, the area under comprehensive land use plans, and the amount committed to production and protection. One criterion focuses on change in forest area (which could include afforestation, deforestation and reforestation), and includes that converted illegally.

Major Gaps, Overlaps, Conflicts:

A patchwork of regional instruments requires the development of national-level and some regional-level inventories of forest extent. Additionally, the various C&I processes commonly require national-level and FMU-level inventory of the extent of forest resources. There are overlaps between the inventory reporting obligations found in global and regional instruments and those found in C&I processes (UNFF, 2004: 7).

The regional instruments and C&I processes only weakly reinforce the UNFCCC-related provisions regarding afforestation, with only the non-legally binding MCPFE weighing in on the topic directly. Among the C&I processes, the MCPFE, Tarapoto, Lepaterique and ATO directly reference reforestation. The other regional and C&I processes address regeneration more indirectly through the inventory and monitoring of forest cover over time. The ATO is unique in its emphasis on natural regeneration as well

as directory language requiring that “The conditions for natural regeneration are fulfilled and regeneration processes are maintained (Indicator 3.4.1).”

The regional instruments and C&I processes almost universally address deforestation, but some focus only on tracking of deforestation, while others expressly discourage deforestation and none call for ceasing deforestation.

Non-governmental Approaches³⁶

Similar to other C&I processes, the FSC provides for inventories of the extent of forest resources (e.g. prin. 7 and 8). Additionally, the FSC includes strong language requiring forest regeneration (crit. 6.3) and prohibits deforestation by conversion (crit. 6.10).

Major Gaps, Overlaps, Conflicts:

The FSC standards require forest inventory and forest regeneration. This could serve to reinforce or fragment MEA goals in those areas, depending on the level of consistency and coordination with international efforts. The FSC standards do not expressly address afforestation. The FSC is the only instrument assessed in this report that prohibits deforestation.

³⁶ As discussed in the methodology section of this report, this report's thematic chapters compare approaches to substantive themes of sustainable forestry. The FSC is the only forest certification system that has developed global standards addressing substantive issues and hence is the only system with decisions amenable to analysis in this chapter.

Thematic Element II: Biological Diversity

Biodiversity is a broad term used to describe “the variability within and among living organisms and the systems they inhabit” (SCBD, 2005). The earth is currently experiencing rates of biodiversity loss matching or exceeding those of the five prehistoric mass extinctions. Much of this has been from forests, and this is largely attributable to anthropogenic causes, such as resource over-exploitation, the introduction of alien species, pollution, and climate change. Despite this, forests continue to house the greatest number of species of any terrestrial biome; in fact, over half of all terrestrial biodiversity can be found within forest canopies alone (Global Canopy Programme Steering Committee 2002).

Biodiversity is crucial to the maintenance of basic ecosystem functions, ensuring their resilience to disturbance, and enabling adaptation to changing abiotic conditions. All of these factors underlie the forest's ability to provide benefits, goods and ecological services that humans depend on for their survival, either directly or indirectly.

The terms “in-situ” and “ex-situ”, are used to describe very different, but often complementary approaches to the conservation of biodiversity. While the former focuses on maintaining natural habitats, ecosystems, and viable populations of naturally-occurring species, the latter aims to conserve components of biodiversity outside these natural habitats (CBD, Article 2). Species that may be prioritized for conservation generally fit into one or more of the following categories: threatened species; ecologically important species; species useful to humans, and species with non-use value. With regards to conservation at the ecosystem level, recent efforts have been focussed on global hotspots of biodiversity, embodying a narrow conception of global conservation priorities (Jenkins and Williamson 2002).

The creation of protected areas has figured prominently within in-situ strategies used by international instruments to date, and currently contain approximately 10% of the world's forests. More recently, however, there has been an increasing realization that the delineation of protected areas is insufficient to guarantee their true protection, nor does it make them an instrument of sustainable development capable of delivering benefits to local communities. Furthermore, transboundary anthropogenic influences such as climate change, alien species, and pollution have all made the establishment of protected areas insufficient to stem biodiversity loss.

Ex-situ conservation techniques are generally targeted at the conservation of individual species and their genetic diversity, often involving captive breeding techniques. While this is often considered a last resort, it is normally done with a view to eventually re-introducing species into their native habitats once this is deemed to be viable and the threats to their survival have been removed.

Despite our increasing awareness of the importance of the ecological functions of forests and recognition of their intrinsic value, international conservation efforts are still largely focussed on use and aesthetic values associated with biodiversity. While a growing number of voluntary initiatives do consider such functions, the most stringent, binding and consistently enforced provisions are reserved for species of utility to humans, and charismatic species that readily command human empathy.

The interconnectivity of the various levels of biodiversity contained within forest ecosystems and the people that depend upon them makes any systematic analysis of its components problematic. This thematic section will look at how the instruments address biodiversity conservation in general followed by sections on ecosystem, species and genetic diversity, to examine where these are addressed specifically. The issues of risks associated with biotechnology, and protected areas will also be addressed as separate criterions. All of the criteria listed under the theme of “biodiversity” have socio-economic connections and consequences, examined in Theme 6. In addition, the means to implement many of the related provisions is addressed separately under Theme 7 (Legal, Policy and Institutional Frameworks for Forests).

Criteria

This chapter's analysis of multilateral policies relating most directly to the biodiversity has been organized according to six sub-themes or “criteria”. These criteria were identified iteratively from issue areas present in the instruments under analysis as well as from C&I processes worldwide (Holvoet and Muys 2004). The criteria are: “biodiversity-general”; “ecosystem biodiversity”, “species biodiversity”, “genetic biodiversity”, and “protected areas”.

Legally binding global instruments

Biodiversity - General

This criterion is a “catch-all” for provisions addressing biodiversity conservation in the broadest terms and at all levels; subsequent sections on ecosystem, species and genetic diversity will examine provisions that address these topics specifically.

The most obviously relevant instrument to this theme is the CBD, with its three objectives of conserving biodiversity, ensuring its sustainable use, and the fair and equitable sharing of the benefits associated with this (although forests are not mentioned anywhere in the original convention text). The substantive provisions of the CBD are contained within Articles 6-20, and all of these are relevant to biodiversity conservation. The call for biodiversity conservation is usually coupled with calls for its “sustainable use”, with few references to non-use values. Article 6 establishes general measures for the conservation and sustainable use of biodiversity, including the development of national strategies or programmes and the integration of these strategies into relevant sectoral and cross-sectoral policies (as far as possible and appropriate). Article 7 requires that the important components of biodiversity and threats posed to these components are identified, monitored and recorded. Article 8(l) then requires Parties to regulate or manage processes and categories of activities that impose a significant adverse effect.

The three main forest-related components of the CBD that have been developed since its creation are the definition of the Ecosystem Approach for sustainable forest management, the Forest Biological Diversity Program of Work (FBDPOW), and the Ad hoc Technical Experts Group on Forest Biodiversity (AHTEG-FBD), none of which are legally binding.

The Ecosystem Approach is the primary framework for action under the CBD (SCBD, 2005), and is defined as “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way” (CBD COP5, Article 6, Annex A.1). This approach was adopted at the 5th COP (CBD COP5, Article 6) and was given additional guidance regarding rationale and implementation at the 7th COP (CBD COP7, Article 11). It incorporates a broad definition of what constitutes an “ecosystem” (“a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit” (CBD)), and states that this can be “any functioning unit at any scale”, ranging from a grain of soil to the entire biosphere (Decision V/3, Annex A.3). This is in contrast to the convention’s definition of “habitat”, which refers to the specific location where a species occurs naturally (CBD, Article 2).

Despite its name, the Ecosystem Approach contains a strong anthropocentric component, as reflected in the 12 principles upon which it is based. These include assertions that management objectives are a “matter of societal choice” (Principle 1), that management should be “decentralized to the lowest appropriate level” (Principle 2), and that there is a need to “manage the ecosystem in an economic context” (Principle 4). Contrasting with these are more biocentric principles, such as considering the effects of management on adjacent ecosystems (Principle 3), prioritizing the conservation of ecosystem structure in order to maintain ecosystem services (Principle 5), and managing ecosystems “within the limits of their functioning” (Principle 6). It has been noted that implementation of the EA has been slow due to financial constraints (CBD/COP6, Decision 12).

The non-binding FBDPOW was adopted at the 6th COP (Decision 22), as one of five thematic programmes, with the aim of conserving forest biodiversity, promoting the sustainable use of its components and the fair and equitable use of the benefits derived from forest genetic resources. It is composed of three elements: “Conservation, Sustainable Use and Benefit Sharing”; “Institutional and Socioeconomic Enabling Environment”; and “Knowledge, Assessment and Monitoring”. Although these are all relevant to the discussion of forest biodiversity, the first programme element is the one that is primarily concerned with biophysical aspects, such as threat reduction, restoration, watershed management and protected areas, and includes the goal of applying the ecosystem approach to the management of all types of forests. The FBDPOW is to be reviewed at the 8th COP of the CBD, and an Ad hoc Technical Experts Group on Forest Biodiversity (AHTEG-FBD) has been established in order to facilitate and provide technical input.

Implementation of the CBD is also supported by the Global Taxonomy Initiative (GTI) and its programme of work, and is intended to inform decision-making within the CBD by improving the identification and classification of biodiversity at all levels (adopted by the 6th COP (Decision VI/8) and further developed at the 7th and 8th COPs (Decision VII/9; Decision VIII/3). It contains a forest-specific operational objective to generate the taxonomic information needed for decision making regarding the conservation and sustainable use of biodiversity (Decision VI/8, Annex, II.C.4.1).

The stated objectives of the UNFCCC are primarily concerned with the stabilization of greenhouse gasses (GHGs); however, it also emphasizes that this should be accomplished “within a time-frame sufficient to allow ecosystems to adapt naturally to climate change” (UNFCCC). Many of the UNFCCC provisions are of direct or indirect relevance to biodiversity conservation, and forestry-based projects designed to capture carbon may promote direct preservation, sustainable forestry management or reforestation (Stuart and Costa 1998). However, a preoccupation with carbon sequestration may result in other values not being taken into consideration; there are ongoing discussions within the UNFCCC as to how to avoid potential negative environmental and social impacts of forest projects initiated under the Clean Development Mechanism.

The UNCCD’s objectives of combating desertification and restoring degraded land hold obvious benefits for biodiversity, although its concurrent goal of increasing productivity of the land may not (UNCCD). Several of the regional annexes to the UNCCD mention biological diversity as a factor to take into consideration, however, this is not a strong focus of the convention.

CITES, in addition to its primary objective of protecting individual species from threats posed by over-exploitation through international trade, acknowledges in its preamble that the diversity of wild fauna and flora is “part of the natural **systems** of the earth which must be protected” (CITES).

The primary purpose of the WHC is to protect cultural and natural heritage of outstanding universal value (WHC preamble). As such, it offers protection for all levels of biodiversity, but only for select sites that have received WHC designation.

The Ramsar Convention is most relevant to forest biodiversity in the context of the protection it provides for forested wetlands, mangrove ecosystems, and associated species. The agreement recognizes the habitat that wetlands provide, and states that the loss of this would be “irreparable”. It stresses the importance of addressing this issue at the international level, primarily due to the migratory nature of wetland-dependant waterfowl (Ramsar preamble). Furthermore, it provides principles and guidelines for wetland restoration and urges all Parties to integrate these into National Wetland Policies and plans (Ramsar COP8, Decision 16). Recently, a conceptual framework for the wise use of wetlands and the maintenance of their ecological character was adopted (Ramsar COP-9, Decision 1).

The WTA does not mention biodiversity conservation as an explicit objective, and the preamble of the Marrakesh Agreement establishing the WTO is primarily concerned with enabling trade. Fundamental to the WTO are the inherited GATT requirements that embody the principle of non-discrimination, focussed on removing barriers to trade. These include Article I (“most favoured nation” clause, requiring members to treat like products from eachothers countries the same); Article III (“national treatment” clause, requiring that goods be treated no less favourably than their domestic equivalents once they have entered a market) and Article XI (which disallows quantitative restrictions such as embargos or bans).

However, WTA objectives also include a commitment to “protect and preserve the environment”, and presumably this would include the conservation of biodiversity (WTA preamble). The GATT also allows exceptions to the “non-discrimination” clause under Article XX, whereby members may impose trade-related measures deemed in order to protect “legitimate” interests. These include measures “necessary” to protect human, animal or plant life or health, or relating to the conservation of exhaustible natural resources; any such measures must be accompanied by corresponding restrictions on domestic production or consumption. Subsequent rulings issued by the WTO’s dispute settlement body on cases where environmental and trade interests have clashed (most notably “Tuna-Dolphin, 1991” and “Shrimp-Turtle, 1998”) have indicated that it is very difficult to prove the legitimacy of interests and/or the necessity of taking trade-related measures, such that these would be exempt from WTO (Tarasofsky and Pfahl 2001). The WTO Doha Declaration has initiated negotiations on the relationship between existing WTO rules, and trade obligations set out in MEAs (Doha Declaration, para 31).

Finally, the ITTA objectives do not explicitly mention biodiversity conservation, although it does encourage members to sustainably use and conserve “timber producing forests and their genetic resources”, as well as “maintaining the ecological balance” (ITTA preamble, para. (I)). The ITTA has also developed a number of non-legally binding programs relevant to biodiversity conservation, such as the Yokohama Action Plan Reforestation And Forest Management Goals.

Major Gaps, Overlaps, Conflicts:

The bulk of this thematic area is well covered by the CBD, although mostly in a non-legally binding manner. As is common with most of the LBIs, each operative Article of the CBD is preceded by qualifiers such as “as far as possible and appropriate”, “in accordance with its particular conditions and capabilities”, “subject to national legislation” that make it clear that the international norm of respecting

state sovereignty takes precedence over that of conserving biodiversity. It is notable that this is not the case with WTO provisions and their application, which do not allow for such flexibility and discretion.

Overall, the CBD conveys a preoccupation with the sustainable use of biodiversity and maintaining access to it as a "resource"; there is much less emphasis of conserving biodiversity for its own sake. A major gap exists regarding "directive" provisions that extend similar protection to less visible and aesthetically pleasing (yet ecologically pivotal) species. In a similar manner, certain "high-profile" ecosystem types, such as tropical forests, have received a disproportionate amount of conservation attention when compared to others, such as grasslands, that may actually be at greater risk. Other substantive gaps include provisions that address the maintenance of intact roadless areas, decreasing fragmentation, and the maintenance of primary forests.

Provisions of the UNFCCC and the Kyoto Protocol may conflict with CBD objectives in that its promotion of carbon sequestration though forestry activities may potentially demote other values, including the conservation of biodiversity. However, this issue is extremely complicated, due to uncertainties and calculations associated with carbon accounting. This matter is currently being addressed through the Good Practice Guidance For Land Use, Land-Use Change And Forestry (GPG-LULUCF).

While the level of direction and provisions for enforcement found in CITES regarding the protection of threatened species is much stronger, this is not extended to provisions that aim to protect their habitat, and this remains a major gap.

The WTO principle of non-discrimination may conflict with the ability of individual states to establish trade-related measures in the interest of protecting biodiversity. Although WTO does allow for exceptions, these are narrowly construed and mostly address human health and safety concerns.

Ecosystem Biodiversity

This criterion includes provisions specifically addressing ecosystem-level biodiversity conservation.

This criterion is primarily addressed by the CBD, and in particular by provisions that address in-situ conservation. These include the requirement that contracting parties shall (as far as possible and appropriate) promote the protection of ecosystems, natural habitats, maintenance of viable populations in natural surroundings (Article (d)), and the requirement to rehabilitate and restore degraded ecosystems (Article (f)).

The CBD has adopted a Global Strategy for Plant Conservation which includes non-binding "outcome-oriented targets for 2010", including objectives to halt the loss of plant diversity with a focus on the vital role of plants in the structure and functioning of ecological systems (CBD COP6, Decision 9). It has also adopted a number of ecosystem-specific goals pertaining to the conservation of forest biodiversity in mountainous areas (CBD COP7, Decision 27). In addition, the non-legally binding Ecosystem Approach and Forest Biological Diversity Program of Work contain provisions applicable to all levels of biodiversity conservation.

Although it could be argued that efforts to combat climate change under the UNFCCC and the Kyoto Protocol are applicable to all the earth's ecosystems, it has yet to adopt strong provisions that address this level of biodiversity conservation specifically. It does, however, include consideration of the decreased resilience of natural ecosystems within its definition of "adverse effects of climate change" (UNFCCC, Article 2).

Although CITES has mostly focussed on species-level conservation, recently it has recommended that sustainable use management goals and practices avoid or minimize adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems (CITES COP13, Decision 2, Practical Principle 5).

The WHC contains provisions for the protection of "natural heritage" areas that carry obvious benefits for ecosystem-level conservation; however, these are limited to selected sites that contain "outstanding universal value" (these are addressed under Protected Areas, below). In fact, a World Heritage site can be deleted from the list if it has been seriously degraded or irretrievably lost (WHC Operational Guidelines, Section E).

The Ramsar list of internationally significant wetlands includes a number of ecosystem types known for high levels of biodiversity. These include riparian and coastal zones adjacent to the wetlands, especially where these have importance as waterfowl habitat, as is the case with mangrove forests and tropical forest swamps and bogs (Article 2).

As outlined under the criterion "Biodiversity - General", WTO free trade requirements and the principle of non-discrimination may interfere with the ability of individual country Parties to enact import restrictions on products sourced from endangered ecosystems. While exceptions to this are allowed under Article XX, these only allow for measures necessary to protect human, animal or plant life or health, and this may not necessarily extend to the protection of whole ecosystems. It is much easier to prove that a particular action causes harm to a particular species, as opposed to the health of an ecosystem, which is a poorly defined and not well understood. Similarly, the clause under Article XX allowing for measures necessary to conserve **exhaustible** natural resources may be more difficult to apply, as it is more difficult to prove that an ecosystem is at risk of "extinction" as opposed to a particular species.

Major Gaps, Overlaps, Conflicts:

While this criterion is addressed primarily by the CBD, this is largely done in discretionary language and through voluntary programmes. Although CITES requirements are more directive, they are almost entirely directed at the species level, and further limited to those species that have been designated as being threatened. In a similar manner, WHC affords a high level of protection, but only for a select list of outstanding sites. Ramsar overlaps with the CBD in that it contains limited provisions for the protection of coastal and mangrove ecosystems. It is very unlikely that WTO exceptions to the principle of non-discrimination will allow for countries to enact trade measures in the interest of protection at the ecosystem level.

Species Biodiversity

This criterion addresses the conservation of species-level biological diversity and viable species populations.

The CBD prioritizes the identification and monitoring of species and communities according to a set of criteria (CBD Article 7 with Annex I), including whether they are threatened, related to domesticated/cultivated species, whether they are deemed useful to humans in terms of their medicinal, agricultural or other economic value, or if they have high social, cultural, scientific, or conservation importance. It approaches the conservation of species using both in situ and ex situ techniques. With regards to the former, it requires parties to promote the maintenance of viable populations in natural surroundings (Article 8d); to promote the recovery of threatened species through the development and implementation of plans or other management strategies (Article 8f), and to develop or maintain necessary legislation and/or regulatory provisions for the protection of threatened species and populations (Article 8k).

CBD Article 9 calls for the adoption of measures and maintenance of facilities for ex-situ conservation, with an emphasis on complementing in-situ measures and with a view to rehabilitating and re-introducing threatened species into their natural habitat (9c). Again, these requirements are both qualified by "as far as possible and appropriate". At the World Summit in 2002, governments agreed to cut significantly by 2010 the rate of biodiversity loss. However, this plan does not contain specific targets or inhibit countries from pursuing development projects that might put species at risk. The CBD is currently developing such targets to be considered for adoption at COP8 in 2006.

CITES contains the most strongly worded provisions regarding species-level biodiversity conservation, and contains many trade-related requirements to this effect. It is based on the "Fundamental Principle" that Parties shall not allow trade in specimens of species included in its Appendices, except in accordance with the provisions of the Convention (CITES, Article 2). Appendix I contains the most threatened of all species, and trade is forbidden except in exceptional circumstances (such as scientific research). Even then, this must be condoned by a scientific authority and verified to have been obtained legally (CITES, Article 3). There are further exemptions for Appendix I specimens raised commercially, which could have implications for threatened tree species grown on plantations (CITES, Article 7).

CITES Appendix II contains species that may become endangered in the future due to trade, or that closely resemble Appendix I species. Trade restrictions on these species are slightly less rigorous and do not require an import permit. However they still require an export permit, and this will not be granted unless relevant authorities deem that trade will not be detrimental to the survival of the species in the wild (Article 4). CITES Appendix III include species nominated by individual countries seeking cooperation in preventing their unsustainable or illegal exploitation (Article 5).

CITES Appendices contain many forest-dwelling plants and several tree species, most notably big-leaf mahogany (*Swietenia macrophylla*), and more recently, ramin (*Gonystylus* spp.). In the case of the

former, this restricts the trade of logs, sawn wood, veneer sheets and plywood made from this species (CITES Appendix II, Parts and Derivatives #6).

At its 13th meeting, CITES decided to link the activities of its “Plants Committee” to the CBD’s Global Strategy for Plant Conservation (GSPC), particularly with regard to pursuing Target 9: “No species of wild flora endangered by international trade” (CITES/COP13, Decision 8), as well as with the IUCN/SSC Invasive Species Specialist Group (Decision 10). It was also decided that the Plants Committee will evaluate tree species according to new CITES-listing criteria and the results of regional workshops on sustainable management of timber species to be held in 2005 and 2006 (COP13/Decision 54). In response to a heightened concern over the survival of great apes in the wild³⁷ CITES has increased its focus on the conservation of and trade in these species and on reducing the demand for bushmeat. It has produced relatively strongly worded decisions in support of these objectives (CITES XIII/4, XIII/11).

As mentioned before, the WTO and its “principle of non-discrimination” may limit the ability of countries to impose trade-related measures in the interest of protecting any level of biodiversity, including at the species level. Exceptions under Article XX, must meet the test of being “necessary” to protect human, animal or plant life or health, or relating to the conservation of exhaustible natural resources. Although proving harm to a particular species is easier than proving harm caused to an ecosystem, it still appears that this is very difficult to do to the satisfaction of the WTO. Two separate cases, involving the protection of dolphins and turtles, have come before the WTO’s dispute settlement body (1991, 1998 respectively). In both cases trade interests won out, and the trade measures disallowed, indicating the difficulty of proving the legitimacy of interests and/or the necessity of taking trade-related measures. In fact, all rulings made by the dispute settlement body on cases where trade and environment interests have clashed have been in the favor of the former.

Major Gaps, Overlaps, Conflicts:

As with the other levels of biodiversity, this criterion is primarily addressed by the CBD, but is largely only supported by discretionary language and voluntary programmes. In addition, many of the conservation provisions are coupled with those focussing on use-values, and maintenance of access to species as resources. There are no international agreements to halt species loss, per se. Although CITES requirements are stronger and more directive, they are almost entirely directed at trade restrictions, and further limited to those species that have been designated as being threatened. In a similar manner, WHC affords a high level of protection, but only for a select list of sites with “exceptional” biodiversity values. Ramsar overlaps with the CBD with regard to species associated with coastal and mangrove ecosystems. While exceptions to the WTO and its principle of non-discrimination may allow for countries to enact trade measures in the interest of protection at the species level, it has so far proven very difficult to do so.

Genetic Biodiversity

While most of the legally binding instruments examined here address biological diversity in general, there is relatively little mention of the conservation of biological diversity at the genetic level specifically. However, the CBD does include this level within an “indicative list of categories” of biodiversity components given priority for identification and monitoring, although limited to genomes and genes of social, scientific or economic importance (CBD Article 7, with Annex I, para 3). Furthermore, at its most recent COP, the CBD decided to develop a framework to evaluate the implementation of the Strategic Plan and its 2010 Biodiversity Target, which includes reducing the rate of loss of the components of biodiversity, including genetic diversity (COP 7, Decision 30).

The only detailed consideration of this criterion with respect to forests specifically is contained within the non-legally binding Expanded Programme of Work on Forest Biological Diversity. This contains an objective to develop information systems and strategies for conservation and sustainable use of forest genetic diversity. Related activities listed under this include assessing forest genetic variability at the DNA level, prioritizing threatened forest ecosystems for national protection based on the genetic variability of their priority species, and developing a holistic framework for conservation and management of genetic resources at all levels. (CBD COP 6, Decision 22, Annex, Programme Element 1, Goal 4, Objective 4).

³⁷ This has been led by the Great Apes Survival Project (GRASP), a UNEP/ UNESCO project aiming at removing the threat of imminent extinction faced by gorillas, chimpanzees, bonobos, and orangutans, across their ranges in equatorial African and south-east Asia. See: <http://www.unep.org/grasp/>

The ITTA objectives include encouraging members to develop national policies aimed at sustainable utilization and conservation of timber producing forests and their genetic resources (ITTA Article 1). However, this is primarily with a view to ensuring the long-term availability of tropical timber for trade.

See Theme 6 for a discussion of intellectual property rights as they relate to genetic resources.

Major Gaps, Overlaps, Conflicts:

While it could be argued that the many provisions addressing the maintenance of biodiversity under the CBD also include genetic diversity, the specific topic of conservation of forest genetic diversity remains poorly addressed by legally-binding provisions. The most strongly worded provisions regarding genetic-level biodiversity concern maintaining access to them as a resource, and the equitable sharing of the benefits derived therein. Noticeably absent is any mention of the conservation of the genetic diversity of tree seed sources, promotion of natural regeneration, or any provisions addressing the rapid proliferation of monospecific forest plantations and the use of cloned specimens.

Protected Areas

This criterion addresses provisions addressing the designation of forested areas for special protection.

CBD is the instrument with the broadest coverage of this criterion; the designation of protected areas forms a component of what the CBD defines as "in-situ" conservation. A key Article addressing protected areas in the CBD is Article 8 (a-c), which calls for the establishment of protected area systems (PAS) to enable in-situ conservation. The Article also calls for the creation of buffer zones to promote sustainable development of the surrounding areas (Article 8e).

The CBD's Global Strategy for Plant Conservation contains non-legally binding "outcome-oriented targets for 2010", including the effective conservation of at least 10% of the world's ecological regions and protection of 50% of the most important areas for plant diversity assured, with another 30% of production lands managed consistent with the conservation of plant diversity (CBD/COP6, Decision 9, C.12.(b)). While these goals are quantitative, their attainment is entirely discretionary.

At the most recent COP, the CBD adopted a programme of work on protected areas, with the objective of establishing comprehensive and ecologically representative terrestrial PAS by 2010, and decided to establish an ad hoc working group to support and review its implementation (COP7, Decision 28). While the CBD COP urges parties to adopt goals and targets set out in an Annex, there are no binding requirements, and implementation is subject to nationally determined priorities.

The WHC contains provisions for the protection of "natural heritage" areas. However, for sites to qualify as WHC natural heritage sites, they must be deemed of "outstanding universal value". In order to receive this designation, they must contain high aesthetic or scientific value, unique geological and physiographical formations, or "outstanding" habitat for threatened species of animals and plants (Article 2). It is up to each Party to identify these areas within their territory (Article 3). However, in order to qualify for the WHC List, a party must prove that the site's ecosystem processes are still functional and that it contains an area big enough for these to occur (WHC Operational Guidelines II(d)). This may bias site selection towards large intact areas as opposed to areas that already suffer from encroachment and dissection by roads.

More recently, the WHC has issued a global strategy that intends to go beyond this "narrow vision" to recognize important sites where humans co-exist with the land. In identifying "Structural and Qualitative" gaps, **savannahs** are identified as the main forest-related biome that is still underrepresented (WHC Global Strategy for a Balanced, Representative and Credible World Heritage List). Natural and mixed sites are relatively well distributed geographically (Northern hemisphere versus Southern) compared to cultural sites. Mountains are well represented, and overlap significantly with the "forest" classification. The WHC now limits each country to 2 nominations per year, and one of these must fall under the "natural" classification. However, WHC designation does not guarantee a forests protection; for example, the Río Plátano Biosphere Reserve in Honduras has suffered from commercial and agricultural intrusions that threaten the values which originally placed it on the WHC List in 1982 (UNESCO WHC Infokit, 2005)³⁸.

³⁸ The site was placed on the List of World Heritage in Danger in 1996, and a corrective action and management plan is being carried out with a World Heritage Fund contribution (UNESCO, 2005).

Ramsar urges countries containing mangroves to recognize the importance of these ecosystems (COP8, res. 11). Specifically, Ramsar has developed discretionary language “exhorting” Parties to modify national policies that could have harmful effects on these, to implement measures to protect and restore their values and functions for human populations, and to cooperate at the international level to establish regional and global strategies for their protection (COP8, res. 32). In a recent decision, countries have agreed to apply IUCN protected areas categories to wetland sites and to integrate these into other protected area systems, such as World Heritage Sites and Biosphere Reserves (COP9, res. 23).

ITTA’s non-legally binding Reforestation And Forest Management Goals include supporting activities such as the creation and maintenance of protected areas, in order to “secure the tropical timber resource base” (ITTA Yokohama Action Plan).

Major Gaps, Overlaps, Conflicts:

While primarily addressed through the CBD, there exists significant overlap with the WHC (for areas of “outstanding universal value”) and Ramsar (for coastal and mangrove forests). Although significant progress has been made, with 10% of the world’s forests protected, there are no legally binding provisions requiring that PAS be representative of the diversity of forest types and ages, and these may be biased towards previously harvested, inaccessible, or otherwise undesirable lands. While gap analyses and the establishment of ecologically representative national and regional PAS have been discussed within CBD COPs, no decision has been made due to lack of consensus.

Table 10 SFM 2 – Biological Diversity: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Biodiversity (general)	Well covered by CBD, albeit in largely discretionary terms (often reflecting internal conflict between conservation and sustainable use). The WTO principle of non-discrimination may conflict with national efforts to impose import restrictions for the purposes of protecting biodiversity.
Biodiversity (ecosystem)	Mainly covered by CBD; overlaps with the WHC (for areas of “outstanding universal value”) and Ramsar (for coastal and mangrove forests). The WTO principle of non-discrimination may conflict with national efforts to impose import restrictions for the purposes of protecting endangered ecosystems.
Biodiversity (species)	CBD and CITES overlap with regards to protection of threatened species, and have established collaboration. The WTO principle of non-discrimination may conflict with national efforts to impose import restrictions for the purposes of protecting endangered species. However, the level of potential conflict is less for the protection of species than it is for ecosystem protection, as it is easier to prove harm and/or depletion of a species as opposed to an ecosystem.
Biodiversity (genetic)	Addressed by CBD, in so far as genetic biodiversity falls within provisions referring to “biodiversity” in general, and mostly with regards to access and sharing of genetic resources. May present a gap, particularly with regard to maintenance of genetic variability of tree seed sources, native species selection in replanting stock, use of natural regeneration methods.
Protected Areas	Well covered in general by CBD (although in highly discretionary language); overlaps with Ramsar for wetlands, and WHC for “outstanding” sites. Gaps include provisions ensuring that protected areas are ecologically representative; provisions for the maintenance of connectivity and roadless areas. No binding requirements to maintain primary forests or others associated with high biodiversity values.

Non-legally binding global processes

The IFF and IPF Proposals for Action (PFA) are largely based on the priorities identified by the Rio “Forest Principles” and Chapter 11 of Agenda 21, and their content and purely advisory nature reflects the political compromises that were made in achieving consensus on these original documents. Many of the 270 IFF and IPF PFAs address the conservation of biodiversity, either directly or indirectly, and often correspond to provisions contained within legally binding instruments examined above. This is particularly the case with the CBD, and many of the PFAs reference this instrument, including supporting the FBDPOW with respect to mitigating the underlying causes of biodiversity loss (IPF Pfa, para. 31c). A key over-arching proposal requests that the development, implementation monitoring and evaluation of NFP’s take into consideration “ecosystem approaches that integrate the conservation of biological diversity” (IPF Pfa, para. 17a). However, this is potentially undermined by requiring that this be

consistent with national, subnational and local policies and international agreements; a more biocentric approach would require the elimination or alteration of policies known to contribute to biodiversity loss.

Conservation of genetic biodiversity is to be given a "special emphasis" within ecosystem based management and planning (IFF PfAs, para 85b). However, most proposals addressing this level of biodiversity are centred around the sharing of benefits derived from this resource.

The topic of protected areas is well covered under the IFF PfA's, as one of eight "issues that need further clarification" (IFF Programme Element I, D.3). Several identified gaps associated with connectivity and representativeness are addressed, including using an ecosystem approach to assess the adequacy, consistency and effectiveness, with consideration for corridors, buffer zones, and transboundary management (IFF PfA, para 85e, 86, 88, 89). Additional PfAs encourage the protection of forests and their water supplies in areas affected by drought (IPF PfA, para. 46c), as well as those with low forest cover (IPF PfA, para 58b(v)). One of the PfA's suggests that protected forests be developed as a source of revenue, both in terms of entrance fees and carbon sequestration services (IFF PfA, para. 85e).

The UNFF has addressed several of these PfA's through its multi-year program of work, primarily at its second and third sessions. UNFF-2 discussed forest conservation and protection of unique types of forests and fragile ecosystems, rehabilitation and conservation strategies for countries with low forest cover, and rehabilitation and restoration of degraded lands. Associated resolutions that emerged from this session are written in characteristically soft terms, "urging" and "inviting" member countries, CPF members and major groups to undertake activities such as exchanging information and building capacity in order to address these issues (UNFF2, Resolution 2). Both forest health and forest cover were discussed at UNFF3 and produced several resolutions relevant to biodiversity; these are discussed in further detail under Theme 3 and 4, respectively.

Major Gaps, Overlaps, Conflicts:

None of these non-legally binding processes have provided any further clarification with regards to the potential conflict between MEA measures seeking to conserve biodiversity and those seeking to maintain unencumbered trade. Gaps identified with regards to protected areas (ecological representativeness, connectivity) and maintenance of genetic diversity are mentioned in the PfAs, although these remain poorly addressed.

Regional Approaches

Non-European Temperate and Boreal Forests

The Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (Montreal Process and C&I) addresses the assessment of biodiversity conservation explicitly through its own separate criterion, as well as incidentally through others. With regards to ecosystem diversity, indicators include the extent of each forest type as a proportion of the total forest area, as well as the extent by age class or successional stage (Criterion 1, Indicator 1 (a), (b)). The extent of protected areas is considered within ecosystem diversity, and is delineated according to categories identified by IUCN and according to age class, which may contribute to filling the gap of "representativeness" (Criterion 1, Indicator 1 (c), (d)).

The indicators for species diversity for the Montreal Process are fairly straightforward, examining the number of forest dependant species and their current status (with regards to their ability to maintain viable breeding populations). Although what constitutes a "viable" population is somewhat open to debate, here the C&I defer to "legislation or scientific assessment" to determine what constitutes this (Criterion 1, Indicator 2a, b). An additional indicator specifically addresses biodiversity of water bodies in forest areas, and looks at the percentage of these that have shown significant variance from their historical range of variability (Criterion 4, Indicator 4 (f)).

The C&I do attempt to address genetic biodiversity by looking at the "number of forest dependant species that occupy a small portion of their former range" (Criterion 1, Indicator 1.3a), and whether population levels from diverse habitats are being monitored.

Europe

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) has passed many resolutions relevant to the conservation of biodiversity in this region, and works towards this goal in collaboration with the Pan-European Biological and Landscape Diversity Strategy (PEBLDS, within the Environment for Europe process)(Resolution V4, with Annex I). Notable aspects include the commitment to removing "distortions and failure of policies" that result in biodiversity loss, including trade regulations (Resolution V4, para. 6).

MCPFE was one of the first of the institutions mentioned here to address the conservation of genetic biodiversity specifically (1990), recognizing the importance of “total genotypic variability” and emphasizing that complete scientific certainty is not required in order to take immediate action in the interest of future generations (Resolution S2, Principles 1,3). The latter embodies an early conceptualization of the precautionary principle. This same resolution recognizes the importance of silvicultural practices, something which is not well considered by the LBIs. MCPFE also addresses the issue of fragmentation (Resolution V4, para. 11) and regeneration with native tree species and provenances (Resolution V4, para. 12).

The MCPFE’s Pan-European Criteria and Indicators for Sustainable Forest Management frames much of the MCPFE’s work into quantitative and descriptive indicators to be applied at the National level. As with the Montreal Process, biodiversity is addressed through its own indicator, but also includes its “appropriate enhancement” in addition to “conservation”. Notable indicators include “existence and capacity of an institutional framework to...identify economic values in forests whose management is adjusted in favour of maintaining biological diversity” (Criterion 4.2), and their specific mention of natural and “ancient” forest types, not found in the Montreal Process. protected areas are addressed, with an emphasis on representativeness and protection of rare or vulnerable ecosystems. Quantitative indicators are stipulated specific to production forests, with mention of natural regeneration (Indicator 4.17).

The Pan-European Operational Level Guidelines expand on the National level C&I to consider more detailed aspects of forest management planning and practice. Although this text differs from other C&I such as the Montreal Process in that indicators are phrased as objectives that should be aimed for (as opposed to value-neutral reporting requirements), it falls short of establishing specific targets to be obtained. For example, Indicator 4.1 (a) states that “forest management planning should aim to maintain, conserve and enhance biodiversity on ecosystem, species and genetic level and, where appropriate, diversity at landscape level”. Although the mention of ancient forests is not present here as it was in the National-level C&I, it does suggest that “old groves and special rare tree species should be left in quantities and distribution necessary to safeguard biological diversity” (Indicator 4.2(h)).

The Amazon

The 1978 Amazon Cooperation Treaty (ACT), while tangentially related to biodiversity conservation, is mostly concerned with the economic development and equitable distribution of benefits for this region. While it briefly mentions that this should take into consideration the preservation of the environment (Article I), the ecological balance, and species preservation (Article VII), this is not a focus of the treaty.

In addition to the National and management unit level criteria contained by other C+I processes, the **Tarapoto Process** also contains one global-level criterion that draws attention to the services that the Amazon forest provides for the whole world, and mentions the conservation of biological diversity as one of these services (Indicator 12.4). At the National level, biodiversity is addressed primarily through Criterion 4 (Conservation of Forest Cover and of Biological Diversity), and covers many of the same issues that the C+I processes do, including genetic diversity, natural regeneration (Indicator 4.5), and impacts from other sectors (Indicator 4.8). However, the indicators are relatively undeveloped and non-specific. Criterion 10 addresses biodiversity at the Management Unit level, and mostly covers the conservation of forest ecosystems, although the protection of species in danger of extinction is also mentioned.

Most recently, the **Amazon Cooperation Treaty Organization (ACTO)** has attempted to re-invigorate and contemporize the provisions of the Amazon Treaty in the formulation of a Strategic Plan that provides guidance regarding sustainable development in the Amazon, and promotes cooperation between the eight Amazon country states to this end³⁹(ACTO Strategic Plan, 2004). “**Biological Diversity, Biotechnology and Biotrade**” constitutes one of 6 programmatic areas, a title which is reflective of the overall “sustainable use of natural wealth” emphasis of this document. It acknowledges problems with over-exploitation of valuable tree species (i.e. mahogany)(ACTO Strategic Plan, p.18), and that although protected areas are currently the main mechanism used to further in situ conservation, the declaration of an area as a park does not guarantee its protection, nor does it necessarily promote sustainable development and local benefit (ACTO Strategic Plan, p.21-22).

³⁹ The eight ACTO Country Members are Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela (ACTO Strategic Plan, 2004).

Central America

The **Central American Forest Convention (CAFC)**, while boasting that the region contains “the most important deposit of genetic wealth and biological diversity in the world”, also recognizes that 416,000 hectares of forest are lost each year, a rate that is increasing with time (CAFC, Preamble). In order to address this, Contracting States commit themselves to consolidating a National and Regional System of Protected Wildlands to ensure the conservation of biodiversity, the maintenance of vital ecological processes (Article 3a), as well as managing primary natural forests in such a manner that reduces the pressure to convert them to other land uses (CAFC, Article 3 (c)ii). (overlap with Theme 4). The CAFC also requires that parties establish mechanisms to control the illegal trade of “flora, fauna, timber and other forest products”, a provision that has led to Central American countries taking a common position within CITES to support the inclusion of mahogany in Appendix II (Tarasofsky 1999b). The **Central American Convention on Biodiversity** has contributed to the creation of a regional Council for Protected Areas which implements the Protected Wildlife Areas system, part of the CAFC.

The **Lepatrique** Process contains both National and Regional C&I pertaining to biodiversity conservation. The status of forested protected areas is to be reported, with special reference to the size and length of the “Biological Corridor”, suggesting consideration for connectivity. A number of species-level concerns are addressed, including reporting the levels of endemic, threatened or endangered species (Indicator 2.7), the regulation of the illegal trade in these species (Indicator 2.10), and ex-situ conservation (Indicator 2.12). National level criteria make specific reference to reporting the amount of primary forest cover remaining (Indicator 5.5), along with that of secondary forest and plantations.

Southeast Asia

Although the 1985 **ASEAN Agreement on the Conservation of Nature and Natural Resources** was written prior to the Rio treaties and even the Brundtland Commission report, it contains many provisions pertaining to the conservation of biodiversity that were well ahead of its time, including the requirement to “maintain maximum **genetic** diversity...and promoting the conservation of all species under their jurisdiction and control” (Article 3.1). One notable aspect is their emphasis on prohibiting unselective taking methods (Articles 3.3 (b), 4.2 (d)), this may be interpreted in the context of forestry to include clearcutting. The Agreement on the whole takes transboundary considerations into concern, and this applies especially to the requirements surrounding the management of protected areas (Articles 13, 19.3 (a),) and migratory species (Articles 19.3, 20.4). Of interest is the prevalence of provisions pertaining to genetic diversity, including the avoidance of “monoculture causing ecological imbalance” (Article 6.2 (d)), and the importance of selecting protected areas on the basis of their “pools of genetic material” (Article 13.1).

Africa

The **SADC Protocol** contains several provisions related to biodiversity; as is the case with the ASEAN agreement, the Protocol considers the transboundary implications of forest management. It requires that parties include biodiversity in SFM C&I to be applied at the national level (Article 8.4(b)), as well as being part of their national forest assessments (Article 9.1.(c)). SADC also includes a specific provision to restrict or eliminate trade in protected tree species, something not found in the other regional instruments (Article 18.2 (e)). Although it contains provisions related to the protection of areas that are “ecologically viable” as well as representative or unique (Article 11.1(b)), it does permit the destruction of natural forests in “exceptional circumstances” if the new land use being proposed is deemed “preferable”, and only after an environmental and social impact assessment has been conducted (Article 11.1(g)).

Most of the attention paid to genetic diversity in the SADC Protocol pertains to the value of forest genetic material, and ensuring that access to this is subject to prior informed consent, mutually agreed terms and equitable sharing of benefits derived (Article 17). It even goes so far in requiring other State parties to support the assertion of these rights, where another member country is in dispute against a third party. Although it does not invoke the precautionary principle outright, one of its guiding principles is that parties “shall not use the lack of scientific certainty as a reason for postponing measures to prevent or minimise potentially serious or irreversible harm to forests” (Article 4.7). Presumably, loss of endemic biodiversity would fall under this provision. Another notable aspect of SADC is the recognition of the intrinsic value of forests in the preamble.

The **ATO and the ITTO**, despite their objectives being largely trade-oriented, produced a collaborative document with a strong biodiversity focus, titled “**Criteria and Indicators for Sustainable Forest Management of African Natural Tropical Forests**” (ATO/ITTO C&I). It contains a number of biodiversity-centric objectives that are targeted at both the National and FMU level, and go beyond the value-neutral nature of most other C+I processes. These include a detailed

consideration of the maintenance of the forest's natural regenerative capacity (Criterion 3.4), poorly or not considered in all other regional agreements. Also notable are strict controls over the use of biocides, and an absolute prohibition of the use of genetically modified organisms (Sub-Indicator 3.3.4.3).

The ATO/ITTO C&I also contain an indicator requiring the “non-fragmentation of tree populations...ensured by the maintenance of a continuous canopy” (Sub-Indicator 3.3.3.5, emphasis added), unique amongst the regional instruments considered here. It also contains indicators at both the National (Indicator 1.1.12) and FMU level (Indicator 3.3.1) favouring the maintenance of high conservation value forests, and invokes the use of the precautionary principle with regards to their management (Sub-Indicator 1.1.12.3). As for protected areas, these C&I set themselves apart by requiring these areas to be visibly delineated “on-the-ground”, and verifying that the associated management rules are known by stakeholders (Sub-Indicator 1.1.12.4). A similar indicator requests the marking of certain trees with high conservation value prior to harvesting (2.3.1.2).

International Tropical Timber Organization C&I

Criterion 5 of the ITTO C&I deals specifically with biodiversity. Interestingly, it notes that “the conservation of ecosystem diversity is best accomplished by...protected areas”, adding specific emphasis to maintaining connectivity between these areas. A separate criterion acknowledges the role that production forests play in biodiversity conservation, and refers to a separate ITTO guidance document on the subject.

Major Gaps, Overlaps, Conflicts:

Not surprisingly, most of the C&I processes contain language that is much more detailed regarding the conservation of forest biodiversity. The Montreal and MCPFE C&I processes contain provisions addressing the maintenance of genetic diversity of tree seed sources and natural regeneration not present in the legally binding instruments. The MCPFE C&I address gaps identified with regards to ecological representativeness, with an emphasis on protecting rare or vulnerable ecosystems, including primary forests. Overall, the Northern regional instruments put a greater emphasis on the use of protected areas for in-situ conservation, while those of the South express a greater concern for development priorities.

Non-governmental Approaches⁴⁰

The **Forest Stewardship Council (FSC)** Principles and Criteria contain directive requirements pertaining to the conservation of biodiversity at the genetic, species and ecosystem level, nested within requirements to maintain, enhance or restore ecological functions and values (FSC Criteria 6.3(b)). FSC goes beyond the protection of rare, threatened and endangered species to include the protection of their habitats as well (Criteria 6.2), and requires that this be expressed in a written long-term management plan (FSC Criteria 7.1(g)).

FSC requires managers to assess the presence of High Conservation Value Forest (HCVF) attributes. These include areas with significant concentrations of biodiversity values, viable populations of naturally occurring species, and rare, threatened or endangered ecosystems. Management in HCVFs must maintain these identified conservation attributes, and do so consistent with the precautionary approach (Principle 9). In addition, representative samples of ecosystems must be protected in their natural state (Criteria 6.4).

Major Gaps, Overlaps, Conflicts:

Perhaps due to their application at the forest management unit level, FSC standards contain substantially more detail regarding forest biodiversity conservation than many of the other processes and agreements examined here. It should also be noted that FSC standards are developed into much greater detail on a regional basis through a non-governmental multi-stakeholder process to adapt them to the local context. However, as they only apply to each individual forest being audited, they are often unable to address landscape-level biodiversity concerns such as migratory corridors, except in the case of larger operations.

⁴⁰ As discussed in the methodology section of this report, this report's thematic chapters compare approaches to substantive themes of sustainable forestry. The FSC is the only forest certification system that has developed global standards addressing substantive issues and hence is the only system with decisions amenable to analysis in this chapter.

The requirement of identifying high conservation value forests (and requiring that these values are protected) represents a unique approach to preventing their loss and fragmentation, currently not well addressed by the legally binding instruments.

Thematic Element III: Forest Health

This Thematic area addresses the decisions of legally binding global instruments as they relate to forest health. The Criteria examined in this section include alien species, fire, insects and disease, forest degradation, pollution and climate change. The following few paragraphs define the theme of “forest health” and its associated Criteria and provide an overview of some of the major challenges and controversies shaping global action on this issue.

Most influences that are considered damaging to “forest health” will also have detrimental effects on biodiversity, and vice-versa (for example, alien species). Defining what constitutes a “**threat**” can be problematic, as biodiversity may also be dependant on the maintenance of natural disturbance regimes considered as damaging to forest health (fires, insects). The debate over the meaning of “threats” is perhaps most pronounced in the case of “**pests**”. Some forestry interests argue that since native insects are part of the natural disturbance regime, controlling them through the use of chemicals, biological methods, and the use of genetically modified organisms poses a greater threat than the pests themselves.

Alien (also referred to as “non-native” or exotic) **species** are defined as species that have been introduced (either accidentally or intentionally) into an area where they did not formerly occur (Dunster and Dunster 1996). Alien species, particularly those that are effective in rapidly “invading” new territories, often have undesirable effects on native species and the integrity of the ecosystem into which they are introduced. In fact, they have been identified as one of the greatest biological threats to the environment and economic welfare worldwide, posing a threat to biodiversity that is only surpassed by habitat loss (SCBD, 2005). This is an issue of particular concern to regions with high levels of endemism, such as islands and other landforms that have been previously isolated by natural barriers. Some of the common vectors for alien species include cargo containers and packaging materials, unprocessed commodities such as raw timber, agricultural goods, imported food species, horticultural and other plant imports, development activities, tourists and citizens returning from travel abroad, and biological control agents used to combat pests, including other alien species.

Many are optimistic that it will be possible to genetically modify trees so as to make them resistant to deleterious effects of invasive alien species and pest outbreaks. However, as discussed in the previous section, others hold concerns that GM trees themselves may present a “forest threat” through horizontal genetic contamination or dilution.

Fire and associated smoke pollution pose serious threats to forest-dependant communities in many parts of the world, and climate change is associated with the increased incidence of such events. However, in many regions of the world, excessive suppression of **fire** as part of the natural disturbance regime has led to the decline of overall forest health. Excessive fire suppression has caused increases in outbreaks of forest insects considered to be “pest” species and furthered the spread of disease.

There has been much debate over what constitutes “**forest degradation**”. However, at the most recent FAO meeting that discussed the harmonization of forest-related definitions, various stakeholders agreed that this would be understood to mean “the reduction of the capacity of a forest to provide goods and services” (FAO 2002b). This is, in turn, linked to the loss of the complex array of vital biotic and abiotic components that allow forests to function, including nutrients (and the ability to perform nutrient cycling), invertebrates, micro-organisms, and coarse woody debris, among other things. A forest system may be able to recover naturally on its own if the source of degradation is removed. However, degradation may become so severe so as to be permanent and irreversible, leading to complete deforestation and potentially desertification. Human intervention and assistance may produce a more favourable outcome.

Forest degradation is also linked to larger underlying socio-economic problems such as the over-exploitation of forests for fuelwood, a problem that has become severe in many parts of the South. In addition, fragmentation may be considered to be a structural form of degradation. This criterion ties in closely with the first SFM Theme of “Forest Extent”, as at the extreme end of the spectrum of forest degradation lies deforestation and potentially desertification. It is also linked with Theme 2, Biodiversity, a component so integral to the health of forests as to be practically inseparable.

Pollution affects the health of trees and the forest ecosystem as a whole, inhibiting growth, decreasing resiliency, and reducing the ability of forest ecosystems to adapt to changing conditions. Air pollutants may have a direct effect on forests through the vegetation itself, or indirectly through soil and water. “Primary” sources of pollution are those that are directly released into the atmosphere, largely through the combustion of fossil fuels, and include sulphur dioxide (SO₂), nitrogen oxides (NO_x), and

reactive hydrocarbons (RHC). These primary pollutants react chemically to form “secondary” pollutants, such as acidic deposition, and ozone (O₃), a common oxidant that is extremely toxic to both plants and humans (NCSE 1990).

Climate change may also pose one of the greatest risks to forest health in the future. For the forest sector, this may result in the spread of forest pests and diseases into higher latitudes due to warmer winters and increased survivorship of pest species (CBD/COP7, Decision 21, Annex II). Climate change is also associated with changes in forest fire frequency and severity. This represents a positive feedback loop, with fires releasing large amounts of carbon and decreasing the amount of forest available to absorb more.

Climate change has several significant implications for efforts to maintain biodiversity. First, to the extent that changes in the earth's climate occur at a rate faster than that at which biodiversity (at all levels) can adapt, the latter will suffer losses. Subsequently, this is linked to forest degradation and potentially desertification. Recent research examining the potential impacts that climate change may have on terrestrial ecosystems indicates a potentially dire outlook; the high rate of change that is expected to occur will cause extinctions among species unable to migrate or adapt, selecting for those that are highly mobile and opportunistic. It is expected to lead to invasions of new habitat types and the resultant loss of original ones (Malcolm et al. 2002). Forest types that are not able to adapt or migrate with the anticipated change in climate may be seriously degraded if not completely converted into another biome.

Biotechnology, and in particular the advent of genetically modified organisms (GMOs), represents a novel management challenge for the world's forests. Many are optimistic that soon it will be possible to grow trees on a commercial basis that have been genetically modified to exhibit particular traits such as drought, pest and disease resistance, herbicide tolerance, or rapid rates of growth. However, others hold concerns that GMO trees themselves may present a threat to forests through genetic contamination, and that unlike forest chemicals, they cannot be withdrawn if found to be harmful (Lang 2004). Trees are generally longer-lived, much slower to reach sexual maturity, and are more likely to grow in proximity to their wild relatives than GM food crop species. These factors increase the likelihood of gene flow, and make the examination of impacts much more difficult (Sedjo 2004). Hence, international instruments targeted at managing risks associated with GM crops may prove inadequate to address those of GM trees.

Criteria

Seven sub-themes or “criteria” were selected for the analysis of multilateral policies on forest health. These criteria were identified iteratively, through the examination of the instruments under analysis as well as C&I processes worldwide (Holvoet and Muys 2004). These eight themes are: “forest health—general”; “alien species”; “fire”; “degradation”; “impacts of pollution”; “impacts of climate change”; and “pests and disease”; and “biotechnology”.

Legally binding global instruments

Forest Health – General

The objectives of the CBD make it the instrument most relevant to the maintenance of the health of all forest types, for much the same reason that it is the one most relevant to SFM Theme 2, Biodiversity. The CBD's ultimate objectives are the conservation and sustainable use of biodiversity, the foundation of forest health. In particular CBD Article 7, “Identification and Monitoring”, places a high level importance on monitoring threats to biodiversity.

The overarching objective of the UNFCCC is to stabilize atmospheric CO₂ levels. Consequently, all provisions that support this objective should, in theory, have benefits for the theme of Forest Health. There has been some concern expressed that forestry activities performed with a view to obtaining credits for carbon sequestration within the Kyoto Protocol may disregard other values and functions associated with forests.

The UNCCD is relevant to forest health in that it aims to rehabilitate, conserve and sustainably manage degraded lands suffering from drought or desertification. The process of desertification and associated water stress may leave forests more vulnerable to forest threats such as disease, pest outbreaks, and especially increased fire frequency. However, there are relatively few provisions directed specifically at forest health.

CITES objectives primarily focus on protecting individual species from the threat posed by trade, and related provisions do not explicitly address the habitat of that species.

Ramsar objectives specifically consider “the fundamental ecological functions of wetlands as regulators of water regimes”, and mangrove forests fall within this classification. The WHC is also limited in scope, seeking mainly to protect natural sites of “outstanding universal value”. It includes provisions protecting these sites from “threats” in general.

While ITTA objectives do not make explicit reference to addressing forest threats, it does aim to increase the capacity to conserve and enhance other forest values in timber producing forests, and encourages members to support and develop reforestation and rehabilitation of degraded forest land.

The WTO Agreement on the Application of Sanitary and Phytosanitary Measures states that it aims to clarify inspection and other control measures in order to bring national standards into line with international norms to facilitate trade, while reducing the risks associated with the introduction of alien species, pests and diseases. However, in practice, the burden of proof is placed on the country that wishes to place additional restrictions on imports that may contain invasive alien species.

Major Gaps, Overlaps, Conflicts:

This theme is most directly covered by the CBD, in much the same way that Biodiversity is; most things that are considered damaging to “forest health” will also have detrimental effects on biodiversity, and vice-versa (for example, alien species). The main conflict that is emerging is with regards to biosecurity, mostly regarding the control of alien species, and related provisions under the CBD and the WTO. In certain circumstances the WTO may limit an individual party's ability to impose additional controls with regards to the movement of certain goods that may contain alien invasive species.

There is a general lack of provisions addressing the impacts of harvesting operations on forest health, residual structure, and functionally important species. Furthermore, cross-sectoral impacts on forest health (such as from oil, gas and mining exploration and extraction) are not considered by any of the legally binding instruments.

Alien Species

The CBD contains the most directive language with respect to the control of alien species. It has been identified as a crosscutting issue of relevance to all thematic areas and substantive provisions. According to Article 8(h), parties must prevent the introduction of species which threaten ecosystems, habitats or native species. Where these are already within their borders, they must seek to eradicate them. However, these requirements are all subject to the qualifier that they are only to perform these actions “as far as possible and as appropriate”. This provision was further developed at COP6, where guiding principles were adopted for the prevention, introduction and mitigation of impacts of invasive alien species (CBD/COP6, Decision 23). Another outcome of this COP was the CBD Strategic Plan and its associated 2010 Biodiversity Target (COP6, Decision 26). This included plans to address major threats to biodiversity, including alien species. A subsequent decision at the next COP and its related annex provided more specific goals and targets, including measures to control threats from invasive alien species, such as restricting pathways and implementing management plans (CBD/COP7, Decision 30).

A recent decision (CBD/COP7, Decision 13) emphasizes the importance of inter-institutional collaboration in managing alien species. Notably, this decision recognized the potential for measures aimed at restricting the movement of alien species to conflict with the World Trade Organization's goal of removing trade restrictions. The decision invites the WTO and its relevant bodies “to give consideration to the risks from invasive alien species in their deliberations”, and directs the CBD's Executive Secretary to renew membership with the WTO's Committee on Sanitary and Phytosanitary Measures (SPS) in order to improve communication with regards to alien species and trade. It also calls for financial assistance for developing countries to build capacity with regards to border control and quarantine measures. Lastly, it identified significant policy gaps and inconsistencies that exist at the international and regional level regarding this subject, and requested that the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) establish an ad hoc technical expert group (AHTEG) to address this. This issue is to be considered in-depth at the next COP.

CITES recommends that Parties consider the problems of invasive species when developing national legislation and regulations that deal with the trade in live animals or plants, consult with the Management Authority of a proposed country of import, when possible and when applicable (COP13, Resolution 10).

Ramsar (COP8, Decision 18) urged Parties to address the problems of invasive species in wetland ecosystems “in a decisive and holistic manner”, and to draw upon the tools and guidance developed by other institutions and processes in doing so. It has also encouraged the development of decision support tools to prevent, mitigate and adapt to alien invasive species (COP9, res. 9).

International trade and associated transport pathways are major vectors for the spread of alien species, and so measures to control their introduction have implications for the multilateral trading system. The WTO, primarily through the Agreement on the Application of Sanitary and Phytosanitary Measures (ASPM), sets out binding rules and recognizes sources of international standards that should, where available, be followed in national measures. These standards are largely focussed on animal, plant and human life and health/food safety, and do not specifically take into consideration threats to ecosystem function. If a state wishes to establish a higher level of protection (or if no relevant international standard exists), the State must justify why their measure should be allowed to inhibit international trade, through a scientifically based risk assessment.

Major Gaps, Overlaps, Conflicts:

This issue is addressed well by the CBD, yet is potentially undermined by provisions contained within the WTO, which places the burden-of-proof on the country that wishes to place additional restrictions on imports that may contain invasive alien species. The WTO provisions are more strongly worded, with direct consequences of non-compliance more likely, and thus they may take precedence over CBD provisions where these conflict.

Fire

Forest fires and fire management are not mentioned by most of the LBIs examined here, and the provisions that do address it are worded in an advisory manner.

The CBD paid special attention to human-induced uncontrolled forest fires and other forest threats at COP5 in their review of the progress report on the implementation of the Forest Biological Diversity Program of Work (FBDPOW), and requested that the SBSTTA consider these issues (COP5/4, paragraph 12).

Forest fires are of direct consequence to the UNFCCC, as they cause a substantial change in terrestrial carbon stocks. At COP9, UNFCCC adopted the IPCC's Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG-LULUCF) and decided that Parties shall use this report for reporting GHG inventories (UNFCCC/COP9/13). Chapter 3.2 of this document provides methods for estimating carbon stock changes and GHG emissions and removals associated with changes in biomass and soil organic carbon on forest lands, as well as lands converted to forest land (IPCC 2003). It does so according to five different types of terrestrial carbon "pools", including Forest Land, Cropland, Grasslands, Wetlands, Settlements, as well as "Other" lands. Evaluation of carbon stocks takes into consideration living organic matter (above and below ground biomass), dead organic matter (dead wood and litter), and soil organic matter. It also contains complex equations specific to each pool that are to be used to calculate the net changes in stocks (change in biomass is calculated from the difference between biomass growth and loss). This includes emissions of carbon on managed lands due to natural losses caused by fire, windstorms, pest and disease outbreaks (IPCC 2003). According to the Kyoto Protocol (Article 3.3 and 3.4, further developed at Marrakesh), carbon released during forest fires is included in the calculation of net CO₂ emissions if the fire occurs within areas that parties have designated as "managed forests".

Ramsar has increasingly acknowledged the importance of peatlands, and a recent decision supports the expansion of measures to protect and rehabilitate these areas to reduce the risk of fires (COP-9, res. 9).

The ITTO decided to make forest fire experts available to producer member countries in order to assist their forest fire prevention and management strategies, and to develop proposals for their implementation (ITTO-33 Decision 6); this was to be financed by voluntary contributions. ITTO has also developed "Guidelines on Fire Management in Tropical Forests" (ITTO 1997), and provide a process by which tropical countries can analyze their fire management situation and develop programs to address gaps. It contains seven categories of issues, namely: Policy & legislation; Strategies; Monitoring and Research, Institutional Framework and Capacity Development; Socioeconomic Considerations; Land Resources Management and Utilization; and Training and Public Education.

When a World Heritage site is at risk due to natural influences (including fire, but other "threats" to forest health are not mentioned), it is listed under the title of "list of World Heritage in Danger", and the associated costs of mitigating this threat are determined (WHC/COP11, Decision 4).

Major Gaps, Overlaps, Conflicts:

This topic is addressed most specifically by the ITTO, albeit in purely advisory terms, and only as applied to members in tropical areas. Their Fire Management Guidelines could be possibly extended to other regions after having taken into consideration differences in biogeography, and their model for

expertise-sharing with regards to forest fire prevention and management strategies could also be extended to include non-tropical areas that lack capacity. Elements of the CBD's programme of work on forest biodiversity also cover this topic in more general terms, as does the WHC (in the event that a WHC site is threatened by fire); all of these are relevant to the UNFCCC and its provisions addressing land use, land use change and forestry.

Degradation

This criterion includes provisions addressing forest degradation, as well as those related to the rehabilitation or restoration of degraded ecosystems. Degradation here includes the loss of components crucial to forest ecosystems, including biotic and abiotic components required in fundamental ecological processes, such as soil micro-organisms, fungi, and insects.

Restoration of degraded forests is recognized as an essential strategic component of sustainable forest management (Frelich and Puettmann, 1999; Noss and Scott, 1997). The legally binding, forest-related global instruments which address the restoration of the productive functions of forests include: CBD, UNFCCC, UNCCD, WHC, Ramsar, and ITTA.

Restoration is a key component of biodiversity conservation under the CBD. The Convention requires that parties "as far as possible and appropriate: ... rehabilitate and restore degraded ecosystems" (art. 8(f)). The conference of the parties has emphasized this advice (COP-3, dec. 9, para. 6) and has focused its encouragement particularly on restoration in support of efforts to mitigate desertification (COP-5, dec. 5, para. 15(d) and 16-18; dec. 23, annex 1, sec. II, part. B, act. 7(b)). However, the conference of the parties has also encouraged parties to develop specific capacity for restoration of forests (COP-5, dec. 4, para. 10). Additionally, the CBD has been endeavoring to coordinate restoration work amongst the various global instruments that address the matter (COP-6, dec. 4, para. 2).

The CBD also addresses the restoration of degraded lands in its thematic work programmes, including the International Initiative for the Conservation and Sustainable Use of Pollinators (established as a cross-cutting initiative within the programme of work on agricultural biological diversity). Part of the Terms of Reference (TOR) of the Ad Hoc Technical Experts Group (AHTEG) on Forest Biological Diversity includes "identifying measures for the restoration of degraded forests" (Decision V/4, Annex 2b: (iv)). All of these work programmes, however, are non-legally binding.

The UNFCCC and the Kyoto Protocol's incentives for reforestation of degraded forests contribute to the restoration of forests (COP-9, dec. 13).

The UNCCD addresses land degradation in terms of combating desertification, and this is addressed under its own criterion under Thematic Element 5, Criterion "Desertification".

The WHC, which encourages parties to establish natural heritage conservation areas, including forested natural heritage conservation areas, also advises parties "in so far as is possible and as appropriate" to endeavor to provide for, amongst other things, rehabilitation of natural areas in its national-level policies and strategies (art. 5(d)).

The Ramsar Convention, which requires parties to promote the conservation and wise use of wetlands, including forested wetlands (arts. 3 and 4), has established advisory guidelines encouraging the restoration of wetlands (COP-8, res. 16, annex) (Ramsar Convention Bureau, 2002). Additionally, the Ramsar strategic plan (2003-2008) has set as an operational objective the restoration and rehabilitation of wetlands (COP-8, res. 25, para. 56(2)).

It is an explicit but advisory objective of the ITTA to encourage the rehabilitation of degraded tropical forest lands (art. 1(j)) and to that end it has a Committee on Reforestation and Forest Management tasked with, amongst other things, encouraging parties to cooperate on rehabilitation of forest lands (art. 2(a)(ii)). The ITTO Yokohama Action Plan (YAP) includes the goal of developing and promoting the implementation of guidelines for the restoration of degraded tropical forests and the rehabilitation of degraded forestland (YAP Goal #2). The YAP, however, is not legally binding.

Major Gaps, Overlaps, Conflicts:

The CBD, WHC, Ramsar and the ITTA all address this criterion in general and non-binding terms. In addition, the Kyoto Protocol's incentives for reforestation may also serve to prevent forest degradation. None of the legally binding global instruments, however, address the issue of forest fragmentation, which is often the main precursor to the degradation of forest health. Furthermore, there are no provisions addressing the impacts of forest harvesting operations on forest health, such as soil, fungi, micro-organisms and various other biotic and abiotic components vital to forest regeneration.

Impacts of Pollution

This criterion covers provisions addressing the impacts that air and water pollution have on forests, as well as those concerned with the effects of climate change.

The CBD contains few directory or advisory decisions relating to the impacts of pollution on forest health. The Strategic Plan and the 2010 Biodiversity Target does includes provisions for addressing "major threats to biodiversity", which includes pollution (COP6, Decision 26). A subsequent decision and associated annex provides a framework for related goals and targets; Goal 7 addressing challenges to biodiversity from pollution, and Target 7.2 being to reduce pollution and its impacts on biodiversity. The Forest Biodiversity POW addresses mitigating the impacts of pollution (namely acidification and eutrophication) through Programme 1, Goal 1, Objective 2 (CBD/COP7, Decision 30).

WHC does not contain any provisions related to this criterion within the original document, but the Operational Guidelines do acknowledge pollution as a threat to natural heritage sites. Ramsar requires that parties "arrange to be informed" if the ecological character of any wetland in its territory and included in the List has changed, including due to pollution. (Ramsar, Article 3).

Major Gaps, Overlaps, Conflicts:

Although mentioned in CBD's voluntary Strategic Plan, this criterion is not addressed in binding terms by any of the instruments reviewed here. It should be mentioned, however, that this issue is addressed by the Geneva Convention on Long Range Transboundary Air Pollution (CLRTAP). CLRTAP, mostly applicable in Europe, receives scientific advice from an International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests, and uses this information to develop legally binding protocols on international air pollution abatement policies (UNECE 2005).

Impacts Of Climate Change

The CBD Strategic Plan and the 2010 Biodiversity Target includes provisions for addressing "major threats to biodiversity", including climate change (COP6, Decision 26). A subsequent decision and associated annex provides a framework for related goals and targets; Goal 7 addressing challenges to biodiversity from climate change. A non-binding objective within the FBDPOW specifically addresses the mitigation of the negative impacts of climate change on forest biodiversity (Decision IV/22, Annex, Programme Element I, Goal 2, Objective 3).

The UNFCCC definition of "adverse effects of climate change" includes consideration of the decreased resilience of natural systems (UNFCCC, Article 1). One of the main stated objectives of the UNFCCC is to stabilize greenhouse gas concentrations within "a time-frame sufficient to allow ecosystems to adapt naturally to climate change...". However, it looks very unlikely that this will be accomplished given the current rate of progress towards meeting emissions reduction commitments. UNFCCC requires that parties cooperate in preparing for adaptation to impacts of climate change, and specifically mentions that this may require the rehabilitation of areas affected by drought and desertification (UNFCCC, Article 4c).

Ramsar encourages Parties to "recognize fully" the role that mangrove ecosystems can play in mitigating climate change and sea-level rise, especially in low-lying areas and Small Island and Developing States (SIDS). In this regard, it encourages them to plan their management, including required adaptation measures, so as to ensure that the mangrove ecosystems may respond to impacts caused by climate change and sea-level rise. However, this is merely an advisory clause rather than a directory requirement.

The WHC has recently established a working group that will review the effects of climate change on World Heritage properties, and has requested State parties implement a strategy to protect WHC sites from such effects (WHC COM 29, dec. 5C; WHC COM 30, dec. 7.1).

Major Gaps, Overlaps, Conflicts:

The UNFCCC and the CBD both address mitigating the impacts of climate change, albeit in general and non-legally binding terms. Ramsar also overlaps with these, seeking greater recognition for the role that coastal and mangrove forests can play in the mitigation of climate change impacts. However, a gap exists here in that there is no comprehensive plan to address the impacts of climate change on forests specifically.

Pests and Disease

Aside from provisions which address alien invasive species, there is very little mention of pests and disease in the agreements evaluated here. It could be argued that the CBD addresses this, in that Article

8(L) requires parties to regulate or manage “relevant processes and categories of activities” that are known to pose a significant adverse effect on biodiversity (according to Article 7). Also, the Global Taxonomy Initiative does include goals related to increasing taxonomic information regarding pests and diseases (Decision VI/8, further developed in Decision VII/9).

Major Gaps, Overlaps, Conflicts:

Although the CBD and the WTO contain provisions addressing the spread of alien species, none of the legally binding instruments contain substantive provisions that address the management of pests and diseases native to a region.

Biotech Risks

This criterion examines provisions concerning risks posed by Genetically/Living Modified Organisms⁴¹ and other biotechnology.

The CBD (together with the Cartagena Protocol on Biosafety) and the WTO are the only two international legally-binding instruments that contain substantive provisions regarding risks associated with biotechnology, and have taken fundamentally different approaches to addressing this issue.

The CBD itself addresses risks associated with biotechnology through Article 8(g). This Article requires parties (as far as possible and appropriate) to establish or maintain the means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotech which are likely to have adverse impacts that could affect the conservation and sustainable use of biodiversity, taking into account the risk to human health.

The CBD's Cartagena Biosafety Protocol (CBP), adopted in 2000, was developed specifically to address the transboundary movement of living modified organisms (LMOs) and the risks that they pose to biodiversity. The CBP covers all LMO's except pharmaceuticals, and distinguishes between those used for “food, feed and processing” and all others, since it is assumed that the former will not be directly introduced into the environment. It contains provisions related to liability, and is enforced by a Compliance Committee that allows third parties to report violations of the protocol. It also requires that shipments of LMO-containing products be clearly labelled as such, allowing countries the right to refuse entry of a shipment if clear information regarding its GMO content is not provided. The CBP incorporates the precautionary approach, in both the Preamble as well as in the operative text, which provides for states to take preventative action in the interest of human health and biodiversity despite the “lack of scientific certainty due to insufficient scientific information and knowledge” (CBP, Article 10 (6), 11(8)). Another pillar of the Protocol is the requirement of Advanced Informed Agreement and the Clearinghouse Mechanism (CHM, Article 11), whereby consent must be given the first time a GM product is traded (Article 7, 10).

The rising interest in creating carbon sinks has led to an interest in the development of GM trees that grow and sequester carbon at a faster rate. The use of GMO trees in afforestation and reforestation project activities (i.e. “carbon sinks”) under the clean development mechanism (CDM) has been a major controversy within the UNFCCC. While many countries have been pushing for their exclusion from such projects, others have opposed this. The result is that although a decision made at the 9th COP of the UNFCCC mentions GMO trees in its preamble (“recognizing that host Parties evaluate, in accordance with their national laws, potential risks associated with the use of genetically modified organisms...”) the operative part of this decision does not impose any restrictions on their use (UNFCCC COP9, Decision 19).

The WTO has taken a fundamentally different approach to the regulation of GMOs effectively placing the burden of proof on those who seek to restrict trade. Under the SPS agreement, parties can only impose trade restrictions based on scientific principles maintained with scientific evidence (Article 2), and in addition, they must conduct an assessment that provides evidence that risk exists; any trade restriction must be based on this (Article 5). While the CBD and the WTO will not necessarily clash in every given scenario, there is the potential for this, as the CBP is more generous regarding when a country is able to apply trade measures.

⁴¹ “Living Modified Organism” is a term that was adopted during the Biosafety Protocol negotiations in order to gain the approval of parties who felt that the term “genetically modified organism” had a negative connotation; however, they refer to the same concept.

Major Gaps, Overlaps, Conflicts:

The relationship between the Cartagena Biosafety Protocol and the WTO's trade-related provisions is complicated and remains politically contentious, poorly defined, and yet to be tested. The basic conflict lies in the placement of the burden-of-proof; while the CBP requires that LMO proponents prove that the LMO in question does not pose harm (prior to transboundary movement), the WTO requires opponents to justify the imposition of trade restrictions by proving that harm will occur. With regards to forests, the application of provisions under the CBP will be dependant upon whether it is in the context of trade of LMO-based products (i.e. wood), or the use of GM trees in plantations, such as under the CDM, as the latter constitutes an intentional release into the environment and will trigger the CBP's Advanced Informed Agreement clause. Furthermore, it must be noted that three of the largest producers of LMOs (US, Canada and Argentina) have not signed the CBP but are members of the WTO.

Table 11 SFM 3 - Forest Health: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Alien species	Mostly covered by the CBD, although language is largely advisory. May conflict with WTO requirements that place the burden of proof on the party that wishes to restrict the importation of a good based on concerns regarding alien invasive species.
Fire	Very little coverage. CBD delegates this to SBSTTA; fire is part of complicated LULUCF calculations for UNFCCC; ITTA provides funding and expertise for tropical producers; if a “natural risk” threatens a WHC site, funding for mitigation is provided.
Degradation	A number of CBD provisions address this, as well as the FBDPOW, albeit in non-specific terms. Impacts of fragmentation and forest harvesting operations not covered (no mention of maintenance of structural diversity, standing and downed dead wood). ITTA also addresses the issue, but in purely advisory language and only applicable to tropical forests. UNCCD is concerned with degradation in the form of desertification, and this is addressed according to its own criterion (Reference to section on Desertification under Theme 5). Incentives for reforestation under the Kyoto Protocol also may serve to mitigate forest degradation.
Pollution	Very little mention in any of the LBIs, except as identified as a “major threat” to biodiversity in the CBD Strategic Plan, and the FBDPOW (non-binding goals/objectives associated with each). No mention of fertilizers as pollutants.
Climate change	CBD, UNCCD and UNFCCC all consider the effects of climate change on forests, including increased fires, susceptibility to pests, and species loss. However, there is little in the way of requiring parties to monitor the impacts of (or facilitate adaptation to) climate change.
Pests and disease	Very little legally binding coverage aside from that directed at alien species.
Biotech Risks	Potential conflict between the CBP and WTO requirements, particularly the SPS Agreement. Use of GMO trees under the UNFCCC and UNCCD may also raise issues (use of modified trees for carbon-sequestering through the CDM, drought resistance, respectively).

Non-legally binding global instruments

The IPF and IFF produced notably few proposals for action (PFAs) addressing threats associated with alien species, fire, insects, disease, or climate change. However, pollution was addressed in the PfAs of the IPF, including proposals for adopting a preventative approach to the reduction of air pollution (IPF PFA, para 50a), strengthening international cooperation to better monitor and understand the impacts of pollution on forest health (IPF PFA, para 50b,c), and to develop methods for the assessment of national-level SFM C&I in relation to this threat (IPF PFA, para 50d). Any discussion of managing the risks associated with genetically modified organisms or other biotechnology is notably absent.

The UNFF addressed the issue of Forest Health and Productivity at its Third Session, with the resulting resolution calling for cooperation in increasing capacity to identify and address threats to forest health, and encouraged countries to develop forest fire management strategies. Although the resolution calls for international cooperation to further control transboundary pests and disease movement, it adds the caveat that this is to be done “consistent with World Trade Organization provisions”, emphasizing the primacy of trade (UNFF3, Resolution 3/2, para 4).

Major Gaps, Overlaps, Conflicts:

Aside from pollution, the PfAs do little to cover the gaps associated with identified threats to forest health. Although the UNFF has discussed controlling pests and diseases, the resultant resolution essentially defers to existing WTO rules. The topic of the risks associated with biotechnology, specifically genetically modified trees, has not been formally addressed either, although it was the focus of debate at a side event held during UNFF4.

Regional Approaches

Non-European Temperate and Boreal Forests

The Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (Montreal Process and C&I) addresses forest health primarily through Criterion 3 (Maintenance of Forest Ecosystem Health and Vitality). As with measuring biodiversity of forest bodies, the Montreal Process uses the “range of historic variation” as a reference

point to assess the area and percentage of the forest affected by “processes or agents”, including insects, disease, exotic species, and fire (Criterion 3, Indicator (a)). Additional threats considered include flooding, salinisation and domestic animals.

Forest degradation is considered in terms of the amount of forest suffering from diminished biological components, ecological components and continuity (with mention of “functionally important species” such as fungi, arboreal epiphytes, and insects). This speaks to the gap associated with giving consideration to the less visible, yet vital, forest inhabitants.

In addition to considering the “usual suspects” of air pollutants associated with acid deposition, the Montreal Process also looks at ultraviolet B radiation (Criterion 3, Indicator (b)), and the amount of forest experiencing high levels of toxicity (Criterion 4, Indicator 4 (h)). However, the impacts of climate change are not considered here.

Risks associated with biotechnology are not mentioned, although it does assess “the extension and use of new and improved technologies” (Criterion 6, Indicator 6.3 (c)).

Europe

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) has adopted a number of resolutions concerning forest health. Pollution is central to the very first resolution (Strasbourg Resolution 1), which includes a call for the evaluation of factors that affect the functioning of forest ecosystems and timber production, including air pollution, stress, climatic fluctuations, storms, fire, human interventions (Principle 2.2).

The Pan-European Criteria and Indicators for Sustainable Forest Management includes many of the same indicators that the Montreal Process C&I do regarding forest health, but goes on to examine the relevant legal and institutional framework as well as its enforcement. With regards to pollution, it requires that permanent plots are established to determine changes in depositions and soil acidification (Indicators 2.1, 2.8), and contains specific guidance on using defoliation classification systems (Indicator 2.2). It also considers damage incurred through grazing, but includes that of game as well as domestic animals. It also addresses damage to forest health caused specifically by forest operations, something which receives little consideration elsewhere (Indicator 2.8).

The Pan-European Operational Level Guidelines go beyond the National level C&I to examine forest management planning and practice, including the monitoring of main forest health threats most commonly mentioned by other regional instruments (pests, disease, and fire), as well as overgrazing and overstocking, climatic factors, air pollutants and forest management operations (Indicator 2.1(b)). Furthermore, it suggests that biodiversity at all levels (as well as the seldom-mentioned structural diversity) be maintained so that the forest ecosystem is able to self-regulate in the face of these stresses (Indicator 2.2(a)). Consistent with this objective, it encourages the maintenance of standing and fallen dead wood as well as hollow trees (Indicator 4.2(h)).

The Amazon

Although the **Amazon Cooperation Treaty (ACT)** has some implications for “forest health”, it is mostly concerned with economic development and equitable distribution of the resulting benefits. While it briefly mentions that this should take into consideration the preservation of the environment (Article I), this is not a focus of the treaty. It does contain a provision for scientific research, information exchange and cooperation with regards to flora, fauna, and disease control (Article VII).

The **Tarapoto Process** has fewer reporting requirements related to forest health than the Montreal Process and the PEFC C+I, but does consider the area and percentage of forest affected by “processes or other agents” such as insects, disease, fire, and flooding, at both the National and the Management Unit level (Indicators 4.4, 10.3 respectively). It does not make any reference to monitoring the effects of pollution or climate change.

Amazon Cooperation Treaty Organization (ACTO) mentions both natural and anthropogenic threats to forest health in its 2004 Strategic Plan, created to guide the sustainable development programs of the eight member countries that are part of the TAC. However, it contains very little direction regarding how to address these. It identifies “indiscriminate fire” as a hazard, particularly with regards to slash-and burn agriculture (ACTO, p. 18,20), and links this to habitat fragmentation. It contains a substantial consideration of the threats posed by pollution to water resources, made all the more important due to the fact that the Amazon contains 1/5 of the world’s freshwater (ACTO, p.20). Specifically, there are concerns around the use of mercury used in gold extraction, oil spills associated with oil exploration, urban wastewater, and contaminants associated with agriculture (such as biocides and “chemical precursors” used in plantations)(ACTO, p.18). The plan also suggests the harmonization

of efforts designed to manage Biosafety concerns (ACTO Strategic Plan, p.24). Noticeably lacking is any consideration of the threats posed by pests, disease or climate change.

Central America

While the **Central American Forest Convention** contains general provisions related to the maintenance of biodiversity and vital ecological processes (Article 3a), it does not address specific threats to forest health (such as alien species, fire, disease). It does contain provisions to restrict transboundary harm (Article 1c) and the use of national and regional forest management programs to rehabilitate degraded lands and secondary forests (Article 3). Collaboration initiated by this convention has led to a regional strategy for the management of forest fires (Tarasofsky 1999b: 116).

The Central American Lepatrique Process contains reference to many of the same threats as the other processes, but does not mention pollution. It does, however, specifically refer to the environmental impacts of forest management (Indicator 2.5), and considers the area and percentage of forests affected by both anthropogenic and natural agents, although not in more specific terms than these (Indicator 2.8).

Southeast Asia

The ASEAN Agreement on the Conservation of Nature and Natural Resources considers both natural and human-induced threats to forest health, including the prevention of brush or forest fires and grazing detrimental to vegetation (Article 6.2 (a)), as well as a particular focus on regulating the impacts of mining (Articles 6.2 (b), 7.2(c)). Compared to the other southern regional agreements, it gives far greater consideration to controlling pollution and its impacts (Articles 9, 11), but hardly any to pests and diseases.

Africa

SADC considers threats to forest health, with a particular emphasis on transboundary impacts, including measures to prevent and suppress uncontrolled **fires**, identify and control pests, diseases and alien species (with a notable exception for exotic tree species used in plantations)(Article 15.2).

The most notable aspect of the **ATO/ITTO C&I** with regards to this SFM theme is the detailed consideration of the impacts that logging operations (Indicator 3.1.2), silvicultural prescriptions (2.4), infrastructure (Sub-Indicator 3.2.1.4) and harvesting of NTFP's (Sub-indicator 2.4.3.2) have on forest health. These are quite specific, such as "all appropriate silvicultural treatments are applied at the level of the individual tree rather than at the forest stand level" (Indicator 2.4.2), a level of detail that is unparalleled in the other instruments reviewed here.

In addition to the usual indicators related to the prevention of alien species being introduced, the **ATO/ITTO C&I** also mentions that phyto-sanitation and quarantine procedures are to be enforced in order to avoid the introduction of pests and pathogens (Sub-Indicator 1.1.12.8). It is also notable for its emphasis on phasing out the use of chemical pesticides, and prohibiting the use of those that are "persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use" as well as "any pesticides banned by international agreement" (Sub-Indicator 3.5.2.4). A pair of somewhat region-specific indicators require the control of bushmeat exploitation (Indicator 3.3.3), and that high-protein food alternatives be made available in order to reduce this pressure (Sub-Indicator 4.4.2.4). Regarding "risks associated with biotechnology", this instrument bans the use of genetically modified organisms altogether.

International Tropical Timber Organization C&I

The ITTO C&I address forest ecosystem health under Criterion 3. They take a unique approach in requesting respondents to identify the "top five" cause of degradation and disturbance, differentiating between that cause by human and natural causes. The preamble suggests possible factors, including illegal harvesting, fire and pollution, and cross-sectoral impacts from mining and grazing. In addition, separate criteria consider the total area of degraded primary forest specifically, and the total area identified as environmentally sensitive.

Major Gaps, Overlaps, Conflicts:

Several of the regional agreements (such as the Central American Forest Convention) reflect regional strategies to address threats to forest health in the context of preventing transboundary harm, a widely accepted norm within international environmental law.

Most of the Criteria and Indicator processes contain much more specific language than the LBIs regarding pests, diseases and fire. Notably, some (such as the Montreal Process) address this with

reference to the “range of historic variation”, acknowledging that these elements form natural components of a healthy forest ecosystem. Many of the C&I processes (including the ATO/ITTO C&I) include provisions to reduce or eliminate the use of pesticides. The ATO/ ITTO C&I takes the strongest stance with regards to “risks associated with biotechnology” by banning the use of GMOs.

Non-governmental Approaches⁴²

Many of the **Forest Stewardship Council (FSC)** Principles and Criteria (P&C) contain provisions relevant to forest health. Central to this is the requirement that ecological functions be maintained, enhanced, or restored (Criterion 6.3). FSC also requires that operations avoid or minimize damaging other forest resources during harvesting and road construction (Criteria 5.3, 6.5), and that chemical use is minimized. Although the use of exotic species is allowed, they are to be carefully controlled and actively monitored (Criterion 6.9). The use of genetically modified organisms is prohibited. These international standards are developed regionally into much greater detail in order to suit the local context.

Major Gaps, Overlaps, Conflicts:

FSC standards go a long way in addressing gaps related to the maintenance of ecological function and prevention of forest degradation during harvesting and road building. They also restrict the use of forest chemicals, and favour their elimination. As is the case with the ATO/ ITTO C&I, FSC addresses “risks associated with biotechnology” by prohibiting the use of genetically modified organisms.

⁴² As discussed in the methodology section of this report, this report's thematic chapters compare approaches to substantive themes of sustainable forestry. The FSC is the only forest certification system that has developed global standards addressing substantive issues and hence is the only system with decisions amenable to analysis in this chapter.

Thematic Element IV: Productive Functions of Forest Resources

Criteria

The thematic area “productive functions of forest resources” commonly refers to the ability of forests to generate economically valued forest products (Holvoet and Muys 2004). Multilateral decisions addressing this issue, can be divided into two criteria, consisting of “forest productivity” and “accounting”.

The criterion “forest productivity” refers to those multilateral decisions addressing management practices designed to maintain the economic productivity of the world’s timber and non-timber forest resources. These practices include the regulation of wood and non-wood harvest levels, forest regeneration and harvest patterns. The criterion of “accounting” addresses the collection, management and use of data on the production, consumption and trade in fuel wood, industrial round wood, saw wood and standing wood volume per hectare (Holvoet and Muys 2004: 102).

Legally Binding Forest-Related Global Instruments

Forest Productivity

The only legally binding global instruments that directly address forest productivity are the CBD and the ITTA.

The CBD provides some voluntary guidance addressing the productivity of non-timber natural resources. Included among these are the “Addis Ababa Principles of the Sustainable Use of Biodiversity”. These advisory principles state that policies should “take into account” such forest-related issues as current and potential values derived from the use of biodiversity, as well as intrinsic and other non-economic values of biodiversity (COP 7, Decision 12, Annex II a), b)). The CBD has also adopted a set of “Guidelines on Biodiversity and Tourism” (COP 7, Decision 14, Annex) that outline a coordinated approach for tourism management that protects biodiversity and fosters local empowerment and benefit sharing.

The ITTA (1994) is the only legally binding global instrument that addresses the management of forest resources for the purpose of producing timber. Among the objectives of the ITTA are “to enhance the capacity of members to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources by the year 2000”; and “to encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land...” (Chapter 1, Article 1 d), j)). The ITTA, 2006 does mention non-timber forest products, one of the stated Objectives is to promote “better understanding of the contribution of NTFPs and environmental services to the sustainable management of tropical forests” (ITTA, 2006, Article 1).

The ITTO’s primary policy mechanisms for improving forest practices involve information sharing and support of research and capacity-building projects. Among the categories of projects that have thus far been supported by the ITTO are “forest resource” projects, involving “pre/projects which assist with the establishment and assessment of a secure forest resource”; and “sustainable forest management” projects, including “pre/projects which involve the assessment of forest areas through inventory, and the design and implementation of management plans for sustainable forestry on the ground” (Poore and Chiew 2000).

Major Gaps, Overlaps, Conflicts:

The CBD and the ITTA are the only two legally binding global instruments that address forest management for economic production. The CBD provides voluntary guidelines for “biodiversity use” as well as responsible tourism. The ITTA provides information, outreach and individual project funding in support of sustainable management practices within producing member countries. The management of forests for non-timber forest products is not well covered by any of the legally binding global instruments.

Accounting

To encourage a transition from a timber-productive focused forest management regime to sustainable forest management it is well recognized that not only timber, but also non-timber values, such as biodiversity and carbon values, need to be taken into account in forest management decision-making (Costanza et al. 1997; Kant 2004). This criterion explores the extent to which both timber and non-timber values are addressed by international forest instruments. The legally binding, forest-related global instruments which address issues of accounting for the productive functions forests include: CBD, UNFCCC, UNCCD, WHC and Ramsar.

The CBD does not have any legally binding provisions regarding accounting for productive functions of forests; however, it has undertaken considerable efforts to encourage the accounting of non-timber values in forest management. The CBD has encouraged parties to revise national-level policy to incorporate market and non-market accounts of the value of biodiversity (COP-3, dec. 18; COP-4, dec. 10) and specifically, via the FBDPOW, to incorporate forest biological diversity and other forest values into national accounting systems (COP-6, dec. 22, ele. 2, goal 2, obj. 1, act. (c)). The conference of the parties has adopted the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, which encourage, amongst other things, the revision of international-level and national-level policies and strategies regarding accounting for biodiversity to incorporate current and potential values, as well as the intrinsic and non-economic values of biodiversity (COP-7, dec. 12, annex).

The UNFCCC and the Kyoto Protocol effectively alter international accounting of the productive functions of forests by valuing forest-related carbon stocks and sinks. Rules for the precise accounting of the forest-related contributions to climate change mitigation remain unsettled (Rosenbaum, Schoene, and Mekouar 2004) (9-14).

The UNCCD requires parties to be guided by, amongst other things, “a better understanding of the nature and value of land...” in the exercise of its obligations under the Convention (art. 3(c)) and it calls upon parties to adopt “green accounting” to assist in this regard (COP-6/II, annex VI, paras. 22(c) and 23(e)).

The WHC imposes a duty on parties to, amongst others things, identify natural heritage of “outstanding universal value” (arts. 1-4). Effectively, this requires parties in their national-level accounting of forests to acknowledge the intrinsic value of forested areas that are candidates for WHC designation. This indirect accounting measure, while directory in nature, is not sufficiently linked to the productive functions of forests to be considered a contributor to the criterion.

The Ramsar Convention does not have a directory requirement regarding accounting for forest-related productive functions; however, the conference of the parties to the Ramsar Convention encourages parties to take into account the cultural value of wetlands, which would include forested wetlands, in their national-level policies and strategies (COP-8, res. 19). Additionally, the Ramsar strategic plan (2003-2008) has set as an operational objective the establishment of national-level environmental assessment and valuation policies for implementation of the Convention (COP-8, res. 25, para. 56(2)).

Major Gaps, Overlaps, Conflicts:

Global accounts are based on national-level reporting expectations arising from legally binding, forest-related, global instruments – there are many overlapping accounting provisions (UNFF 2004c: 7). There are however considerable gaps in the accounts called for in legally binding, forest-related global instruments, particularly as it regards accounting for non-timber values.

Table 12 SFM 4 – Productive Functions: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Forest Productivity	There are no directory decisions that address the management of forests for the sustainable production of forest resources. The ITTA provides voluntary support for sustainable tropical timber management, and the CBD provides voluntary guidelines for sustainable “biodiversity use” and tourism. Non-timber forest management is not well covered.
Accounting	Global accounts are based on national-level reports that have considerable gaps, particularly as it regards accounting for non-timber values.

Non Legally Binding Global Forest Instruments

The IPF/IFF PfA support the development of national strategies for sustainable forest product production by means of National Action Programmes. They also expressly (PfA) urge countries to “consider actions to promote the sustainability of their wood supply and their means for meeting demand...(IPF 28(a)).” The UNFF has addressed forest productivity in its Third session (UNFF-3, res. 3.2).

The IPF PfA acknowledge the need to broaden the scope of accounting and valuation methodologies to address non-timber values in the pursuit of sustainable forest management (IPF 58(b)(iv), 104 (a)-(c)). The IFF PfA identified a series of accounting issues related to forest productivity, including making full-life cycle cost comparative assessments of forest product and their substitutes (IFF 41(c), 41(d), 41(e), 64(h), 121(e) and 122(f)). Following upon the IPF and IFF proposals for action, the UNFF also endorsed the need for a broader accounting of forest-related values (UNFF-2, res. 1, annex, para. 7).

Major Gaps, Overlaps, Conflicts:

The IPF, IFF and UNFF all address the issues of forest productivity and have encouraged a broader accounting of forest-related values in decision-making for sustainable forest management.

Regional and C& I Approaches

Non-European Temperate and Boreal Forests

Criterion 2 of the Montreal Process Criteria and Indicators addresses the “maintenance of productive capacity of forest ecosystems” through a series of indicators aimed at measuring the total area of productive land (crit. (a)), the volume of growing stock (crit. (b)), the area of tree plantations (crit. 2(c)) and the removal of timber (crit. 2(d)) and non-timber forest-related resources (crit. 2(e)). Criterion 6, “maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies”, calls for measuring the value and quantity of wood (crit. 6(a)) and non-wood (crit. 6(b), (d)) production and consumption (crit 6(c), (f)).

Europe

The non-legally binding MCPFE has created a “General Guidelines for the Sustainable Management of Forests in Europe, which states that “the use of wood and non-wood forest products should be encouraged on a basis compatible with the sustainable management of forests, thereby providing and increasing the potential for traditional and new forest products...” (res. H1, para. 11). The MCPFE Parties have also committed to undertake efforts to improve their accounting of the full range of forest-related values (res. L1, paras. 5 and 9; res. H2, para. 2).

The MCPFE Pan-European Criteria and Indicators include both national-level and operational-level Criteria specifically addressing the maintenance and “enhancement” or “encouragement” of the productive functions of the forest (both wood and non-wood) (crit. 5 and 3, respectively). The national-level C&I also include a suite of measures related to the accounting of productive functions of forests, including the value and quantity of roundwood production (ind. 3.2), non-timber related production (ind. 3.3), forest-related services (ind. 3.4) and the contribution of the forest industry to the GDP (ind. 6.2).

The Amazon

The Treaty for Amazonian Cooperation does not address the productive functions of forests directly. The ACTO has developed a strategic plan (2004-2010), which suggests that national forest plans will permit non-timber forest values to be accounted for in forest management decision-making (ACTO 2004) (21).

The Criteria and Indicators of the Tarapoto Proposal include national-level accounts of the extraction of the timber and non-timber forest products (ind. 9.1) and global-level accounts of the value of the services provided by the Amazon forest (crit. 12). Criterion 9 at the management unit level, addresses “sustainable forest production” by such indicators as the sustainability of harvest levels (ind. 9.1) and the impact of forestry activities on soils (ind. 9.2).

Central America

The objective of the Central American Forest Convention includes “to promote national and regional mechanisms that will prevent a change of land use of those areas covered with forests that are occupying lands with forestry potential, and to recover ... deforested areas...” (art. 2). The focus is not primarily on timber production, but rather on “biodiversity”, the “maintenance of ecological processes” (art. 3(a)) and giving “priority to the supply of fuelwood for domestic consumption, and to other forest products of local community use” (art. 3(d)).

Most Parties to the Central American Forest Convention have enshrined forest-related accounts in their national-level legally binding instruments as a result (Aguilar and Gonzalez 1999: 117).

The Leparterique Process has a suite of indicators related to the accounting of the productive functions of forests at both the regional (crit. 4; ind. 3.2) and national-levels (crit. 6 and 8). National level Criterion 6 also calls for “silvicultural prescriptions for each type of forest” (ind 6.8).

Southeast Asia

The ASEAN Agreement on the Conservation of Nature and Natural Resources contains directory provisions regarding accounting for the full-range of productive functions of forests, economic, environmental and social in the preparation of development plans (art. 2(2)) and land use plans (art. 12(1)).

Africa

The South American Development Council (SADC) Forestry Protocol addresses forest productivity by supporting the development of legal frameworks for forest planning and encouraging the maintenance of the "existing species composition of natural forests" (art. 11(d)). Particular emphasis is also placed on managing forests for local community benefit (art. 12).

The SADC Forestry Protocol requires parties to employ criteria and indicators to evaluate the productive functions of forests (art. 4(d)). Additionally, the Protocol requires the inclusion of a range of non-timber forest-related values in national forest assessments (art. 9(1)(c)).

The ITTO and ATO Criteria and Indicators address the sustainable production of both timber (crit. 2.3) and non-timber (crit. 2.5), as well as silvicultural practices (crit. 2.4) through a relatively detailed set of Indicators and Sub-indicators. This includes the measurement of timber production, as well as a limited number of accounting measures of non-timber forest products. Provisions are included to both identify the non-timber forest resources currently being used (ind. 2.5.1.1) and note their distribution (ind. 2.5.2.1).

International Tropical Timber Organization C&I

This theme is addressed directly within Criterion 4, Forest Production, and includes provisions for resource assessment, planning and control procedures, and silvicultural and harvesting guidelines. This includes a detailed checklist approach to assessing species composition, consideration of non-wood forest products and fuelwood, by both forest area and harvesting levels.

Major Gaps, Overlaps, Conflicts:

Those legal and non-legal instruments in Europe, Central America and Africa that are specifically focused on forests all include provisions aimed at sustaining forest economic productivity. In contrast to the ITTA, these regional forest instruments place a stronger emphasis on non-timber values. The CAFC is unique in its emphasis on forest management for subsistence purposes.

Some regional instruments, such as the Central American Forest Convention, include directives calling for the accounting of the productive functions of forests. The C&I processes in general encourage the accounting of productive forest functions. However, as the first overview report of the Montreal Process C&I illustrates, there are capacity gaps in regional reporting efforts (MPCI 2003: 20).

Non-governmental Approaches⁴³

The FSC standards include numerous and relatively detailed Criteria addressing forest practices aimed at protecting forest productive functions. Many of these Criteria are found under Principle 6, "Environmental impact", addressing such diverse issues as harvest patterns, reforestation, and soil and water protection. In addition, Principle 8 addresses the monitoring of forest practices, including accounting requirements for timber and non-timber resources (crit. 8.2).

Major Gaps, Overlaps, Conflicts:

The FSC's focus on the forest management unit level allows for much more detailed and comprehensive coverage of silvicultural practices than that found in instruments governing national or international actions.

⁴³ As discussed in the methodology section of this report, this report's thematic chapters compare approaches to substantive themes of sustainable forestry. The FSC is the only forest certification system that has developed global standards addressing substantive issues and hence is the only system with decisions amenable to analysis in this chapter.

Thematic Element V: Protective Functions of Forest Resources

Criteria

In addition to housing vast amounts of species, forests perform a wide variety of protective functions. These range from the prevention of soil erosion and the maintenance of slope stability, to capturing carbon and regulating the earth's climate. Many of these functions have been referred to as "ecosystem services", and are often associated with positive externalities not always taken into account in decision-making. This is reflected in a general lack of recognition of these protective functions by the legally binding agreements.

While there exists a degree of uncertainty regarding the exact amount of carbon dioxide contained and absorbed by forests, there is no doubt that they play an essential role in regulating this greenhouse gas and the world's climate, and that this function may be threatened by rising temperatures and the increased frequency of fire and the outbreak of forest pests and diseases. Forests also provide a protective function with regards to the local micro-climate, as their canopies provide shade and trap water vapour.

The world's soils are currently at risk due to a range of anthropocentric causes, such as agricultural activities (excessive use of fertilisers, inadequate fallow periods and erosion control, compaction, loss of nutrients, salinisation, pollution); removal of natural vegetation, large-scale commercial forestry, urban sprawl, and the excessive gathering of fuel-wood, fodder and timber (Hannam and Boer 2002). Trees and their extensive root systems play an essential role in maintaining soil integrity, and in turn are benefited from the health of these soils and symbiotic associations with fungi. The combination of micro-climate regulation and soil protection contributes to the role that forests play in protecting dry regions against the spread of desertification.

Water resources all over the world are suffering from overuse and contamination. Healthy and intact forest ecosystems are able to protect water quality and regulate its flow. However, this ability is currently suffering from anthropogenic stresses linked to deforestation, forest degradation, the loss of soils, and contamination from the use of biocides and fertilizers.

This section will examine the manner in which these protective functions are addressed according to five broad categories: climate regulation, desertification prevention, soil protection/ erosion control, water cycle regulation, and pollution mitigation. These topics overlap considerably and are interlinked in numerous ways.

Legally binding global instruments

Protective Functions - General

The CBD's three objectives, including the conservation of biodiversity, are congruent with the goal of maintaining the protective functions of forests, since conserving the component species that make up forest ecosystems is a pre-requisite for the functioning of ecosystem processes that enable this protection. Many of the CBD's substantive provisions are relevant to the maintenance of protective functions.

The UNFCCC's most important contribution to this theme is recognizing the role that terrestrial ecosystems play in regulating the concentration of atmospheric carbon, and its overall objective of stabilizing Green House Gases (GHGs) in a time frame that would allow natural systems to adapt to these changes.

The UNCCD objectives relate directly to many inter-connected criteria contained within the "Protective Functions" theme, including the prevention of desertification, maintenance of soil integrity, erosion control, and the protection of water resources. UNCCD objectives include the rehabilitation, conservation and sustainable management of land and water resources, with the overall emphasis being community-level improvement in living conditions as well as increased land productivity, and Africa mentioned explicitly as a region of special concern. The UNCCD definition of land degradation explicitly includes human-induced soil degradation and erosion within forests and woodlands.

The WHC's objectives do not consider the maintenance of protective functions per se; it aims to conserve sites of "outstanding interest" mainly, suggesting that aesthetic and spiritual/ cultural values may take precedence in the selection of natural heritage sites. However, "outstanding interest" in this context can mean a wide range of things, including biodiversity and ecosystem integrity. For example, a watershed might be inscribed on the WHL list, thereby enabling "the protection of its protective functions", as it were.

CITES objectives also hold similar promise; while normally associated with the protection of individual species, the CITES preamble recognizes that these are part of (and dependant upon) "natural systems of the earth which must be protected" (CITES).

Ramsar objectives specifically consider "the fundamental ecological functions of wetlands as regulators of water regimes", and mangrove forests fall squarely within this classification. Several related provisions address their protective role within this ecosystem type.

ITTA, 1994 objectives include the goal of "increasing the capacity to conserve and enhance other forest values in timber producing tropical forests" (ITTA, 1994). "Other forest values" could be interpreted to include forest protective functions. ITTA, 2006 gives greater consideration to environmental services, as one of the multiple benefits of forests, and states that one of the agreement's objectives is to promote better understanding regarding their contribution to sustainable forest management (ITTA, 2006 Preamble and Article 1).

The WTO objectives (as expressed in the preamble of the Marrakesh Agreement) include a strong focus on global economic growth, calling for raising standards of living, steadily growing real income and effective demand, and other goals that may lead to an increase in the consumption of forest products. There is an inherent tension between these socio-economic goals and global forest protection. Global economic growth poses a threat to forest health to the extent that ecological services and protective functions provided by forests do not receive adequate protection and/or their value is not recognized in the marketplace. The WTO also states goals of optimizing the use of the world's resources and seeking to protect and preserve the environment. To the extent these latter goals are also pursued, the WTO could support forests and their protective functions.

Major Gaps, Overlaps, Conflicts:

Overall, aside from their ability to sequester carbon, there is very little explicit recognition of the protective functions of forests within the legally binding agreements reviewed here. There is a paucity of binding requirements with regards to maintaining forest or vegetation cover so as to protect the hydrological cycle and water resources, aside from wetlands covered under Ramsar (and this mostly concerns the provision of habitat for migratory birds). There is very little explicit recognition of the role that forests can play in regulating microclimates, protecting soil, and warding off desertification. The UNCCD does contain region-specific appendices that do address the role that forest can play in combating desertification. There is little to no recognition of the "ecosystem service" of pollution absorption and maintenance of air and water quality.

With regards to the role that forest play within the carbon cycle and climate regulation, this is addressed by the UNFCCC; the specific details of how forestry activities will be considered by the Kyoto Protocol, CDM and LULUCF guidelines is still in the process of development. Needless to say, some of the main GHG emitters have not signed the Kyoto Protocol. However, almost all nations are party to the UNFCCC, which itself holds some commitments with regards to reducing emissions and increasing removals by sinks such as forests. Some concerns have been expressed that the lack of institutional capacity to certify carbon-sequestration may prevent some countries from participating in this industry, favoring only a few select Southern countries (Stuart and Costa 1998).

Carbon cycle and Climate change

This criterion reviews provisions pertaining to the role that forests play within the global carbon cycle. It has direct relevance and overlap with most of the SFM themes, most notably that of "Extent of Forest Cover", and provisions regarding afforestation, deforestation, and reforestation have been addressed under Thematic Area 1.

The UNFCCC is obviously the most relevant instrument to this criterion, with forests playing a crucial role in attaining the Convention's ultimate objective of stabilizing atmospheric greenhouse gas concentrations within a timeframe that will allow ecosystems to adapt naturally to this change. However, aside from CITES, WHC and the WTO, all of the other instruments examined also contain provisions regarding climate change.

UNFCCC Parties acknowledge their "common but differentiated responsibilities" in reducing GHG emissions and increasing removals of atmospheric carbon by carbon-absorbing sinks such as forests, peatlands and soils. They also make commitments to promote the development and transfer of technology to relevant sectors, including forestry, in order to promote the sustainable management of these carbon sinks and reservoirs (Article 4).

Kyoto falls short of a "full carbon accounting" approach that would take into consideration all exchanges of carbon between terrestrial and atmospheric realms. Instead, it focuses solely on areas

subject to “direct human-induced” activities since 1990 (Article 3.3), or “human-induced activities” (Article 3.4), leaving out net carbon flows that would have occurred regardless of human intervention (IPCC 2000). The definitions of what constitutes a “forest”, “afforestation”, “reforestation,” and “deforestation” are all crucial in determining what land Annex I countries are able to include under Article 3.3, with direct implications for calculating the changes in carbon stocks (see Theme 1 for discussion of afforestation, reforestation, deforestation and the Kyoto Protocol).

The Kyoto Protocol to the UNFCCC establishes commitments for countries listed in Annex I to reduce their net emissions and provides more specific guidance regarding the use of sinks to meet these commitments. This guidance includes transferring sink credits to, or acquiring credits from other Annex 1 parties, under condition that the resulting benefits would be additional to those that would have otherwise occurred. This can be done according to two project-based mechanisms: Joint Implementation (JI) for projects in other countries with a reduction target, and the Clean Development Mechanism (CDM) for projects in developing countries that do not have a reduction target.

The UNFCCC’s emphasis on using forests to sequester carbon may result in an increased interest and investment in afforestation and reforestation activities that may benefit total forest cover and potentially forest-dependant species. However, this may also pose the risk that biodiversity may receive less consideration in forest management strategies that primarily aim to establish rapidly growing plantations. This may result in the loss of habitat, as well as the loss of genetic and species diversity of the growing stock used to pursue this goal.

The “biodiversity versus carbon credits” debate has been addressed to a certain extent by both the UNFCCC and the CBD. A decision adopted by UNFCCC may restrict the conversion of natural forests to carbon-sinking plantations in requiring that Land Use, Land Use Change and Forestry (LULUCF) activities contribute to the conservation of biodiversity (UNFCCC COP7, Decision 15). Further guidance has been provided by a decision made at the 9th COP, regarding modalities and procedures for afforestation and reforestation project activities under the CDM (COP9, Decision 19), including risk assessments that must be performed in advance of such projects. Annex 1 countries are allowed to use credits obtained under the CDM to offset up to 1% of their base year emissions during the first commitment period of the Kyoto Protocol (2008-12).

The CBD has also initiated an Ad Hoc Experts Group on Biodiversity and Climate Change, and has invited parties to make use of their findings, with reference to the Forest Program of Work, but this is not binding (CBD COP7, Decision 15). The CBD Expanded Program of Work on Forests has encouraged collaboration with the UNFCCC with regards to research and monitoring activities concerning the relationship between climate change and biodiversity. The UNCCD has also called for such inter-instrumental collaboration with UNFCCC, specifically with regards to LULUCF (COP3, Annex, Part III(c)).

Attempts to mitigate the effects of climate change may hold further repercussions for socio-economic functions of forests, if multiple benefits associated with natural forests are reduced at the expense of pursuing carbon credits. However, Kyoto does contain an advisory clause requiring Parties in Annex I to “strive” to meet their obligations in such a way so as to minimize adverse effects, including social, environmental and economic impacts on other Parties, especially developing country Parties (Kyoto Protocol, Article 2).

While Ramsar encourages Parties to recognize the role that mangrove ecosystems can play in mitigating the effects of climate change, this is mostly with regards to their ability to reduce the impact of sea-level rise on low-lying coastal areas, and not their role as a carbon sink (Ramsar COP 8, Resolutions 11 and 32). Recently Parties have been encouraged to manage and restore wetlands “in order to mitigate the impacts of natural phenomena such as floods, provide resilience against drought in arid and semi-arid areas, and contribute to wider strategies aimed at mitigating climate change and desertification...” (Ramsar COP 9, Resolution 9).

The ITTO Yokohama Action Plan considers the contribution of forests (referred to as “the resource base”) to the mitigation of the effects of climate change, under Reforestation And Forest Management Goal 2. However, this is a non-legally binding plan.

Major Gaps, Overlaps, Conflicts:

Although mentioned by Ramsar and ITTO, this criterion is primarily addressed by the UNFCCC, and to a lesser extent, the CBD. The relationship between forestry activities designed to receive credits under the clean development mechanism and the conservation of biodiversity and other values associated with maintenance of forest health continues to be developed; the issue remains controversial.

Desertification

The CBD contains numerous provisions related to the conservation and sustainable use of biodiversity in dry and sub-humid lands, as well as many references to cooperation with the UNCCD and other conventions in achieving this goal. For example, a decision made at the 5th CBD COP endorses a POW that seeks to promote synergy with UNCCD, CITES, Ramsar, and the Convention on Migratory Species (CMS) (CBD Dec V/23, Annex 1).

The UNFCCC also has several significant provisions addressing desertification. These include a requirement that parties cooperate in preparing for adaptation to the impacts of climate change, and mentions that this may require the rehabilitation of areas affected by drought and desertification (UNFCCC, Article 4c).

The UNCCD is the instrument of greatest relevance to the theme of desertification. At the heart of this instrument is the requirement that parties adopt an integrated and long-term approach addressing the physical, biological and socio-economic aspects of the processes of desertification and drought, and promote cooperation among affected countries with regards to conservation of land and water resources as they relate to desertification and drought (UNCCD, Article 4.2). From here, it delineates obligations pertaining to "affected" (Article 5) versus "developed" (Article 6) countries. The former are to give priority to combating desertification, establishing long-term strategies and policies to this end, addressing underlying causes, strengthening existing legislation, and enacting laws if these do not exist. Obligations of developed countries include actively supporting affected parties in their efforts and mobilizing financial resources, access to technology and know-how, all with a view to helping them meet their obligations.

The overall approach of the UNCCD focuses on addressing underlying causes related to socioeconomic issues and poverty, and encourages cooperation at all levels of government in pursuing research and development relevant to combating desertification (these issues are addressed in further detail under Theme 6). The UNCCD also incorporates an emphasis on incorporating traditional knowledge. For example, COP4 called for the development of strategies for the communication of information regarding best practices for combating desertification and mitigating the effects of drought, noting that this should include both traditional and scientific knowledge.

At COP 6, the UNCCD invited parties to take an inter-sectoral approach, incorporating consideration of desertification into all sector sustainability strategies, including that of forestry. Most of the specific details that pertain to forests are contained within the region-specific annexes; some of which make reference to fighting loss of forest cover and forest degradation. It was also decided that the UNCCD should collaborate with the UNFF, the UNFCCC and the CBD to promote activities with Low Forest Cover Countries (LFCCs) for a joint approach on forests (UNCCD COP 6, L.19/Rev.1). Recently the UNCCD has given greater emphasis to monitoring and assessment of biophysical aspects of desertification, including benchmarks and indicators, as "the most urgent activity for the next two year period" (UNCCD dec. XII/17 and XII/20), and has called for enhancing synergies with other MEAs surrounding climate change mitigation and combating desertification (UNCCD dec. XII/3 and XII/12).

International efforts to combat desertification may also affect risks associated with biotechnology; in a declaration made at the 4th COP of the UNCCD, it was suggested that parties should make use of "modern and safe bio-technologies to disseminate drought-resistant species" (UNCCD COP 4, Annex, V, para 6). If GM tree species become widely used in the fight against desertification, this issue may intersect with substantive provisions concerning the use of bio-technology in the CBD Biosafety Protocol and related WTO provisions (see discussion under Theme 3: Biotechnology Risks).

Major Gaps, Overlaps, Conflicts:

The three Rio Conventions all contain provisions addressing desertification, with the UNCCD logically taking the lead on this. However, there is a lack of binding provisions requiring the maintenance of forest cover in regions facing the encroachment of desertification, or those requiring donor countries to contribute resources to this end.

Soil

This criterion addresses provisions concerned with the protective function that forests serve in maintaining the health and integrity of the soils upon which they grow, including their biotic and abiotic components. This protection, in turn, enables forests to provide the vast array of other ecosystem services crucial to our survival, as well as that of most terrestrial biodiversity. In addition, soil plays a significant role in the carbon cycle, containing over four times the total amount of carbon than that contained within the vegetation that grows on top of it (IPCC 2000), and stands to be affected greatly by climate change.

Despite the high degree of awareness regarding the problem of global soil degradation, until recently there has been little discussion of what role existing or new international environmental law could or should play with regards to soil degradation.

The CBD is of particular relevance to soil conservation, as all provisions related to conserving biodiversity or sustainably using biological resources will have repercussions for this ecological element; although not mentioned explicitly, "soil" falls squarely within the two key definitions of "biological diversity" and "biological resources"⁴⁴.

The UNFCCC acknowledges that soil is an important carbon sink, and that conversion of forests to other land uses, such as agriculture, will release this carbon. Although the original ITTO agreement does not specifically mention soil, it encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as the rehabilitation of degraded forest land (Hannam and Boer 2002).

The UNCCD encourages the development of National Action Plans and scientific and technical cooperation that are able to address many of the causes of soil degradation. At its 3rd COP, the UNCCD decided that the priority issue to be addressed at the 4th session of the Committee on Science and Technology would be the application of traditional knowledge, benchmarks and indicators and early warning systems for the monitoring and assessment of sustainable soil and water management in dryland areas for effective implementation of the national action programmes.

CITES, although primarily concerned with protection of species, has recently issued a resolution that Parties should avoid or minimize adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems in their sustainable use management goals and practices (COP13, Resolution 2, Practical Principle 5), presumably this would include soil.

Major Gaps, Overlaps, Conflicts:

The protection of soil remains a significant gap within multilateral environmental agreements. The CBD, despite recognizing the importance of soils, does not include specific binding provisions for its protection (although its many provisions related to maintaining biodiversity in general may provide for this). Similarly, UNCCD requirements for soil protection are written in discretionary language, and the UNFCCC focuses primarily on their carbon-storing capacities.

Water

This criterion encapsulates provisions that address the protective function of forests in regulating water, both in quality (e.g. filtration, siltation) and quantity (e.g. flood control, forest soil moisture content).

CBD adopted "inland waters" as a thematic area at COP-4, and much of the work that has been done on this topic is of direct relevance to forests. Most recently, an expanded POW on Inland Water Biological Diversity was adopted at CBD-COP7; much of this is relevant to the discussion of forests, and recognizes the ecological interconnectedness of aquatic and terrestrial biomes. Although it is purely advisory in nature, the POW does include watershed management goals that make reference to using forests and wetlands to recharge groundwater stocks, maintain the hydrological cycle, protect water supplies and prevent flood damage. The CBD Secretariat (in conjunction with Ramsar) is developing a proposal for consideration by COP8, on streamlining national reporting on inland water ecosystems, taking into account the work of the UNFF's Task Force on Streamlining Forest-related Reporting. The CBD POW on arid and sub-arid lands mentions water management strategies, but does not explicitly acknowledge that forests could play a role here.

The UNFCCC includes obligations that parties cooperate in adopting measures aimed at adapting to the impacts of climate change, with specific reference to integrated plans for water resources and for the protection and rehabilitation of areas particularly in Africa, that are affected by drought and desertification, as well as floods. Although forests are not mentioned explicitly here, they would clearly

⁴⁴ "Biological diversity" is defined as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems". "Biological resources" includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity (CBD Article 2).

be able to play a critical role in providing these “protective” functions. On the other hand, there are provisions within the UNFCCC and the Kyoto Protocol that may lead to a push for carbon-sequestering plantations that may exacerbate water scarcity problems.

One of the priority areas identified in the UNCCD is the preparation of joint venture programmes for sustainable management of transboundary natural resources and biological diversity, which would presumably apply to water resources.

CITES does not have any significant provisions related to water, aside from the protection of freshwater species listed under Appendixes I and II (e.g. freshwater turtles).

WHC sites might mandate the protection of riparian zones or forests upstream or adjacent to an area of outstanding value. In the Operation Guidelines, it requires that properties proposed under criterion VII should be of outstanding universal value and include areas that are essential for maintaining the beauty of the property. For example, a property whose scenic value depends on a waterfall, would meet the conditions of integrity if it includes adjacent catchments and downstream areas that are integrally linked to the maintenance of the aesthetic qualities of the property” (WHC Operational Guidelines, 2005). Many of the sites on the World Heritage List include significant water bodies and their catchment areas; for example the Three Parallel Rivers of Yunnan site includes the upper reaches of three of the great rivers of Asia (Yangtze, Mekong and Salween), an epicentre of Chinese biodiversity (UNESCO 2005b).

Ramsar, most applicable to this theme in the context of mangrove forests, requires that Parties consult with each other about implementing obligations arising from the Convention, especially in the case of a transboundary wetlands, or where a water system is shared by Contracting Parties. Recent decisions have provided additional guidance for identifying and designating under-represented wetland types as Wetlands of International Importance. This has included mangroves, and recognizes their importance in reducing siltation and providing shoreline stability (Ramsar COP8/11).

Although there is no specific reference to water in the original ITTA agreement, the Yokohama Action Plan includes the goal of implementing land use planning that provides sufficient representation through protected, reserved and conservation areas to ensure biodiversity conservation and watershed protection.

Major Gaps, Overlaps, Conflicts:

This criterion is addressed by Ramsar and all three Rio Conventions, particularly through the CBD and its expanded programme of work on Inland Water Biological Diversity. However, this is done in largely discretionary terms. While the WHC does provide more substantial protection for watersheds, this is only for select sites of outstanding universal value. With regards to the UNFCCC and the Kyoto Protocol, there is a lack of legally binding requirements that assure that plantations established under the Clean Development Mechanism will not disrupt water quality or the hydrology of the surrounding ecosystem.

Pollution Mitigation

In addition to sequestering carbon, forests have the ability to absorb air and water pollution and remediate soils upon which they grow, a protective function most beneficial in urban or peri-urban environments (McPherson 2000). Past a certain threshold, however, such pollution may be detrimental to forest health (as addressed under SFM Thematic Area 3).

One of the potential uses identified for genetically modified (GM) trees has been the remediation of contaminated soils and decreasing the effects of mercury vapours in the atmosphere caused by fossil fuels and medical waste burning. It is hoped that plots of GM trees may act as “phyto-remediating” agents, taking up ionic mercury or organic mercury and converting it into less toxic elemental mercury (Rugh et al. 1998). However, this has been associated with a number of risks that may pose threats to animal and human health as well as problems of cross-contamination of native plants (Cummins, 2002).

The CBD’s programme of work on biological diversity of inland water ecosystems identifies the development of pollution prevention strategies as a priority for parties. Although not mentioned explicitly, forests can play a role in the mitigation of the effects of water-borne pollution, if not in the reduction in the amount of pollution itself.

Major Gaps, Overlaps, Conflicts:

This protective function of forests is not mentioned by any of the legally binding instruments.

Table 13 SFM 5 – Protective Functions Forest: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Carbon cycle/ climate change	Primarily addressed through UNFCCC, Kyoto Protocol and the LULUCF guidance document; emphasis on forests as carbon sinks may (but will not necessarily) conflict with CBD and conservation of biodiversity and obtaining multiple benefits.
Desertification	Covered mostly by UNCCD, with some overlap with CBD and to a lesser extent, UNFCCC.
Soil	A gap, in terms of specific or directory provisions, although CBD's many provisions seeking to protect biodiversity and biological resources may provide an umbrella under which this criterion is protected. Overlap with UNCCD (addressing soil degradation) and UNFCCC (maintenance of soil as carbon sink).
Water	Mostly covered by discretionary language within CBD (Inland Waters POW), overlap with UNCCD, UNFCCC, ITTO (watershed protection in tropical forests), WHC (limited to outstanding sites) and Ramsar (limited to mangroves).
Pollution Mitigation	Gap; while pollution is mentioned as a threat to forests, the maintenance of forests as providers of air/water remediation services is not considered.

Non-legally binding global processes and agreements

Several of the IPF and IFF Pfa's address the issue of valuation of forest ecological services, including protective functions, with the objective of giving these greater consideration in decision making (IPF Pfa's para 89h, 104; IFF Pfa's para 107). Several Pfa's are targeted directly at combating desertification, urging countries to establish protected areas to safeguard forest and related ecosystems, their water supplies in areas affected by drought (IPF Pfa's, para 46c). Although the IPF and IFF final reports mention the role of forests in maintaining the carbon cycle and climate, they do not contain any Pfa's that address this.

During its multi-year program of work, the **UNFF** has produced general resolutions regarding sustainable forest management that may contribute to addressing the protective functions of forests; however, this topic has yet to receive much specific attention. The closest reference comes from the Ministerial Declaration made to the WSSD at UNFF-2, calling for the advancement of SFM in order to improve access to safe drinking water, among other development and poverty reduction goals (UNFF2 Resolution 2/2, 15a). The issue of payment for environmental services is a matter of ongoing debate within this forum. However, at UNFF-6, a resolution regarding means of implementation encourages "the development of mechanisms...for attributing proper value, as appropriate, to the benefits derived from goods and services provided by forests..." (UNFF6 Decision III, 5i).

Major Gaps, Overlaps, Conflicts:

The IPF and IFF Pfa's go a great deal further than the LBIs towards addressing the protective functions of forests and acknowledging their value, and recent developments within UNFF indicate that consensus behind this issue is gaining momentum.

Regional instruments

Non-European Temperate and Boreal Forests

Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (Montreal Process and C&I) gives consideration to the protective values of forest primarily through Criterion 4 (Soil and Water Resources) and 5 (Carbon Cycle). Indicators relevant to the former include the amount of forest land with significant soil erosion or damage (including consideration of diminished properties or compaction resulting from human activities), and the amount that is primarily managed for protective functions (Criterion 4, Indicators (a), (b), (d), (e)). In particular, the Montreal Process contains detailed indicators relevant to the protection of water (Criterion 4, Indicators (f), (g)) and the ability of forests to control flooding (Criterion 4, Indicators (b), (c)).

As is the case with much of the Montreal Process, the emphasis is to examine where these levels are in relation to the historic range of variability, and to determine whether there has been significant

variation in relation to this, suggesting that a “baseline” has been determined to which present-day conditions can be compared. However, there is no direction as to when in “history” this baseline should be anchored.

The contribution of forests to the carbon cycle is given a high profile under its own Criterion; many of the instruments have highlighted this function in an attempt to capture some of the political momentum behind the issue of climate change. The indicators call for the measurement of total forest ecosystem biomass and carbon pool, including a breakdown by forest type, age class, successional stage “as appropriate” and the contribution of forest ecosystems to the net carbon budget (Criterion 5, Indicators (a), (b)). Notably, the C&I specifically mentions the contribution of forest products to the global carbon budget (Criterion 5, Indicators (a)-(c)), presumably to highlight the role that this should play with regards to climate change commitments, even though it is unclear whether forest products will count as “sinks” under Kyoto. There is also general consideration of “non-consumptive-use forest values” under Criterion 6.4 (b) that could encapsulate many of these protective functions and ecological services.

Europe

Ministerial Conference on the Protection of Forests in Europe (MCPFE) considers “Protected and Protective Forests” together, under the same heading (Resolution V4, Annex 2), and forests require explicit designation as such, and long term commitment (>20 years), in order to be officially recognized by the MCPFE. Forests are divided into three “Classes”, one of which is “Protective Functions”; these are forests where management is directed at protecting soil, water quality (or quantity), forest ecosystem functions, as well as infrastructure (not considered in other instruments).

MCPFE member states have committed to mitigating climate change according to the UNFCCC, and to research the links between climate change and forest ecosystems, including feedback processes (Resolution H4, Part 1). They have also passed a resolution to increase the use of wood and other biomass as an alternative to fossil fuel consumption (Resolution V5, para 5). While promoting the use of forests as carbon sinks, the resolution also pays regard to mitigating potential negative effects of large scale afforestation efforts on biodiversity and other values (Resolution V5, para 6(b)) .

As with the Montreal C&I, the **Pan-European Criteria and Indicators for Sustainable Forest Management** contains many quantitative indicators concerning the protection of soil and water (addressed under its own Criterion 5), as well as the maintenance of the forest’s role in the carbon cycle (part of Criterion 1). In addition, it looks at the legal and institutional frameworks that protect these functions, and the capacity to implement these.

Pan-European Operational Level Guidelines applies these national level C&I at the level of forest management planning and practices, with attention paid to the maintenance of water and soil resources (Criterion 5 and Indicator 1.1(a)), and both the direct and indirect impacts that forest management has on these (Indicator 1.2a). Notable aspects include special consideration of particularly sensitive soils, requiring that deep soil tillage and the use of heavy machinery be avoided (Indicator 5.2 (a)), and the requirement that forests serving “protective functions” be mapped accordingly and registered as such (Indicator 5.1 (b)). The contribution of forests to the global carbon cycle figures prominently within the first criterion of this instrument.

The Amazon

The **Amazon Cooperation Treaty (ACT)**, primarily concerned with economic development, has little content pertaining to protective functions; the closest it comes is the mention of “rational utilization of hydro resources” (Article V). However, the **Amazon Cooperation Treaty Organization’s (ACTO) Strategic Plan**, released in 2004, goes much further in this regard, with consideration of the importance of forest cover in protecting soil and water resources, particularly the prevention of erosion and siltation (ACTO, p.18). With regards to climate change, it mentions that the Amazon has underused potential to benefit from projects that could be developed under the Clean Development Mechanism and other provisions contained within the Kyoto Protocol (p.14).

The **Tarapoto Process** goes further than the treaty efforts to address protective functions of the Amazon forest, in the form of Criteria and Indicators. The most notable aspect of this process, as mentioned in Theme 2, is that in addition to the National and Management Unit level criteria contained by other C&I processes, it also contains a global-level criterion that draws attention to the services that the Amazon forest provides for the whole world, and mentions the conservation of biological diversity as one of these services (Criterion 12). “Protective” services include: contribution to the global carbon balance, water cycle and even the global radiation balance and regulation. As with the Montreal C+I, it considers the “historic range of variation” as a benchmark; here this is used in reference to the

percentage of the forest that is flooded (Indicator 5.3). However, in both cases this concept remains poorly defined.

Central America

The Lepatrique Process contains several indicators relevant to the protective functions of forest; National Criterion 4 looks expressly at the contribution of forest ecosystems to environmental services, with special regard to watershed management. A similar indicator is present at the regional level (Regional Indicator 2.13). The Lepatrique Process also considers the role of forests in the carbon cycle, and requires reporting on the aggregate value of carbon fixation (Regional Indicators 2.6, 4.5, National Indicators 4.6, 8.6).

Southeast Asia

ASEAN acknowledges the importance of designating areas for the maintenance of soil quality, and notably the importance of safeguarding the processes of organic decomposition (Articles 7, 6.2 (e)), and also includes strong provisions for the protection of water resources for supporting fauna and flora (Article 8), and not just for human consumption, as is the case with many instruments examined here. Of interest is that with regards to pollution mitigation, the ASEAN Agreement mentions the “self-purificating aptitude of the recipient natural environment”, a protective function not mentioned by other regional or legally binding agreement, which focus on the negative impacts that pollution have on forests.

Africa

The South African Development Community (SADC) Protocol on Forestry acknowledges the protective functions of forests in its preamble, and to a lesser extent in its substantive provisions, with an emphasis on considering transboundary impacts. It mentions the maintenance of “essential ecological functions” of forest ecosystems as one of the guiding principles of the agreement (Article 4.5), and calls for parties to address protective functions as part of SFM C&I⁴⁵ at the National level (Article 8.4(e)). While SADC does require Parties to co-operate in addressing climate change as an “issue of common concern” (Article 3.2), noticeably absent is any mention of the contribution of forests to the carbon cycle.

A substantial component of the **ATO/ITTO C+I** document is aimed at the protection of soil and water resources during and after harvesting operations (Criterion 3.5), including the reclamation of secondary roads and skid trails with vegetation cover (Sub-indicator 3.5.2.3), and the rehabilitation of severely eroded areas (Indicator 3.5.3). It also acknowledges the potential value of the protective function of carbon storage (Indicator 1.1.13).

Although **Central America’s 1993 Regional Convention for the Management and Conservation of the Natural Forest Ecosystems and the Development of Forest Plantations (Central American Forest Convention)** does not mention “protective functions” of forest specifically, erosion is mentioned as a central concern in the preamble, and it does contain general provisions for the maintenance of vital ecological processes. Notably, it encourages that soils should be “used to their best aptitude”(Article 3b), and calls for environmental parameters to be incorporated into estimations of economic growth, so that the value and depreciation of forest resources and soils are accounted for (Article 4e). This Convention has also led to the creation of a strategy to create a regional market for the certification of carbon sequestration in the context of UNFCCC (Tarasofsky 1999b: 169). Such considerations could contribute to addressing the identified “gap” of the undervaluation of the protective (and other non-consumptive) values of forests.

International Tropical Timber Organization C&I

The ITTO C&I give a high profile to the ability of forests to provide soil and water protection (Criterion 6), examining the area of forest that is managed solely for this purpose, as well as practices within production forests. They take a unique approach in scrutinizing the engineering behind forest operations (6.4), including measures to prevent erosion during harvesting operations. Carbon storage is addressed as a “productive function” of forests, and interestingly, both above-ground and soil carbon is to be estimated.

⁴⁵ These follow the same 7 SFM themes that the CPF has adopted and that this report is structured according to.

Major Gaps, Overlaps, Conflicts:

The regional instruments go a long way to addressing the gaps identified in the legally binding instruments with regards to the protective functions of forests, particularly in terms of soil and water protection. The Pan European Operational Guidelines require that forests providing protective functions be explicitly designated as such on relevant maps, and that machines not be permitted on sensitive soils. ASEAN is the only agreement or process to acknowledge the pollution mitigation capacity of forests.

Although it is a small component of the Central American Convention, the call for environmental parameters to be incorporated into estimations of economic growth (accounting for the value and depreciation of forest resources and soils) is a meaningful step towards acknowledging the value of natural systems and their ecological services.

The C&I processes examined here are primarily concerned with the measurement of variables associated with protective functions, and do not contain specific requirements that must be met. They do, however, contain some interesting ideas, such as using the historic range of water flow as a baseline with which to compare current levels (Tarapoto and Montreal Processes), and explicit recognition of soil carbon storage (ITTO C&I).

Non-governmental Approaches⁴⁶

The **Forest Stewardship Council** (FSC) Principles and Criteria (P&C) contain several provisions that address the protective functions of forests, mostly in terms of water resources. They require that forest management operations recognize, maintain, and/or enhance the value of forest services and resources, mentioning watersheds specifically (Criterion 5.5). Furthermore, guidelines for erosion control and the protection of water resources must be prepared and implemented (Criterion 6.5). FSC also contains detailed monitoring requirements regarding all aspects of forest management (Principle 8), and in addition, is audited by a third-party certifying body accredited by FSC.

Major Gaps, Overlaps, Conflicts:

FSC's requirements address many of the same gaps that the regional processes and agreements do, particularly with regards to the protection of water, soil and ecological functions.

⁴⁶ As discussed in the methodology section of this report, this report's thematic chapters compare approaches to substantive themes of sustainable forestry. The FSC is the only forest certification system that has developed global standards addressing substantive issues and hence is the only system with decisions amenable to analysis in this chapter.

SFM Thematic Element VI: Socio-economic functions of forests

The interdependence of environmental health and socio-economic welfare are central themes of “sustainability”. It is currently well understood that socio-economic problems such as poverty, illegal logging, conflicting land tenure policies, and poorly functioning markets are primary drivers of deforestation and forest degradation worldwide. Effective global forest governance therefore requires coordinated attention to the socio-economic functions of forests.

There has been an increasing global effort to link nature conservation and human development priorities. The 2000 Millennium Summit, hosted by Secretary-General Kofi Annan in advance of the General Assembly session, was pivotal in this regard. The Summit established a series of Millennium Development Goals, consisting of concrete targets for reducing poverty, malnutrition, disease, illiteracy, and social inequities, all of which are to be achieved hand in hand with halting environmental degradation. The General Assembly called upon all inter-governmental processes, instruments and organizations to support the Millennium Development Goals (MDGs). Many of the forest-related instruments under analysis in this report have responded with pledges of commitment to the MDGs.

Despite agreement on the importance of socio-economic welfare, however, there is tremendous debate on how best to promote it. As will be clear in the following section, the forest-related instruments vary considerably in their strategies and priorities.

Criteria

Eight criteria have been selected for analysis under thematic area six. The first of these is “general socio-economic benefit” which covers decisions relating to social and economic benefit in a broad, unspecified sense. The second criterion, “Economic development”, refers to decisions targeted at economic growth, including industrial wood production, wood trade, and employment. “Local benefit” covers those decisions aimed specifically at the welfare of local populations living in or near the forest resource. “Resource rights” addresses land tenure and natural resource use rights. “Traditional knowledge and use” addresses decisions relating to traditional and/or indigenous knowledge and use of natural resources. The three remaining criteria are “public participation”, “non-consumptive/recreational use”, and “health and well-being”. The last criterion “health and well-being” includes decisions aimed expressly at poverty reduction, as well as general health care.

Legally Binding Forest-related Global Instruments

General socio-economic benefit

Seven out of the eight global legal instruments addressed in this report cover socio-economic issues in a significant way. This is reflected, firstly, in the inclusion of socio-economic goals in the statement of objectives in the original convention texts. An analysis of convention decisions, however, reveals considerable variation in the nature of these socio-economic priorities and concerns.

The CBD’s primary socio-economic contribution is focused on the equitable sharing of benefits from biodiversity. The CBD’s core objectives include the “sustainable use” of biodiversity “and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources ...” (Article 1). In general the CBD places a strong emphasis on local rights, local benefit and public participation. This emphasis is evident, for example, in the advisory “Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity”(COP7, Decision 12, Annex II).

The UNFCCC fills a critical niche in global governance, with its focus on understanding and mitigating the socio-economic effects of climate change. Social objectives included in the original UNFCCC statement are “...to ensure that food production is not threatened {by global warming} and to enable economic development to proceed in a sustainable manner (Article 2).” The Subsidiary Body on Scientific and Technical Advice (SBSTA) is responsible for compiling and disseminating knowledge regarding climate change impacts on human populations and mitigation measures. In addition, country Parties are expected to include socio-economic analyses in their country reports to the COP.

The UNCCD places perhaps the strongest and broadest emphasis on issues of socio-economic welfare, highlighting in particular the role of local well being on preventing and mitigating desertification and drought. The UNCCD’s objectives include “long-term integrated strategies that focus...on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level.” (Article 2, para. 2)

Consistent with its socio-economic priorities, the UNCCD’s decision-making structure is relatively decentralized. The Convention’s “regional annexes” provide more detailed direction based on regional priorities. However the primary focus is on the national level, whereby country Parties are to establish

their own socio-economic priorities through Action Programmes, with active participation of diverse interests from the national to the local level.

CITES includes very few decisions addressing issues of general socio-economic benefit. However, illustrating awareness of and cooperation with CBD, COP 13 in 2004 includes a decision urging country Parties to "make use of" the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity first developed under the CBD (CITES/COP13, Resolution 13.2).

The World Heritage Convention is focused on the designation and protection of natural and cultural sites of "outstanding interest" (WHC, preamble). The criteria for choosing sites and the process for their world listing has undergone considerable evolution over time. A study commissioned by the WHC in the 1990s revealed that Europe, historic towns and religious monuments, Christianity, historical periods and 'elitist' architecture (in relation to vernacular) were all overrepresented on the World Heritage List (WHC 1994; p. 3). In response, the WHC has focused effort on increasing the number of developing country Parties to the convention, and re-written selection criteria to place greater emphasis on living cultures. A new set of Operational Guidelines outlining the updated selection process was released in 2005 (UNESCO 2005a). Forests of cultural significance are currently included on the WHC list, although as yet they make up a very small proportion of sites.

The Ramsar Convention introduces the concept of "wise use" in its original convention text (Article 2, para. 6). COP 4 endorsed a non-binding Recommendation 4.10, providing "Guidelines for the implementation of the wise use concept". COP 5 introduced the "Kushiro Statement", which claims that, "...The sustainability of wetlands is crucial to human life." Ramsar's "Guidelines for the implementation of the wise use concept" show the benefits and values of wetlands for 'sediment and erosion control; flood control; maintenance of water quality and abatement of pollution; maintenance of surface and underground water supply; support for fisheries, grazing, and agriculture; outdoor recreation and education for human society; and contribution to climatic stability'. COP 9 provides an updated definition of the wise use of wetlands as, "the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development." The definition refers to CBD and the Brundtland Commission to inform interpretation of "ecosystem approach" and "sustainable use" (Resolution 9.1, Annex A).

The ITTO fills an important niche as the primary institution focusing on industrial wood production and global trade in forest products. This includes support of research and development aimed at both monitoring and improving the socio-economic impacts of tropical timber management. The ITTO's Objective 2000 establishes a target of "achieving exports of tropical timber and timber products from sustainably managed sources by the year 2000 (ITTO 2002).

The primary focus of the WTA is on economic development through the reduction of barriers to global trade. The WTA preamble outlines several socio-economic goals related to trade: "relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income ... {and} contributing to these objectives by ... the substantial reduction of tariffs and other barriers to trade ..." (WTA, preamble). The WTA allows exceptions to the general goal of reducing trade barriers where necessary to protect human, animal and plant "health" (GATT, Article 20; GATS, Article 14). The determination of what trade barriers might be justified to protect human, animal and plant health, however, is still a matter of considerable debate.

Major Gaps, Overlaps, Conflicts:

The provision and/or protection of socio-economic benefits is articulated as a general goal of many of the existing legally binding global instruments under analysis. The instruments vary greatly, however, in their framing of the appropriate means for achieving these goals. In the case of the trade-oriented instruments, the promotion of world trade is stated as the primary vehicle for maximizing socio-economic benefits. The CBD, UNCCD, and Ramsar, in contrast, place greater emphasis on local welfare and the protection of local and/or indigenous rights. The WHC plays an important role in providing protection for sites of outstanding "cultural" value. However the exclusive focus on "outstanding" sites limits its coverage. Until recently, there has been an imbalanced emphasis on sites in the developed world.

As will become clear in the following analysis of more specific socio-economic criteria, the distribution of forest-related governance among multiple, issue-specific instruments with different geographic distribution and different overarching priorities contributes to a correspondingly piecemeal approach to socio-economic issues in forestry.

Economic development

This criterion covers decisions relating to economic development in general, including the issue of the economic viability of forest management operations, forest products trade and forest-related employment. Decisions relating specifically to local economic development are discussed under the following section of “local benefit”, reflecting a common distinction made in sustainable forest management Criteria and Indicator processes (Holvoet and Muys 2004).

The CBD makes little mention of the economic viability of natural resource management. In regards to trade, the CBD’s “Addis Ababa Principles of Sustainable Use” call for the removal of trade distortions and perverse incentives and state that international and national policies should take into account “markets and market forces affecting values and use”(COP 7, Decision 12, Annex II).

Similarly, the UNCCD convention text states that “Parties shall...give due attention, within the relevant international and regional bodies, to the situation of affected developing country Parties with regard to international trade, marketing and debt with a view to establishing an enabling international economic environment conducive to sustainable development”. Both the CBD and UNCCD statements leave ample room for interpretation.

The ITTA is the only agreement discussed which directly addresses the issue of the economic viability of natural resource management and production. Broadly speaking, economic objectives listed in Article 1 of the 1994 ITTA are to promote, expand and diversify international trade; promote value-added processing; increase efficiencies and improve market intelligence. This is to be done “...with a view to promoting industrialization and thereby increasing employment opportunities and export earnings” (Article 1(h)). The ITTO has established committees to address these objectives, including a “Committee on Economic Information and Market Intelligence” and a “Committee on Forest Industry”.

In terms of the relative attention that the ITTO has given expressly to trade and industrial development, a study released in 2001 revealed that 19.8% of the total number of ITTO funded projects and pre-projects, amounting to 10.8% of the project funds spent, were directly related to these topic areas (Poore and Chiew 2000). These ranged from general studies of macro-economic trends and economic incentive structures to workshops and conferences, to planning, research, and information management. It also included a number of pilot projects on economic strategies, production processes and utilization of lesser-known forest species in individual producer countries.

The ITTO has also made considerable investments in researching forest certification as a market-based tool for improving the environmental and social performance, and hence reputation, of tropical timber producers. Improved reputation, in turn, will presumably lead to increased international demand for tropical forest products. The focus of the ITTO’s forest certification research has included “step-wise” certification and legal source verification initiatives aimed at building developing country capacity. ITTA 2006 elevates forest certification to the level of a new objective and priority for future ITTO efforts (Article 1 (o)).

ITTA 2006 also introduces several other new objectives that expand the breadth of its priorities related to economic development. These include mandates to address poverty alleviation (Article 1 (c)), law enforcement and governance (Article 1 (n)), and trade in non-timber forest products and environmental services (Article 1 (q)).

The WTO trade and environment decisions are all central to forest-related economic development. The WTO plays a pivotal role in world trade by requiring party members to remove tariff and non-tariff barriers to trade. As already mentioned, however, restrictions are allowed on the trade of products or services that pose threats to human, plant and animal life and health (GATT, Article 20; GATS, Article 14).

Country Parties are not permitted to impose import restrictions based on the environmental or social impacts of production outside of their own borders, unless it is proven that the method of production has an adverse impact on life and health within the importing country’s borders as well. As already stated, the definition of harm to life and health has yet to be well elaborated resulting in limited application of this exception. It could be further argued that failing to provide market differentiation based on production standards by default gives a competitive advantage to those countries with lax regulations (due to their presumably lower production costs).

The WTO’s policies of relevance to forest certification are similarly under-developed. Forest certification is a system designed to overcome market “blindness” to the environmental and social costs of production. It could be argued that certification’s differentiation of forest products on the basis of production standards constitutes an unlawful barrier to trade. However, it could also be argued that

forest certification is a non-legal, market-based instrument and hence does not involve trade discrimination on the part of WTO member governments.

Major Gaps, Overlaps, Conflicts:

The ITTA is the only agreement that focuses on the economic viability of natural resource management. The ITTA addresses economic viability primarily through information-sharing and project-specific support. Since the ITTA only covers forest management in tropical regions, however, there is a gap in addressing worldwide normative standards for commercial wood products trade. This gap is all the more notable if one considers that economic development remains a major challenge in many temperate and boreal forests.

The ITTO has provided support to the development of forest certification and other source verification initiatives. There is uncertainty under WTO rules whether or not source verification initiatives could be considered a barrier to trade.

Local benefit

The criterion of "local benefit" is here defined as the sharing of benefits derived from forest management with populations and workers living in and/or near the forest and dependent on the forest resource. This criterion is a common element of Criteria and Indicator processes worldwide (Holvoet and Muys 2004).

The central decision of the CBD with respect to local benefit, is Article 8(j) of the original convention. Article 8(j) states that,

"Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices."
(Article 8(j), CBD)

Over the CBD's evolution, with the guidance of the ad hoc group on traditional knowledge, the Convention has further elaborated upon Article 8(j) to encompass a broader agenda, albeit with advisory rather than directory text. Recent CBD guidance documents include text on resource rights, traditional knowledge and use and local participation. The CBD's emphasis remains, however, on protecting "traditional", and generally non-industrial natural resource uses of genetic resources.

The UNCCD places strong emphasis on local economic development, including the development of "alternative livelihoods". This emphasis is embodied in Article 10 of the convention, which specifies that local development needs must be addressed within country party National Action Programmes. The Programmes themselves, as already mentioned, are to be developed in a participatory manner, with involvement at the local community level.

CITES and the WHC do not address local benefit per se. The Ramsar Convention, however, has placed increasing attention on the importance of wetlands for local livelihoods. COP 5 resolution 5.6 states that "Wetland management should be adapted to local circumstances, sensitive to local cultures and respectful of traditional uses." This advisory text is followed up by COP 7, Article 7.8 "Guidelines for establishing and strengthening local communities' and indigenous people's participation in the management of wetlands". COP 8 provides further rationale and guiding principles for local involvement in Resolution 8.36 "Participatory Environmental Management" and Resolution 8.19 "Guiding principles for taking into account the cultural values of wetlands for the effective management of sites."

Within ITTA 1994, local benefit is addressed in the context of promoting forest industry. In the listing of objectives, Article 1(j) calls for the industrialization of forestry "with due regard for the interests of local communities dependent on forest resources" (ITTA, Article 1(j)). The Yokohama Action Plan further elaborates upon this, with a call to "create and publicize industrial demonstration projects on efficient and socially-sound community-based forest industries" (ITTO 2002; Section 3.3, Goal 2, Action 8). The ITTO has subsequently supported research and development projects relating to community-based forest industry and community participation (ITTO 2002; Poore and Chiew 2000).

ITTA 2006 introduces expanded priorities for local benefit. Article 1 (c) expressly includes a goal of poverty alleviation and Article 1 (r) calls for recognizing the "role of forest-dependent indigenous and local communities" in achieving sustainable forest management.

Local benefit is not a focus of the WTA.

Major Gaps, Overlaps, Conflicts:

There is debatably an inherent tension between global market development and local benefit capture. None of the instruments have focused attention on addressing conflicts between priorities. Instead, the two priorities are established side by side, with trade instruments emphasizing global markets and the CBD and Ramsar stressing local benefit.

Decisions relating to local benefit emphasize traditional uses; little attention is paid to local employment in industrial activities, such as industrial wood production. Given that many rural communities depend on both wage labor (including migratory labor) and traditional livelihoods there is need for better communication and integration between these two economic venues.

There are few decisions that address the management of forests for subsistence needs, including fuelwood. Given that fuelwood accounts for the majority of wood product consumption in a large number of developing countries, this constitutes a major gap among the instruments.

Another major gap, is a lack of attention to worker rights and benefits. While the International Labour Organization carries responsibilities in this regard, sustainable natural resource management still requires recognition of, and balanced attention to, issues relating to workers' rights and benefits.

Resource rights

The CBD and WTA are the only instruments covered in this section that directly address forest-related resource rights. Their relevant coverage, furthermore, is primarily focused on intellectual property rights relating to genetic resources.

The objectives of the CBD as outlined in the original convention include the "sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access". The CBD has communicated interest in collaborating with the WTO, and more specifically the WTO's Committee on Trade and Environment, in order to better harmonize the efforts of both instruments (CBD 1996a; CBD 1996b). Many issues, however, remain unresolved.

The CBD has adopted a number of guidance documents relating to resource rights. A central document is the "Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization", adopted in 2002. The CBD "Biodiversity Strategy" includes goals and targets relating to resource rights protections. The Addis Ababa Principles on the Sustainable Use of Biodiversity, adopted in COP 7 in 2004, provide further guidance on the issue. COP 7 also established an "Action Plan for Capacity Building on Access and Benefit Sharing and a Programme of Work on Technology Transfer."

The UNCCD emphasizes protection and benefit sharing of traditional knowledge in its original Convention text. Although this report does not include a detailed discussion of the regional annexes under the UNCCD, the African regional annex is worthy of note as the only directory text in the legally binding global instruments that specifically refers to resource and land tenure as a whole, requiring that country Parties "aim...to sustain and strengthen reforms currently in progress toward greater decentralization and resource tenure" (Annex I, Article 4.2(b)), and that national action programmes adjust "as appropriate, the institutional and regulatory framework of natural resource management to provide security of land tenure for local populations" (Annex I, Article 8.3(c)iii.).

Ramsar Resolution 9.21 states that wetlands may be listed as Wetlands of International Importance based on their cultural values, including as wetlands whose character depends on interactions with local communities or indigenous people. It should be noted, however, that the emphasis of this Resolution is on maintaining the ecological character of the wetland, rather than protecting local resource rights for their own sake.

The WTO TRIPS (Trade-related aspects of intellectual property rights) agreement establishes a global rights framework regarding the use of knowledge and innovation. While the precise scope of "knowledge" qualifying as "intellectual property rights" (IPR) subject to TRIPS protection is not entirely clear, in general protection has been limited to innovations involving genetic manipulation. Knowledge about naturally occurring phenomena, whether scientific or traditional knowledge, has generally not been subject to patent or other legal forms of protection (CBD 1996a).

Major Gaps, Overlaps, Conflicts:

In general, the primary resource rights issues covered in the global LBI are intellectual property rights and benefit sharing in regards to genetic resources. These issues are embodied within CBD text.

There are potential conflicts between CBD efforts at promoting local benefit sharing from genetic resources and TRIPs definitions of intellectual property rights. WTO interpretations of intellectual property rights support the protection of technological innovation for the purposes of genetic manipulation. Traditional knowledge about “naturally” occurring phenomena generally has not been subject to patent or other kinds of protection (CBD 1996a).

Other resource rights issues—such as the definition and distribution of broader forest and land tenure rights-- have received relatively little coverage. Unresolved and/or conflicting forest tenure and land use policies are central obstacles to sustainable forest management worldwide, serving as central drivers of deforestation, forest degradation and rural poverty (Geist and Lambin 2002; Humphreys forthcoming; Hyde, Amacher, and Magrath 1996; Kummer and Turner 1994; Roper and Roberts 1999; Walker 2004; etc.).

Traditional knowledge and use

The CBD, UNCCD, and to a lesser extent the Ramsar Convention, include numerous decisions relating to traditional knowledge and use. Both the CBD and UNCCD frequently reiterate the need for respect of traditional knowledge and its equal status with scientific and technical knowledge and know-how. Both have established ad hoc groups addressing these issues.

Within the CBD, the topic of traditional knowledge and use is often raised in tandem with resource rights issues, and is addressed in the Biodiversity Strategy, Bonn Guidelines, Addis Ababa Principles, and various Programmes of Action. In addition COP 7 in 2004 produced the “Akwé: Kon Voluntary Guidelines on Impact Assessments Affecting Traditional Knowledge”, with a stated purpose to “take into account traditional knowledge, innovations and practices of indigenous and local communities as part of environmental, social and cultural impact-assessment processes, with due regard to the ownership of and the need for the protection and safeguarding of traditional knowledge, innovations and practices” (COP 7, Decision 16, F).

UNCCD country Parties are required to include strategies for promoting and protecting traditional knowledge and use within their National Action Programmes (Article 10). In addition, the UNCCD has enacted decisions to promote information sharing, research and capacity building regarding traditional knowledge and use (Articles 16, 17, 18).

The protection of traditional knowledge and use, as it relates to cultural survival, is a central goal of the WHC, as iterated in Article 6 of that Convention: “State Parties to this convention recognize that cultural and natural heritage of universal value constitutes a world heritage for whose protection it is the duty of the international community as a whole.” Article 5 directs parties,

“To ensure that effective and active measures are taken for the protection, conservation and preservation of the cultural and natural heritage...each State Party shall endeavour to: a) adopt a general policy to integrate protection of heritage into comprehensive planning programmes; b) set up services for the protection, conservation and presentation of natural and cultural heritage; c) develop scientific and technical studies and set up operating methods to make the State capable of counteracting the dangers that threaten its natural and cultural heritage; d) take the appropriate legal, scientific, technical, administrative and financial measures necessary for identification and protection of heritage; e) to foster the development of national or regional training centers to protect heritage”.

The Ramsar Convention, in its Resolution 7.8 adopted in 1999, endorsed the “Guidelines for establishing and strengthening local communities’ and indigenous people’s participation in the management of wetlands”. These guidelines emphasize the importance of involving local and indigenous people particularly where livelihoods depend on the resource and where traditional rights exist. The guidelines call for a participatory approach and provide a checklist of indicators for measuring local and indigenous involvement. In addition, Resolution 8.19 provides “Guiding principles for taking into account the cultural values of wetlands for the effective management of sites”. These guidelines emphasize cultural learning, sensitivity, and the importance of traditional knowledge and use. Most recently, Ramsar Resolution 9.21 states that wetlands may be listed as Wetlands of International Importance based on their cultural values, including as models of traditional knowledge and use, for their exceptional cultural history, as wetlands whose character depends on interactions with local communities or indigenous people, and for their importance as sacred sites.

Major Gaps, Overlaps, Conflicts:

In sum, a number of forest-related Conventions have put considerable attention into the issue of traditional knowledge and use, focusing on benefit-sharing and advisory guidelines. However, as

discussed under the criterion “resource rights”, none of these Conventions address the fundamental issue of indigenous land and resource tenure—an issue of central importance to many indigenous groups worldwide.

In regards to indigenous tenures, another instrument, the 1989 Convention Concerning Indigenous and Tribal Peoples in Independent Countries (ILO Convention 169), is worthy of note. This Convention did not meet our selection Criteria for detailed analysis due to its relatively small number of ratifying Parties. Nevertheless this Convention is important because it includes strong language identifying the nature of indigenous rights to land and resources, as well as outlining commitments to protect these rights. This Convention holds considerable potential to fill in the gaps of existing instruments, should the number of Parties increase over the coming years. At the very least, it serves as a model and reference for a holistic and comprehensive approach to the treatment of indigenous rights.

Public participation

This criterion refers to general commitments regarding the inclusiveness of decision-making processes. The “public” may include traditional and local interests, as well as non-local stakeholders. The emphasis in this analysis is on the public right to participate in decisions, rather than on decisions promoting public education or awareness for the purposes of implementing convention objectives. Public education and awareness-raising more closely resemble policy methods rather than socio-economic objectives in their own right.

Most instruments include some decisions relating to public involvement in the implementation of their objectives. For example, the CBD’s advisory Addis Ababa Principles on the Sustainable Use of Biodiversity encourage a participatory approach to the management and governance of biodiversity use, and promote education and public awareness programs.

The UNFCCC convention text includes a general call for public access to information, participation, and training on climate change (Article 6(a)ii.). Likewise, in the COP 8 advisory New Delhi Work Programme it was stated that “it is also useful to facilitate public access to information on climate change and its effects, and to promote public participation in addressing climate change and its effects and in developing adequate responses” (COP 8, Decision 11, Annex).

The UNCCD convention text includes a number of statements obligating its member Parties to involve the public in decision-making. Article 3 includes the “principle” that “decisions on the design and implementation of programs to combat desert/drought are taken with the participation of populations and local communities and that an enabling environment is created at higher levels to facilitate action at national and local levels” (Article 3(a)). Likewise Article 5 states that Parties must “promote awareness and facilitate the participation of local populations, particularly women and youth...in efforts to combat desertification and mitigate the effects of drought...”(Article 5(b)). In addition, Article 10 on National Action Programmes states that Parties “provide for effective participation at the local, national and regional levels of non-governmental organizations and local populations, both women and men, particularly resource users, including farmers and pastoralists and their representative organizations, in policy planning, decision-making, and implementation and review of national action programmes” (Article 10.2(f)). Requirements for public participation also extend to national reporting requirements (COP 1, Decision 11.10(a)), the operation of the Committee on Science and Technology (COP 1, Decision 15.2(c)), the Medium-term Strategy for the Secretariat (COP 3, Decision 2 Annex II B. 13), and the review of the implementation of the Convention (COP 5, Decision 1.10).

The ITTO’s non-binding Yokohama Action Plan (YAP) includes a “Crosscutting Action” addressing public participation, that reads:

“Encourage and increase the involvement of non-government stakeholders, including industry trade associations, environmental organizations and indigenous groups, in the activities of the Organization with a view to promoting transparency, dialogue and cooperation in furthering ITTO’s objectives” (YAP, Crosscutting Action 2(h)).

The WTO does not allow attendance by non-governmental organizations at its global meetings, nor has it given direction to Parties to incorporate public participation into the development of trade policies at the national level.

Major Gaps, Overlaps, Conflicts:

The decision-making structure of the instruments themselves varies considerably in levels of inclusiveness. The UNCCD places the greatest emphasis on participatory approaches at international, regional, national and local levels. On the other side of the spectrum, the WTO does not allow

attendance by non-governmental organizations at its global meetings, nor has it given direction to Parties to incorporate public participation into the development of trade policies at the national level.

The CBD, the UNCCD and the Ramsar Conventions have addressed this Criterion in unique and complementary ways. The CBD and Ramsar Conventions have collaborated on guidance documents for public participation. The UNCCD has focused on the structural incorporation of participation in the Convention itself as well as in National Programme commitments.

Questions remain regarding the degree to which Conventions have implemented their generalized commitments to public participation. The UNCCD, in particular, has articulated the highest level of commitment for public involvement yet to date has suffered from a serious lack of funding.

Non-consumptive/recreational use

This criterion encompasses non-consumptive and recreational uses of forests other than traditional uses and practices central to cultural survival.

The CBD and Ramsar are the only global LBIs assessed that directly address the issue of tourism and its local impacts. The CBD COP 7 in 2004 adopted a detailed set of "Guidelines on Biodiversity and Tourism" (Decision VII/14, page 231; Annex, page 232). The three "main elements" of the CBD's guidelines are guidance on the preparation of a management framework, a notification process regarding management, and public education, capacity-building and awareness raising on tourism and biodiversity (Ibid, page 233).

The Ramsar principle of wise use includes tourism and recreation in its original convention text, and the principle has been further elaborated in the later wise use guidance documents listed above under the criterion "local benefit".

Major Gaps, Overlaps, Conflicts:

This issue is fairly well covered in the CBD, and also addressed in Ramsar in relation to wetlands. The limited number of instruments involved on the one hand avoids potential overlap and conflict. On the other, it means that the decisions made reflect consensus only among the Parties and particular participants within the CBD and Ramsar.

Health and well-being

This Criterion covers the issues of health, safety (including worker safety), food security, poverty alleviation and quality of life.

A number of the instruments have formally voiced their support for the 2000 Millennium Summit Millennium Development Goals.

The UNCCD provides by far the most focused attention to general issues of health and well-being. Among its efforts in this regard, is the requirement that National Action Programmes address a diversity of health and well-being issues, including food security, food storage, marketing, early warning systems relating to drought food production, water supply, sustainable agriculture, and strategies for poverty reduction (Article 10).

ITTA 2006 introduces an objective of poverty alleviation (Article 1 (c)).

As already discussed, the WTO allows trade restrictions as necessary to protect human, animal and plant life and health (GATT, Article 20; GATS, Article 14).

Major Gaps, Overlaps, Conflicts:

The UNCCD provides the most attention to linkage between natural resource management and general health and well-being. The Convention's geographic scope, however, is limited to areas subject to desertification and drought. This leaves the issue largely unaddressed in any holistic manner in the majority of forested areas, including a large portion of developing country forest.

The health and safety of workers is not addressed in the directory decisions or adopted goals of any of the above instruments. This is an issue of particular importance to forestry, a sector known for its high rates of injury and death among forest workers (including loggers and log processors), especially in developing countries.

Table 14 Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

General Socio-economic Benefit	All instruments focus on issues of relevance to the socio-economic functions of forests. However, coverage is piecemeal and potentially conflicting. None of the instruments are designed to address socio-economic issues in a comprehensive manner.
Economic Development	The ITTA is the only global legally binding instrument that directly addresses forest products production and trade, and forest employment. The ITTA's geographic focus is limited to trade in tropical forest products. ITTA's production focus has expanded beyond timber to include non-timber forest products and environmental services. Little coordination between the WTO and the Rio Conventions or other environmental instruments to ensure a harmony of objectives. Lack of decisions addressing the socio-economic impacts of global trade. Non-industrial forestry receives little attention.
Local Benefit	The CBD, Ramsar and UNCCD have all enacted decisions as well as advisory guidelines and/or programs emphasizing local benefit from natural resource use. These instruments do not address larger-scale economic development issues. Lack of attention, both within and between instruments, to integrating the objectives of local benefit and global development. Management for subsistence uses, including fuelwood, not addressed. Local employment and worker rights and benefits not addressed.
Resource Rights	Lack of decisions addressing the general issue of clear and equitable tenure and resource rights. Intellectual property rights relatively well covered by CBD and WTA. Potential conflict between CBD objectives of local access and benefit sharing of genetic resources, and WTO rules aimed at the protection of technological innovation for the purposes of genetic manipulation.
Traditional Knowledge and Use	Relatively well covered in the CBD, UNCCD and Ramsar Convention. Potential conflict between CBD objectives of local access and benefit sharing of genetic resources, and WTO rules aimed at the protection of technological innovation for the purposes of genetic manipulation.
Public Participation	Covered by all instruments except the WTO. Questions remain regarding the capacity and commitment of the various conventions to implement existing provisions for public participation.
Non-consumptive/ Recreational Use	Sustainable tourism covered by advisory guidelines under the CBD and Ramsar.
Health and Well-being	Addressed primarily in the UNCCD. Limited to areas suffering from drought and desertification. Serious lack of funds for implementation. Worker safety not addressed in directory decisions and adopted goals.

Non Legally Binding Global Forest Instruments

The IFF/IPF Proposals for Action (PfA) address some of the gaps in socio-economic coverage in the legally binding instruments summarized above. Key socio-economic criteria covered by the PfA include global economic development, global equity, resource rights, traditional knowledge and use, and public participation.

In terms of issue-specific direction, global economic development is covered in two different ways within the PfAs. One is through the promotion of global trade, and the other is through addressing the impacts of such trade. The former issue is highlighted under "Trade and Environment in Relation to Forest Products and Services" (IPF PfA, Element IV). This Element promotes the removal of trade barriers; research on wood product markets, wood processing and "the potential competition between wood and non-wood substitutes"; promotion of lesser used tree species, certification and labeling, full-cost internalization, and increased market transparency through the development of global databases and deterrence measures for illegal logging. Many of the items promoting global trade have been addressed within WTO and ITTO, the two trade-related global LBIs addressed in this report.

The environmental and social impacts of global markets are largely covered under "Underlying causes of deforestation and forest degradation" (IPF PfA, Element I, Section A). The PfAs call for the development of research, strategies and policies that address linkages between deforestation and forest degradation and "transboundary economic forces", "macroeconomic policies", and the impacts of foreign debt. As discussed above, these issues are not addressed in the global LBIs.

Both the IPF and IFF Proposals make repeated mention of the importance of land tenure, including the need for security of tenure for "local communities and indigenous peoples" (IPF PfA Element I, Section B; etc.).

PfA coverage of traditional knowledge and use is fairly consistent with the approaches of the CBD and UNCCD. The IPF PfA include a specific reference to Article 8(j) of the CBD (IPF PfA, Element I, Section C, para. 40(a)).

Finally, public participation is a very consistent theme within the IPF/IFF Proposals. The issue of participation is particularly well covered under Element I, "The Implementation of Forest-related Decisions of UNCED". Within this Element, the need for inclusive decision-making processes is emphasized in the sections on national forest programmes, underlying causes of deforestation and forest degradation, traditional forest-related knowledge, desertification and drought and countries with low forest cover.

The UNFF, as planned in its multi-year program of work, has addressed the IPF/IFF PfAs on the socio-economic functions of forests in two of its four sessions thus far. The UNFF's Third Session highlighted the "Economic aspects of forests". Resolutions addressing the issue urged countries to integrate sustainable forest management into their national poverty reduction and development strategies; called upon countries to take immediate action on law enforcement and illegal international trade; encouraged countries to develop voluntary partnerships to promote SFM; requested countries to reduce tariffs; invited the Collaborative Partnership and others to "operationalize" the IPF/IFF Proposals for Action on forest certification and labeling; urged countries to increase the participation of women, indigenous and local people's participation in forestry; and encouraged countries to support the development of small and medium-sized enterprises. The UNFF-4 report makes mention of the role of eco-tourism in the protection of forests, a topic not covered by the earlier PfA.

The UNFF's Fourth Session resolutions address the social and cultural aspects of forest management. Specifically, countries were urged again to integrate SFM into their overall national poverty eradication and development strategies and invited to consider the evaluation of social and cultural impacts of implementing national forest programs. The international community was urged to provide technical and financial support for SFM in developing countries. All countries were also encouraged to "promote the role of private-sector investment for SFM "that takes into account social and cultural aspects of forests"; to increase the involvement of "relevant stakeholders, including indigenous and local communities, particularly women and youth", in National Forest Programmes and SFM decision-making in general; and to "explore options for the decentralization of decision-making on sustainable forest management...as a possible means of effectively addressing social and cultural questions"(Resolution 4/2).

Major gaps, overlaps, conflicts:

The IPF/IFF Proposals for Action provide guidance that, if followed, could go a long ways in addressing gaps in regards to the directory decisions of legally binding global instruments.⁴⁷ For example, the PfA address resource rights issues beyond the particular concern of intellectual property rights covered by the CBD and WTA. They also address the environmental and social impacts of global trade, thereby linking global and local development efforts in a way not covered by directory language in the legal instruments. Furthermore, the IPF/IFF PfA support the development of National Forest Programmes (NFPs). The NFPs were conceptualized in the IPF/IFF PfA as tools for integrating both national and global prioritizes into cohesive and holistic strategies for SFM. The NFPs could potentially contribute to a holistic approach to addressing the socio-economic functions of forests in those countries with the political will and capacity to develop effective forest strategies.

Regional and C&I Approaches

There is tremendous variability in socio-economic conditions worldwide. Regional approaches therefore provide an important opportunity to tailor multi-lateral decisions to the social and economic challenges and priorities of a given world regions.

Non-European Temperate and Boreal Forests

The Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests addresses the geographic gap caused by the ITTO's exclusive focus on tropical forest trade. Included among the Montreal Process C&I are national reporting requirements regarding the volume and value of wood and non-wood product production and consumption, forest sector contribution to the GDP, forestry investments and new technologies. These national-level C&I, however, are focused on data gathering and reporting, and do not provide guidance regarding economic development priorities.

Similarly the Montreal Process C&I address the issue of local benefit, referred to as “employment and community needs”, by establishing reporting requirements rather than setting any particular management priorities. Information to be reported includes “employment as a proportion of total employment”; “average wage rates and injury rates”, the “viability and adaptability of forest dependent and indigenous communities, and “area and percent of land for subsistence purposes” (Indicator 6.5 (a)-(d)).” While individual governments are free to use this information as appropriate to their own priorities, the selection of indicators does hold some potential to influence those priorities. For example, the inclusion of a sub-indicator addressing “subsistence purposes” may play a role in the increasing the recognition of such uses, an issue overlooked by many legally binding global instruments.

In regards to resource rights, the Montreal Process C&I do provide some general normative direction. Again, no priorities are assigned, however the Montreal indicators call for a legal framework that “clarifies property rights” and “recognizes customary and traditional rights of indigenous people (Indicator 7.11 (a)).” This indicator could potentially address the gap in legally binding global instruments in regards to addressing resource rights issues beyond intellectual property. However, this would clearly depend on the manner in which it is applied at national and/or sub-national levels.

The Montreal C&I also include indicators addressing public involvement, as well as the “cultural, social and spiritual needs and values”. The focus again is on the collection of information, including the extent of public involvement (Indicator 7.2(a)) and the “area and percent of forest land managed...to protect the range of cultural, social and spiritual needs and values...(and) non-consumptive forest values” (Indicator 6.4 (a),(b)).

Europe

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) has produced a number of resolutions addressing the socio-economic functions of forests. In addition, socio-economic issues are covered in the MCPFE's national-level Pan-European Criteria and Indicators for Sustainable Forest Management as well as their forest management unit-level Pan-European Operational Level Guidelines for Sustainable Forest Management.

⁴⁷ The reader is reminded once again, that the analysis of legally binding instruments was restricted to assessment of original Agreement text and subsequent *directory* decisions, i.e. those decisions that represented commitments to a given action by all Party members.

The MCPFE national-level C&I address the issue of economic development in a manner similar to the Montreal C&I. The MCPFE standards call for reporting on the volume and value of both wood and non-wood product production, the contribution of the forest sector to the GDP, and forest expenditures. Perhaps reflecting the general complexity and fragmentation of forestlands in Europe, the MCPFE C&I also include an indicator addressing the “number of forest holdings, classified by ownership categories and size classes.”

The MCPFE's national C&I do not include any indicators addressing “local” or rural economic development. They do, however, contain two indicators aimed at workers' issues. These are Indicator 6.5 “Forest sector workforce: Number of persons employed an labour input in the forest sector, classified by gender and age group, education and job characteristics”, and Indicator 6.6. “Occupational safety and health: Frequency of occupational accidents and occupational diseases in forestry.” Both of these indicators address issue areas neglected in global legally binding forest-related instruments.

Public involvement is addressed as a “qualitative indicator” under Criterion 6 (B.10). Recreation is covered in the C&I, in the form of an indicator calling for the measurement of the area of forest open to the public for recreation and an assessment of the intensity of recreational use (6.10). Spiritual values are covered by recording the number of sites designated as having cultural or spiritual value (6.11).

The MCPFE Pan-European Operational-level Guidelines (PEOLG), in contrast to the national-level C&I, go beyond the reporting of information to address the issue of management priorities. In regards to balancing economic growth with local benefit, the operational guidelines state that “forest management planning should aim to respect the multiple functions of forests to society, have due regard to the role of forestry in rural development, and especially consider new opportunities for employment in connection with the socio-economic functions of forests.” There is, however, considerable room for discretion in the interpretation of this indicator. The PEOLG include one reference to traditional knowledge and use, stating that, “Traditional management systems that have created valuable ecosystems, such as coppice, on appropriate sites should be supported, where economically feasible (Sub-indicator 4.2.d).”

In addition to the national and operational-level C&I, two MCPFE Resolutions also address issues of economic development and local benefit. Lisbon Resolution 1, “People, Forests and Forestry—Enhancement of Socio-economic Aspects of Sustainable Forest Management”, emphasizes public participation (framed as an important component of public “education” on the importance of forestry), creating institutional and economic frameworks encouraging forest investment, inter-sectoral collaboration (including agriculture, tourism, environment, energy and industry), diversification of forest employment, gender aspects, and the promotion of sustainably produced wood products. Vienna Resolution 2, “Enhancing Economic Viability of Sustainable Forest Management in Europe”, lists priorities of improving institutional frameworks to “encourage investment in the forest sector”, “promote the use of wood from sustainably managed sources”, create enabling conditions for “market-based provision of a diversified range of non-wood goods and services”, disseminate knowledge, strengthen institutions concerned with workforce safety and education, promote inter-sectoral collaboration, and incorporate the economic viability of forest management into rural development policies.

Finally, the issues of resource rights, traditional knowledge and use, and non-consumptive and/or recreational uses are addressed to some degree in Vienna Resolution 3, “Preserving and Enhancing the Social and Cultural Dimensions of Sustainable Forest Management in Europe”. This resolution calls on Parties to “secure the property rights and land tenure arrangements of forest owners, local and indigenous communities”, preserve traditional elements of the cultural landscape, raise awareness of traditional knowledge and practices of sustainable forest management, and protect significant “historical and cultural objects”. The MCPFE national C&I include two indicators for reporting that could serve to inform progress towards the Vienna Resolution. These are Indicator 6.10 “Accessibility for recreation: Area of forest and other wooded land where public has a right of access for recreational purposes and indication of intensity of use” and Indicator 6.11 “Cultural and spiritual values: Number of sites within forest and other wooded land designated as having cultural or spiritual values.”

In sum, the MCPFE national C&I, like the Montreal Process C&I, make important contributions to forest reporting. The broader institutional mandate of the MCPFE however, has allowed that process to go beyond the scope of the Montreal Process and establish some general management priorities.

The Amazon

The 1978 Treaty for Amazonian Cooperation is another regional instrument with considerable potential for setting priorities on forest-related socio-economic issues. In this Treaty, countries of the Amazon commit to cooperation on a variety of socio-economic issues, including navigation, hydropower, health, socio-economic development, production for local trade and local consumption, transport and communication, ethnological and archeological sites, and tourism.

The Amazon Cooperation Treaty Organization (ACTO) has recently produced a Strategic Plan that elaborates somewhat more on the Amazon Treaty's socio-economic goals. The Plan highlights two socio-economic issues of particular importance to the Amazon region. These are the role of indigenous peoples in sustainable development, and the need to improve health and sanitation conditions in the Amazon Basin. In regards to indigenous issues, the Plan reports ACTO's intentions to build upon existing efforts of collaboration with the Coordination of Indigenous Organizations of the Amazon Basin (COICA). ACTO also emphasizes indigenous people's participation in projects affecting them (ACTO, page 26), as well as promoting civil society involvement in regional processes (ACTO, page 35). ACTO also emphasizes the promotion of ecotourism, cultural tourism, and adventure tourism as compatible with sustainability goals for management both inside and outside of protected areas.

The Tarapoto Proposal of Criteria and Indicators for Sustainability of the Amazon Forest covers many of the same socio-economic issues as the MCPFE and Montreal Process C&I. These include reporting on issues relating to economic development, such as production, investment, employment, and land use. In addition, the national-level C&I call for the measure of both "sustainable" and "unsustainable" forest product production. This latter data, if effectively collected, would be of great use to global instruments such as the ITTO and its Objective 2000.

In addition to reporting requirements, the Tarapoto C&I also provide some direction on management priorities. These priorities include an emphasis on local benefit. For example national-level Indicator 1.3 calls for the "area and percentage of forest lands used for the purpose of supporting local populations" and forest management unit-level Indicator 11.4 addresses "Impact of the economic use of the forest on the availability of forest resources of importance to local populations". They also call for forest management to make a "Contribution to the maintenance of cultural values and diversity, and of indigenous and local populations' knowledge (Indicator 12.6)." Finally, Indicators 1.2 and 3.4 look at the rate of increase and area covered, respectively, of tourism activities.

Perhaps in part reflecting the relatively less developed state of the Tarapoto C&I however, a number of the socio-economic indicators are not very precisely defined or measurable and hence may play a limited role in setting management priorities.

Central America

Central America's 1993 Regional Convention for the Management and Conservation of the Natural Forest Ecosystems and the Development of Forest Plantations (Central American Forest Convention) addresses some major gaps in the coverage of socio-economic issues under the global legally binding global instruments. In particular, land tenure issues feature prominently in this Agreement in a manner not seen at the global level.

Article 2 on the objectives of the Central American Forest Convention (CAFC), calls for coordinated land settlement and land use policies. The Convention provides particular emphasis on the provision of needs and the promotion of economic development at the local level. Measures to achieve local economic development, furthermore, are spelled out in greater detail than commonly found at the global level. They include a clause stating that land rehabilitation efforts must "give priority to the supply of fuelwood for domestic consumption and community use" (Article 3 (d)). Article 4 of the CAFC addresses the provision of incentives for sustainable management including the diversification of forest-related industries (timber use, ecotourism, potable water, hydroelectric production, biotechnology, etc.). Article 4 furthermore calls for ensuring "credit access to groups such as ethnic groups, women, youth, civic associations, local communities, and other vulnerable groups." Article 5 calls for active public participation in implementing the Convention, and support for cultural diversity, "respecting the rights, obligations and needs of indigenous peoples, their communities and those of the other inhabitants of forested areas." As observed by Aguilar and González, however, the Convention does not directly address the broader issue of rural poverty, which is widely recognized as a cause and/or effect of deforestation (Aguilar and Gonzalez 1999).

The Lepaterique Process of Central America on Criteria and Indicators for Sustainable Forest Management likewise emphasize issues of land tenure, local benefit and traditional and subsistence uses. For example, Indicator 1.1 calls for reporting on the "Percentage of population with legal land titles". Likewise, Indicator 4.6 "Availability and value of firewood for domestic use" addresses subsistence uses. Of particular note, are indicators explicitly endorsing the ILO Convention 169, a Convention involving strong language in support of indigenous rights. The Lepaterique C&I also address non-consumptive forest uses, calling for the measurement of the land area managed for tourism (Indicator 4.2), as well as the rate of increase in benefits from tourism (Indicator 4.7).

In sum, the Lepaterique Process goes beyond the reporting requirements common in Northern C&I to provide guidance on economic and social priorities. However, as is true with the Tarapoto C&I, some

of the Lepaterique Process indicators leave considerable room for interpretation as to their purpose and means of measurement. Guidelines have since been developed to aid implementers in the interpretation of these C&I (FAO 2001b).

Southeast Asia

The ASEAN Agreement on the Conservation of Nature and Natural Resources endorses the concept of sustainable use. The focus of the Convention text, however, is exclusively on the achievement of environmental conservation and the control of human use to that end.

Africa

The South African Development Community (SADC) Protocol on Forestry includes as its chief objectives, "sustainable management...{and} trade of forest products throughout the region in order to alleviate poverty and generate economic opportunities for the peoples of the Region" (Article 3.1). This is to be achieved through "human resource" development (i.e. capacity-building), promoting trade and investment "including developing and agreeing on common standards for sustainable forest management and forest products", "harmonizing" approaches to sustainable forest management including legislation and law enforcement, "promoting respect for the rights of communities and facilitating their participation...with particular attention to the need to protect traditional forest-related knowledge and to develop adequate mechanisms to ensure the equitable sharing of forest benefits...without prejudice to property rights...promoting the intangible, cultural and spiritual value of forests...(and) facilitating public access to forests especially by neighboring communities..."

The SADC Protocol uses strong language in regards to public participation, stating that, "communities are entitled {italics added} to effective involvement in sustainable management of forests" (Article 4.10). Unlike the legally binding global instruments discussed above, the SADC Protocol expressly addresses the issue of land tenure. Article 5 "Tenure and Ownership" states that Parties shall ensure "sufficient security of tenure...(and) clearly delineate ownership and occupancy rights (Article 5.1). Article 11 requires social as well as environmental impact assessments involving major afforestation or reforestation projects. Article 12 "Community-based management" emphasizes collective rights by requiring Parties to "adopt national policies and mechanisms to enable local people and communities to benefit collectively from the use of forest resources... (and) develop regional guidelines" on community based forest management. Article 13 "Participation of Women in Forest Management" represents an article specifically aimed at women's participation, including again a requirement to develop regional guidelines. Article 16 addresses "Traditional Forest-related Knowledge" protecting the rights of communities over their knowledge while calling for its preservation and requiring Parties to "where appropriate, develop standards, guidelines and other mechanisms...(Article 16.2)."

The SADC Protocol also addresses general issues of economic development, integrating industrial and community-based development in a manner generally not found in the global instruments. Article 18 "Industry, Trade and Investment" of the SADC Protocol encourages the creation of timber associations. It also encourages the participation of traditional, community and private-sector operators in the forestry sector in national and regional processes for the development of markets...including, if determined to be appropriate, the development and promotion of specific voluntary certification standards and guidelines". Article 18 also addresses workers' issues, requiring national legislation that addresses worker protection, safety and health, and requires that Parties "ensure that forest-based industries contribute to the well-being of surrounding communities."

Article 18 also includes a number of lines addressing the issue of forest certification, again in a manner that integrates concerns for the development of global trade and the generation of local benefit. Paragraph 2(a) requires that Parties "develop standards and guidelines...which facilitate the participation of small-scale rural and local forest operators". Article 18 also promotes "harmonized standards for international trade in forest products" (Article 18, para. 2). Again filling a gap identified among the global instruments, Article 18 also promotes the development of non-wood forest products, calling for the development of "specific product standards" for such products as well.

The African Timber Organization / International Tropical Timber Organization (ATO/ITTO) Principles, Criteria and Indicators for the Sustainable Management of African Natural Tropical Forests include a large number of indicators addressing socio-economic issues in forestry. The ATO C&I are notable, among other things, for their emphasis on priority setting rather than simply reporting. Unlike the other C&I processes discussed in this section, the ATO do not include general reporting requirements on the economic development of the forest sector. Rather, issues of industrial development are covered in a procedural manner under Indicator 1.1.9, "There is a functional industrial policy favourable to the sustainable management of the forestry sector."

As is true of the other developing country C&I processes discussed in this section, the ATO C&I place strong emphasis on local benefits and resource rights. This includes particularly strong language prioritizing local rights and benefits. For example, Sub-indicator 4.1.1.4 states, “As much as possible, local populations have control over the forestry operations on their forest land and resources, unless they freely delegate this control to a third party.” Likewise Indicator 4.3.2 states that “Local communities living in or near the harvested forest area benefit preferentially from opportunities in employment, training and other services.” Language regarding public participation is also notably forceful and far-reaching. For example, Indicator 4.2.3 states, “All stakeholders participate in the control of natural resources management on the basis of a protocol accepted by all.” Indicators addressing non-consumptive forest uses, on the other hand, are limited to the protection of cultural and archaeological sites. Tourism is not mentioned.

The ATO's clear statement of priorities and ambitious scope regarding the socio-economic functions of forests, present both opportunities and challenges. On the one hand they provide a clarity of direction lacking in many C&I processes, on the other hand they create major challenges in measurement and implementation.

ITTO C&I

The ITTO C&I address many of the socio-economic gaps identified in the global LBI. They include indicators addressing macro-economic issues relating to domestic and international timber trade (Ind. 7.1, 7.2), as well as indicators focused on local subsistence needs (including fuelwood harvest) and local benefit capture from forestry activities (Ind. 7.6, 7.9). The C&I also expressly call for the recognition of the tenure and use rights of communities {unspecified} and indigenous peoples (Ind. 7.12), use of traditional knowledge (Ind. 7.13), public and local participation (Ind. 1.10, 7.5, 7.14), non-consumptive uses (Ind. 7.10, 7.11), and the health and safety of workers (Ind. 7.7, 7.8).

In terms of their utility for measuring change “either towards or away from sustainable forest management” (ITTO 2005), some of ITTO's socio-economic indicators are somewhat problematic. For example, Indicator 7.13 reads, “Extent to which indigenous knowledge is used...” This indicator would not only be a challenge to measure at any one point in time, but it is also unclear how one might measure progress towards some ideal level of use. Indicator 7.10 reads, “Number of people dependent on the forest for subsistence uses and traditional and customary uses”. Again, no direction is provided as to how this might impact sustainable forestry. Overall, it is not clear from these and other indicators whether subsistence and traditional forest uses should be viewed as desirable, or merely something in need of quantitative measurement. Regardless, the information collected could be useful for designing policies responsive to existing demographic trends.

Major Gaps, Overlaps, Conflicts:

Each of the above regional instruments vary somewhat in the socio-economic issues emphasized, perhaps in part reflecting priorities unique to each region. Included among these priorities are some of the issues largely overlooked in global instruments, such as land tenure, resource rights (beyond intellectual property rights), and the socio-economic impacts of industrial activities and global trade.

In addition to the regional differences, the above analysis also suggests a larger pattern differentiating developed from developing country processes. Developed country instruments emphasize reporting requirements, while providing relatively less direction in terms of priorities for economic development. Developing country processes, in contrast, place greater emphasis on the rights and benefits of local communities.

All of the regional processes assessed, with the exception of ASEAN, include language expressly supporting local benefit. The strongest and most specific language addressing local benefit is found in the ATO C&I that require that local populations “benefit preferentially from opportunities in employment, training and other services.” Likewise, all except ASEAN, include language protecting indigenous knowledge and use either indirectly, through protection of rights and culture, or through direct mention of traditional knowledge and use. Non-consumptive uses are included to varying degrees, with some processes emphasizing cultural and spiritual values and/or the role of eco-tourism in sustainable forest management. All of the regional processes help to fill gaps in the global LBIs by addressing worker safety as well as poverty alleviation and/or local community welfare.

Non-governmental Approaches⁴⁸

Principle 2 of the Forest Stewardship Council's international standard is similar to other C&I processes and certification systems in placing a strong emphasis on the establishment of clear tenure rights. The Principle goes further, however, in emphasizing "customary tenure and use rights", requiring that communities with such rights "maintain control" over protecting those rights "unless they delegate control with free and informed consent" (Criterion 2.2). Principle 3 on indigenous rights parallels this language, as well as the language of ILO Convention 169, including the requirement for "free and informed consent" of indigenous peoples' prior to conducting forest management on traditional lands (Criterion 3.1). Principle 4 echoes components common to developing country C&I by emphasizing the welfare of forest workers and local communities. Principle 5 recognized the importance of the economic viability of forest production and shares an emphasis on local benefit.

Major Gaps, Overlaps, Conflicts:

The FSC standards provide strong normative direction on some socio-economic issues. This includes directive language on indigenous rights, an emphasis on public participation, and the granting of priority to local level economic benefits.

⁴⁸ As discussed in the methodology section of this report, this report's thematic chapters compare approaches to substantive themes of sustainable forestry. The FSC is the only forest certification system that has developed global standards addressing substantive issues and hence is the only certification system with decisions amenable to analysis in this chapter.

Thematic Element VII: Legal, Policy and Institutional Frameworks for Forests

When the United Nations Economic and Social Council established the United Nations Forum on Forests (res. 2000/35) it established as a primary but tentative objective the assessment of the prospects for an international arrangement on forests (IFF 2000: para. 3(c),(i)). Of fundamental importance to such an assessment is an analysis of the existing provisions of international forest-related instruments. While this study in its entirety addresses the content of such provisions, Thematic Element VII focuses on the overarching decision-making frameworks currently provided by existing global and regional instruments.

The structure of the international forest-related regime is composed of three inter-related and self-reinforcing frameworks: the legal framework, the policy framework, and, the institutional framework. The legal framework consists of the foundational legal commitments, which provide the skeleton of the regime.⁴⁹ The institutional framework arises out of, and supplements, the legal framework by providing the vehicles for implementation of international forest-related policy objectives. The policy framework fleshes out the content of, and supplements, the legal framework, typically via policy dialogues being carried out by the institutions of the international forest-related regime.

In addition to the internal legal, policy and institutional frameworks of the instruments in question, this chapter will also address the overarching structural issue of global finance, capacity and resource transfer between participating countries. Country parties vary considerably in the resources they have available to implement international agreements, and the effectiveness of such agreements rests in enabling all parties to meet their commitments.

In the discussion of Theme VII, each of the three frameworks - legal, policy and institutional – will be examined, along with decisions addressing the transfer of finance, knowledge, technology and capacity from developed to developing countries. For each international forest-related instrument an effort is made to determine what contributions the instrument makes to global and/or regional legal, policy and institutional forums for forest-related decision-making. The various structural provisions of the instruments are examined paying particular attention to the scale of forest administration targeted (global, regional, national, sub-national or forest management unit), the policy approach of the provision(s) (directory, discretionary or advisory) and lastly the type of policy tool employed (for example, work programs, projects, strategy documents, etc.).

The Forest Law Enforcement and Governance (FLEG) processes are included in the regional section of this chapter, along with the other regional and C&I processes covered under Thematic Areas I through VI. The FLEG processes are covered exclusively under Theme VII because their core focus is on structural issues related to forest governance.

Criteria

This thematic area is divided among the following criteria: “multi-lateral legal frameworks”, “multi-lateral policy frameworks”, “multi-lateral institutional frameworks”, and “multi-lateral finance”, the latter referring to the transfer of finance, knowledge, technology and/or capacity from developed to developing countries. In addition, “country-level legal, institutional and policy frameworks” addresses decisions aimed at national-level governance and policy.

Legally Binding Forest-Related Global Instruments

Multi-lateral Legal Frameworks

There remains no overarching global legal framework directly related to forests despite the IPF/IFF/UNFF policy dialogue. Instead, global forest jurisprudence has been described as “fragmented and opaque” (Humphreys 2005: 2; Tarasofsky 1999b: 110), dispersed throughout a suite of primary, legally binding, forest-related global instruments: CBD, UNFCCC, UNCCD, CITES, Ramsar, WHC, ITTA and WTA. These instruments are, for the most part, discrete and narrowly focused, with implementation commonly targeted at the national-level and with policy objectives that are vague and primarily discretionary in nature.

⁴⁹ Commonly, in international forest policy analysis, the legal framework is subsumed within a discussion of the policy framework, where policy is broadly construed *see for example* (pp. 148-149, table 5.1); however, in our analysis it has been treated discretely because it has been identified as a discrete theme of sustainable forest management.

In the absence of an overarching global legal framework, the mandate and scope of the CBD provides the most comprehensive (if still incomplete) coverage of forest-related issues of the global legally binding instruments currently in existence. Having said that, the CBD actually imposes few binding obligations on parties (Khalastchi and Mackenzie 1999; Steiner 2002).

The CBD has an expansive objective to conserve and ensure the sustainable use of biological diversity and the equitable distribution of the benefits of the use of genetic resources (art. 1), which is broadly defined so as to encompass forest-related aspects. The CBD's principal mechanism for achieving these objectives is the requirement for parties at the national-level to regulate or manage in situ biological diversity, including developing national action plans for the conservation and sustainable use of biological diversity, integrating those plans into national-level decision-making, adopting incentive measures in pursuit of these objectives and implementing an environmental assessment process (arts. 6, 8(c), 10(a), 11 and 14).

Since its inception, the CBD has been clarifying its mandate to address forests. Indeed in 1996, at COP3, eventually inconclusive discussions were initiated regarding the CBD assuming, via a legally binding forest protocol (arts. 28-30 and 37), overall responsibility for the international forest legal framework (FAO 2003d: 46). In 1998, at COP-4, however, the CBD withdrew from this initiative and instead adopted a Work Programme for Forest Biological Diversity, which was subsequently expanded in 2002 at COP-6.

Perhaps the most significant recent development regarding the potential structure of a global forest framework was the coming into force of the Kyoto protocol to the UNFCCC in 2005. The Kyoto protocol is the UNFCCC's primary compliance mechanism. The protocol strives to facilitate the UNFCCC's objective of limiting atmospheric greenhouse gas emissions (UNFCCC, art. 4.2(a)), which may be addressed by forest-related measures at the national-level via the treatment of forests as sinks of, or reservoirs for, terrestrial carbon storage. Dependent upon how forests are addressed by the UNFCCC and the Kyoto protocol these instruments may have significant impact on the global forest-related legal framework.

Of particular forest-related importance to the UNFCCC and the Kyoto protocol are the as yet unresolved decisions regarding accounting for land-use, land-use change and forestry (LULUCF) in climate change mitigation efforts that were initiated during the discussions surrounding the Marrakesh Accord. In particular, the resolution of the accounting rules for, amongst other things, the treatment of harvested wood products remains a challenge (IISD 2004; Rosenbaum, Schoene, and Mekouar 2004).

Once the forest-related accounting decisions associated with the UNFCCC and the Kyoto protocol are resolved, the significance of the impact of the instruments on the global forest-related legal framework will be dependent upon the precise mitigation strategies employed by parties to the Convention. For example, a particular forested nation may choose to focus its greenhouse gas emissions mitigation on large-fossil emitters rather than on its forests, thereby limiting the potential impact of the forest-related provisions of UNFCCC and the Kyoto protocol.

The UNCCD only tangentially contributes to the structure of the global legal framework for forests due to its exclusive focus on areas prone to desertification and drought. The UNCCD does, however have a potentially significant regional impact on forests.

CITES is relatively narrowly defined as a trade instrument focused on preventing trade in endangered species. As such, it has been able to take concerted action to prevent trade in listed species. At the same time, its relatively narrow scope limits the convention's ability to address broader causes of biodiversity loss.

Ramsar was the first example of a global legally binding instrument designed to address a particular habitat type – wetlands – as opposed to a particular species. Ramsar does have the potential to have a supporting role in the structure of the global legal framework for forests, specifically as it regards forest-related wetlands; however, in practice, the convention has had limited application (Downes 1999: 67-68).

Ramsar's application is limited because it applies only to forest-related wetlands that have been voluntarily nominated to the convention's jurisdiction by the party whose political boundaries encompasses the nominated wetland. Nevertheless, Ramsar requires parties to the convention to ensure that their national-level legal frameworks provide for the conservation of listed-wetlands, the "wise use" of other non-listed wetlands, the monitoring of changes to the ecological character of its listed-wetlands, and the international reporting of its monitoring activities (art. 1-4) (Downes 1999: 66-68; Sands 2003: 543-545).

In 2002, Ramsar Parties made incremental efforts to encourage the listing of forest-related wetlands - mangrove forests, peatland forests and other underrepresented forest-related wetland types (COP8, res 8.4 and 8.11) (FAO 2005b: 68).

The WHC requires Parties to the Convention to integrate the protection of natural and cultural heritage of outstanding universal value, which may include forests, into its national-level legal framework (arts. 2 and 5(d)). Similar to Ramsar, the WHC also has the potential to have a role in structuring the global legal framework for forests, specifically, national-level forest-related – “natural heritage” - protected areas. However, a gap analysis of the application of the Convention revealed that there are considerable gaps in the representation of global forest types by natural heritage protected areas (Thorsell and Sigarty 1997).

Again similarly to Ramsar, the specific protections afforded by the WHC apply only to forest-related protected areas that have been nominated to the Convention's jurisdiction by the party whose political boundaries encompass the nominated protected area (art. 4). WHC does, however, require that parties to the convention ensure that their national-level legal frameworks provide for conservation planning (arts. 5(d) and 29.1) (Downes 1999: 66-68; Sands 2003: 543-545).

The ITTA engages consumer and producer countries in the promotion of trade in sustainably produced tropical timber (art. 1; COPXXIX, dec. 2) (Sands 2003: 547-548). As such, it is the only global legally binding instrument exclusively focused on forests. Its scope is limited, however, to forests and forest products originating in the tropics. Furthermore, the ITTA's lack of compliance and enforcement measures have led some to question its effectiveness in addressing the acute problems of deforestation and forest degradation faced by many developing countries (Tarasofsky 1999b: 8).

The WTA establishes the WTO and sets as its objective the promotion of global trade liberalization by requiring national-level changes in trade policy. The WTA has two principal forest-related subsidiary instruments: General Agreement on Tariffs and Trade (GATT) and Agreement on Technical Barriers to Trade (ATBT). While there have been claims that the WTA regime “has many serious implications for forests” ((Chalifour 2000: 615) see also, (Downes 1999; Tarasofsky and Pfahl 2001)), assessments of the extent and significance of the role of the WTA and its subsidiary instruments in the legal framework of legally binding, global forest-related instruments remain controversial (Eckersley 2004; Gehring 2004; Neumayer 2004).

The principal basis for the contention that the WTA plays a significant role in the global legal, forest-related framework is the observation that the objectives of the WTA and its subsidiary instrument may conflict with existing and proposed trade-related measures of the global legal framework for forests (see (Gehring 2004: 282-284)). However, both GATT and ATBT provide exceptions for environmental management initiatives.

The GATT is the “central substantive” agreement of the WTA subsidiary instruments (Sands 2003: 948). The GATT requires parties to revise their national-level policies to remove discriminatory rules of trade and import/export quotas and bans (arts. I, III and XI) with an exception for, amongst other things, non-arbitrary and non-trade discriminating measures “relating to the conservation of exhaustible natural resources” (art. XX(g)).

The ATBT requires parties to avoid the use of national-level policy to protect domestic industry from competition and encourages parties to harmonize their trade policy with global standards (art. 2.4) (Sands 2003: 949). The principal influence of the ATBT on the legal framework of legally binding, global forest-related instruments is its potential to interfere with forest products certification and related green procurement initiatives (Downes 1999: 77-78). However, the ATBT, “explicitly recognizes that environmental protection could allow deviation from international standards” (Sands 2003: 950), leading some to argue that the ATBT offers a “clear green light” to forest products certification and green procurement (van Calster 2002: 303).

The WTA, in as much as trade liberalization is related to forests, plays a tangential role in the legal framework of legally binding global forest-related instruments. While both the GATT and ATBT provide exceptions that arguably are broad enough to mitigate potential conflicts with other global forest-related instruments, particularly CITES and ITTA, it is worth noting that the jurisprudence associated with these exceptions is still relatively immature and the significance of the WTA for forests could well change.⁵⁰

⁵⁰ Early jurisprudence appeared to demonstrate that the WTA posed a conflict for environmentally motivated, unilateral, national-level policy implementation (Sand, 2001; Chase, 1994).

Major Gaps, Overlaps, Conflicts:

The majority of legally binding, forest-related global instruments have discrete and isolated policy objectives and there remains a lack of an overarching legal framework for forests. This is despite the fact that a more comprehensive approach to international environmental issues has been broadly encouraged (Sands 2003: 616).

The lack of an overarching, legally binding framework has been cited as a factor in the continuing degradation of forests (Chambers 2004: 503; Crossen 2004: 474; Davenport 2005: 105; Goetzl, Flynn, and Ekstrom 2004; Smith 2004; Steiner 2002: 663; Tarasofsky 1999b: 10) including continuing illegal logging (Chase 1994; Eckersley 2004; FAO 2003c; FAO 2005b: 64; Sand 2001: 10; Sands 2003).

Much of the legal framework for the global forest-related regime remains focused on the national level and is characterized by discretionary or advisory provisions. Perhaps as a result, "in most countries decision-makers have not yet taken sufficient action... - a situation that seriously hinders the implementation of sustainable forest management" (FAO 2005b: 62). At least one author has suggested this calls for a global-level mechanism for enforcement of existing international obligations (Sands 2003: 617).

The CBD arguably has a scope that is broad enough to overlap much of the existing global forest-related regime (FAO 2003c: 48; Sand 2001). However, it has not moved to fill the gap created by the lack of a specifically forest-focused overarching legal framework.

While there is some evidence that the WTA poses a conflict for environmentally-motivated, unilateral, national-level policy implementation (Chase 1994; Sand 2001), the extent of the conflict posed by the WTA with the broader legal framework, particularly the trade-related provisions of the ITTA and CITES, is not readily apparent. It has been argued, however, that the WTA may be exerting a "chilling" effect on the development of the global forest regime that is not easily detectable (Eckersley 2004).

Multi-lateral Policy Frameworks

Policy frameworks flesh out the content of, and supplement, the legal frameworks of the legally binding, international forest-related regime. The policy frameworks, much like the legal framework, have been fractured and compartmentalized despite the efforts of the UNFF and others to promote integration amongst forest-related policy processes.

Examination of the policy framework(s) provided by the legally binding, forest-related global instruments in isolation from the significant policy initiatives progressing under other institutional arrangements, such as the UNFF, FLEG and others, is somewhat artificial. Nevertheless, the unique legal status of policy frameworks associated with legally binding, forest-related global instruments warrants their separate treatment.

The CBD, in keeping with its broad jurisdiction, has been engaged for some time in the development of a policy framework regarding forest biodiversity. In 1998, the CBD adopted a Work Programme for Forest Biological Diversity (FBDPOW) (COP-4, dec. IV/7)), which was subsequently expanded in 2002 into a comprehensive policy framework for forest biodiversity (COP-6, dec. VI/22, Annex). The CBD's internal policy dialogue through FBDPOW appears to be evolving parallel to the discussions at the UNFF and covering off many of the same issues. These include, recently, improving co-operation, streamlining reporting and including indigenous and local communities in forest policy development (COP-7, dec. VII/1).

Much work is being undertaken to implement the legal framework of the UNFCCC and the Kyoto protocol. As a result the forest-related policy framework emerging from these instruments is still immature. Nevertheless, the conventions are contributing significantly to the development of the policy framework for reporting on forests, particularly as it relates to LULUCF (Penman et al. 2003).

The UNCCD plays an important supporting role in the development of the policy frameworks arising from legally binding, forest-related global instruments. The parties to the convention have prioritized coordinating the contributions of the UNCCD to forests with the other Rio conventions (COP-6, L.19, rev. 1) (IISD, 2004a).

CITES created a Timber Working Group at COP-9, which was tasked with addressing the particular issues associated with listing commercially valuable tree species under CITES. This initiative created the policy framework which facilitated the adoption, as mentioned, of big-leaf mahogany (*swietenia macrophylla*), and has opened the door for the potential inclusion of other commercially valuable species such as ramin (*Gonystylus*) (Appendix II), agarwood (*Aquilaria* spp.) and yew (*Taxus* spp.) within the CITES legal framework (COP-13, dec. 13.54, 13.61-13.65).

In the implementation of Ramsar, the secretariat has adopted a five-year strategic plan that calls upon Parties to the Convention to, amongst other things, develop national-level wetland policy regimes (recs. 1.5, 3.3, and 6.9) (Ramsar 2002) which, given the broad definition of “wetlands” (art. 1(1)), could encompass riparian forests. The most recent conference of the parties, COP-8, adopted discretionary resolutions encouraging the Parties to improve their national-level policies regarding the assessment and conservation of mangrove forests (res. 32).

The WHC secretariat has been developing a policy framework aimed at promoting the conservation of so-called World Heritage Forests (Thorsell and Sigarty 1997). A recent meeting in Nancy, France (Mar. 9-11, 2005), which has not yet been officially reported, recognized the need to address the management of forested-World Heritage Sites in a broader landscape context. As a result, the policy framework for the WHC appears to be broadening the scope of the influence of the WHC.

The ITTA has contributed to a complex array of forest-related policy frameworks. Foremost amongst these is the development of criteria and indicators of SFM, which will be discussed in more detail below.

Major Gaps, Overlaps, Conflicts:

The policy frameworks emerging from and supplementing the legally binding, forest-related global instruments suffer from the same policy compartmentalization and isolation as the legal frameworks for forests. Again, similar to the legal frameworks, the policy frameworks are focused on implementation at the national level and implementation is sporadic and insufficiently coordinated. Initiatives such as the FAO's National Forest Programme Facility, which aim to coordinate the implementation of national and subnational-level forest policy, have been useful but not sufficient in addressing this lack of global coordination.

Multi-lateral Institutional Frameworks

For the most part, each instrument has established a discrete secretariat and set of subsidiary bodies to carry out the work of administering and implementing its unique mandate. The resulting institutional array has been described as “divided and contested” (Sand 2001: 40).

Amongst other efforts to overcome the unstructured institutional environment of global forest governance, the Collaborative Partnership on Forests (CPF) was established in 2001 by the UN ECOSOC (res. 2000/35), with the express intention of coordinating the myriad forest-related institutions in support of the work of the UNFF and to further implementation of forest related decisions. The CPF does not endeavour to coordinate regional or national-level institutions (UNFF 2005). Similar to its predecessors, the CPF is not an organization in its own right; rather, it is a coalition of fourteen global-level institutions serviced by the Secretariat of the UNFF.

The United Nations Environment Program (UNEP) is an example of a global-level institution that is supporting the administration of a collection of discrete institutions arising from legally binding forest-related instruments. The UNEP provides administrative support for, amongst other secretariats, the CBD, CITES and UNCCD secretariats. However, the majority of the institutions arising from legally binding forest-related instruments remain uncoordinated in even an administrative capacity.

The Global Environment Facility (GEF) is an example of a global-level institution that is playing a coordinating function in support of the implementation of a suite of legally binding forest-related instruments. The GEF is a shared financing body that supports the work of, amongst others, the CBD, UNFCCC and the UNCCD. As part of a holistic approach to supporting the financing of environmental initiatives the GEF does not have a discrete forest-related program but rather contributes to sustainable forest management indirectly through its focus on terrestrial biodiversity (Brann and Kumari 2004). However, despite the GEF, gaps in the coordination and provision of financing for legally binding forest-related global institutions remain.

Major Gaps, Overlaps, Conflicts:

Global institutional frameworks arising from and supplementing the legally binding, forest-related global instruments are “divided and contested” (Sand 2001: 40). Despite significant efforts to the contrary, cooperation remains largely ad hoc due to the jurisdictional limitations of existing legally binding, forest-related global instruments.

Multi-lateral finance

The criterion of “global finance” covers those decisions relating to the distribution of costs and benefits between countries and world regions. Global finance is a theme found to some degree in all of the global legally binding instruments under analysis. Each of these instruments acknowledges the need

to provide support to lesser-developed countries, including financing, technology transfer and capacity building.

All three of the Rio Conventions include many resolutions to promote resource, knowledge and technology transfer. The original convention text of each of these agreements includes statements that poverty eradication and economic and social development are the first and overriding priorities of developing country Parties. In other words, national development must take precedence over the objectives of the Conventions themselves.

The Global Environmental Facility, first created in 1991, is a key financial instrument designed to aid Parties in meeting the objectives of global environmental conventions. The stated purpose of the Global Environmental Facility (GEF) is to provide support for "the protection of the global environment and promote thereby environmentally sound and sustainable economic development" (GEF 2004). The GEF currently serves as the financial mechanism for the UNFCCC, UNCCD and the CBD (for the interim).

The CBD addresses issues of global finance in its 2002 Strategic Plan and other guidance documents. COP 3 approved guidance measures to the GEF in its capacity as the CBD's interim funding mechanism. This guidance includes a request to "provide financial resources to developing countries for country-driven activities and programmes, consistent with national priorities and objectives..." (CBD/COP3, Decision 5, para. 2). The CBD COP 7 in 2004 has also developed a specific program of work on technology transfer, outlining general goals and targets (CBD/COP7, Decision 29, Annex).

The UNFCCC's decisions relating to global equity address one of two general issues, 1) the distribution of costs and benefits of its implementation, and/or 2) the distribution of the impacts of climate change. The 1995 Berlin Mandate outlines UNFCCC principles regarding the equitable implementation of Convention objectives. The Mandate declares that "a) the developed country Parties should take the lead in combating climate change and the adverse effects thereof..." It further states that the Convention's implementation be guided by:

"c) "The legitimate needs of the developing countries for the achievement of sustained economic growth and the eradication of poverty, recognizing also that all Parties have a right to, and should, promote sustainable development; (d) The fact that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that the per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs..." (UNFCCC/COP1, Decision 1)

In service of the above statement, the Kyoto Protocol has established a Clean Development Mechanism (CDM) (UNFCCC/Kyoto Protocol, Article 12). The CDM enables developed country Parties to meet their commitments to reduce greenhouse gas emissions through support of projects that reduce emissions or sequester carbon in lesser-developed countries.

Other global finance-related decisions under the UNFCCC, include the direction provided under COP 4 to the Global Environmental Facility to support developing countries in implementing the Convention. COP 6 establishes a Special Climate Change Fund to finance "(a) Adaptation; (b) Technology transfer; (c) Energy, transport, industry, agriculture, forestry and waste management; and (d) Activities to assist developing country Parties...in diversifying their economies" (Decision 5, Annex). In COP 6 it was also decided that a Kyoto Protocol adaptation fund "... shall be established to finance concrete adaptation projects and programmes in developing country Parties that have become Parties to the Protocol". COP 7 establishes a "Least Developed Countries Fund" for Climate Change (LDCF) to be administered by GEF, and endorses the Marakesh Accords on capacity building for developing countries and countries in transition. COP 9 (Decision 6) and COP 11 (Decision 3) provide further guidance on the operation of the LDCF. COP 7 also established an Adaptation Fund that is to receive 2% of the proceeds from the CDM (Decision 10).

The UNCCD, likewise, has reiterated the importance of financial aid and technology transfer to developing countries, especially Africa. However, the UNCCD thus far suffered from a lack of sufficient resources and relatively little support from the GEF.

The WHC offers assistance to countries in the listing and protection of sites of outstanding cultural and/or natural heritage value. The WHC's Global Strategy, established in 1994, has aimed to improve the geographic and cultural distribution of its heritage sites. Consistent with this strategy, the WHC has since significantly increased the number of developing country Parties to the Convention as well as the number of sites in lesser-developed world regions.

In terms of the ITTA, global resource, knowledge and technology transfer could be viewed as a

central issue by default, since the goal of the organization has been the promotion of trade in tropical timber, and the vast majority of tropical timber is produced in developing countries. Hence the ITTA could be viewed as de facto contributing to the more equitable distribution of forest benefits between developed and developing countries. The ITTA also includes specific objectives aimed at ensuring equitable implementation of the Agreement. These objectives, as stated in the 1994 Agreement, include to “g) develop and contribute to new mechanisms for the provision of new and additional financial resources and expertise to enhance the capacity of producing members to achieve the objectives of this Agreement; m) promote access to and transfer of technologies and technical cooperation to achieve the objectives of this Agreement” (ITTA, Article 1(g), (m)). The ITTO has addressed these objectives primarily by providing project support, including research and outreach activities, across a range of issues related to its organizational objectives. ITTA 1994 established the Special Account and the Bali Partnership Fund to finance its project work.

By 2006, ITTO funding had fallen to less than half of what it was in the early 1990's. This financial downturn has complicated negotiations for a new Agreement, pending the expiration of ITTA 1994. In an effort to attract more financial support, ITTA 2006 has modified the rules governing the ITTO Special Account, allowing donors to earmark their contributions for particular Thematic Areas or specific projects. These and other administrative changes have been credited with helping achieve the level of financial commitment necessary for the approval of a new ITTA in January 2006 (ENB 2006).

The WTA's primary mechanism for promoting global equity is the removal of barriers to trade and the equal treatment of all nations in matters of economic exchange. WTA policies on trade and the environment, however, add complexity by allowing restrictions on trade as necessary to protect human, animal and plant life (GATT, Article 20; GATS, Article 14). This has generated contentious debate over the definition of “necessary” restrictions.

Also of relevance to global finance, the WTO TRIPs (Trade-related aspects of intellectual property) includes provisions promoting the transfer of technology to least-developed countries. Specifically, developed country Parties are required to provide incentives to “enterprises and institutions” for transferring technology (TRIPS, Article 66).

Major Gaps, Overlaps, Conflicts:

All of the legally binding global instruments under analysis have taken some action to address the issue of global resource, knowledge and technology transfer. The Global Environmental Facility (GEF) has provided funding for developing country parties within the CBD, UNFCCC and UNCCD. The WHC has recently increased its support for listing developing country World Heritage sites. ITTA has provided financing for hundreds of projects supporting SFM in developing tropical countries. Nevertheless, a lack of developing country resources remains a persistent barrier to achieving many of these conventions' goals. The UNCCD, in particular, has been chronically under-resourced.

Country-level Legal, Policy and Institutional Frameworks

Many of the global LBIs have established broad objectives for strengthening the legal, policy and institutional capacity of participating country Parties. This includes the development of systematic national strategies, as well as the incorporation of specific LBI decisions into national-level policies.

The CBD, as part of its “General Measures for the Conservation and Sustainable Use” calls on countries to develop or adapt national strategies, plans or programmes for the conservation and sustainable use of biological diversity (Article 6 (a)). More specifically, it also calls on Parties to develop “legislation or other regulatory provisions for the protection of threatened species and populations” (Article 7 (b)). Programme Element II of the CBD's “Expanded Programme of Work on Forest Biodiversity” (COP 8) includes goals, objectives, and actions that expressly address governance, laws, tenure and planning systems for the conservation and sustainable use of forest biological diversity (Goal 1, Objectives 2,3).

The primary vehicle for implementing the UNCCD is through National Action Programmes, that are to provide a coordinated strategy for preventing desertification (Article 9). Among the specific objectives of the National Action Programmes, is the strengthening of national institutional and legal frameworks (Article 10.4). National Action Programmes are also to “promote policies and strengthen institutional frameworks” that facilitate cooperation among parties at all levels, from the donor community, to governments, to local populations (Article 10.2 (e)).

WHC calls for the establishment of “comprehensive planning programmes”, and the development of appropriate legal measures to implement the objectives of the Convention (Article 5 (a), (d)). Likewise, the Ramsar Convention requires Parties to formulate and implement plans for the conservation and wise use of wetlands (Article 3.1). The Wise Use Guidelines and associated guidance documents provide

further priority and direction on the development of a coordinated national approach to policy and institutional development (see for example, Additional Guidance for the Implementation of the Wise Use Concept, Resolution 5.6, Annex).

ITTA expressly addresses the development of appropriate institutions and policies for sustainable forest management. ITTA 1994 includes a very broad objective to enhance Party capacity to export timber and timber products from sustainably managed forests (Article 1 (d)). ITTA 2006 added a more explicit objective to strengthen “the capacity of members to improve forest law enforcement and governance, and address illegal logging and related trade in tropical timber (Article 1 (n)).”

Major Gaps, Overlaps and Conflicts:

Many of the global LBIs call for coordinated national planning and strategic development, as well as incorporation of LBI objectives into their national policies. However, as earlier noted, there is insufficient coordination across the various LBIs as well as other MEAs. For parties signatory to many such agreements, this creates a major challenge in the coordination and streamlining of planning efforts.

Table 15 SFM 7- Legal, Policy and Institutional Frameworks: Summary of Gaps, Overlaps, and Conflicts in Global Legally Binding Instruments

Multi-lateral Legal Frameworks	There is no overarching legal framework for forests. The CBD could assume such a responsibility but it lacks full support and participation by parties key to global forest biodiversity, production and trade. There is some evidence that the WTA's trade liberalizing objectives conflict with other global legally-binding forest-related instruments; however, the extent of the conflict is not fully apparent nor are there mechanisms in place for addressing such conflicts.
Multi-lateral Policy Frameworks	Policy frameworks sporadic and insufficiently coordinated.
Multi-lateral Institutional Frameworks	The global forest-related institutional framework is “divided and contested”, despite progress toward coordinating the administration of various institutions through UNEP and sharing a common funding agency.
Multi-lateral Finance	The Global Environmental Facility (GEF) has funded developing country parties of CBD, UNFCCC and UNCCD. WHC increased emphasis on developing country World Heritage sites. ITTA finances SFM projects in tropics. Lack of developing country resources remains a persistent problem. The UNCCD, in particular, is chronically under-resourced.
Country-level Legal, Policy and Institutional Frameworks	Different requirements, in various LBIs and other MEAs, to develop national programs addressing legal, policy and institutional planning and development, leads to overlap of national planning efforts.

Non Legally Binding Global Forest Instruments

The IPF/IFF proposals for action and the UNFF have been criticized for their lack of a clear mandate and sufficient authority to address failures in global forest governance (Davenport 2005; Humphreys 2003; Steiner 2002).

Perhaps due to their non-legally binding nature, however, as well as their exclusive focus on forests, these processes have provided guidance on a holistic set of SFM goals by which other forest-related instruments may be measured. One key SFM-focused “policy framework” addressed under the IPF/IFF Proposals for Action, is the call for “national forest programmes” (IPF 17 (a)-(i)). This policy approach encourages countries to set their own priorities for SFM and integrate these priorities into an inter-sectoral, cohesive national framework. The National Forest Programme Facility, hosted by FAO, provides support for the development of national forest programmes with funding from multiple donors.

Meanwhile, throughout of the history of the IPF, IFF and UNFF processes, there has been ongoing debate regarding the need for a single global forest-related instrument that would reflect areas of consensus around global forest priorities. Some countries have argued in strong support of a legally binding instrument, while others have argued for a voluntary instrument or no instrument at all. Despite this continued dispute, UNFF 6 concluded with a mandate to develop a voluntary instrument or “Forest Code” that would summarize a set of commonly agreed upon global forest priorities. A series of country-led efforts and an ad hoc meeting have facilitated work on this Code, which is to be finalized under UNFF 7 in April, 2007.

Non-legally binding instruments have also played a role in the coordination of global finance. The Collaborative Partnership on Forests coordinates with the FAO in producing the “Forestry Sourcebook”, which consolidates information on SFM financing worldwide.

Major gaps, overlaps, conflicts:

The IPF/IFF Proposals for Action provide a long and complex list of important legal, policy, and institutional issues. However, the PFA lack an institutional framework for implementation. The UNFF provides a more permanent home for coordinated global dialogue and action on forests. However, the all-inclusive, consensus-based decision-making approach of the UNFF has been criticized for preventing concerted action across its broad diversity of members. In regards to global finance, the UNFF has contributed to information sharing through its participation in the Collaborative Partnership (CPF). The CPF coordinates with the FAO in the production of the "Forestry Sourcebook", which consolidates information on SFM financing.

Regional and C&I Approaches

Regional legal, policy and institutional frameworks for global forest governance, not surprisingly, vary widely from region to region. Nevertheless, there are examples of sophisticated forest policy regimes at the regional-level – regimes that are characterized by well-coordinated legal, policy and institutional frameworks for forest governance.

Non-European Temperate and Boreal Forests

The Montreal Process does not involve any express governmental commitments (Rametsteiner and Simula 2003) but has been voluntarily incorporated into governmental and non-governmental processes in Canada and elsewhere.

Europe

The Ministerial Conference on the Protection of Forests in Europe, together with its associated Criteria and Indicators, is an ad hoc institutional arrangement involving "high-level political commitment" focused on the "strengthening of synergies for sustainable forest management in Europe through cross-sectoral cooperation and National Forest Programmes" (Vienna, res. 1). While the conference lacks enforcement measures, ministerial participation suggests significant political commitment to the resolutions it has produced.

Multi-lateral finance is addressed through Helsinki Resolution 3, "Forestry Cooperation with Countries with Economies in Transition". This resolution encourages the transfer of finances, technology and capacity building from Western European countries to their Central and Eastern European counterparts.

The Forest Law Enforcement, Governance and Trade (FLEGT) process is an EU-initiated regional effort to address global problems of illegal logging. FLEGT provides a framework for the development of partnership agreements between the EU and developing country partners, aimed at stemming the flow of illegal timber into the EU. Thus far, several EU member states have been involved in bi-lateral partnership negotiations.

The Europe and North Asia Forest Law Enforcement and Governance (ENAFLEG) is a ministerial process that involves governments, ENGOs and the private sector in addressing challenges to forest governance in Eurasia. ENAFLEG is hosted by developed and developing country governments and the World Bank.

The Amazon

The Treaty on Amazon Cooperation is a directory instrument committing the parties to the treaty to, amongst other things, "the preservation of the environment and the conservation and rational utilization of the natural resources of {their} territories" (art. 1). Beyond this broad commitment however, the instrument does not structure a regional framework for forests.

A lack of resources and political commitment has hindered progress on the Tarapoto Criteria and Indicators.

The Amazon Cooperation Treaty and the World Bank are discussing have been negotiating a plan to launch a FLEG-like process in the Amazon region (CPF 2006: 4).

Central America

The Central American Forest Convention is a directory instrument that establishes a relatively comprehensive legal, policy and institutional framework for the forests of Central America. The convention directs cooperation on regional-scale issues and encourages cooperation and coordination of national-level forest policy between member countries.

A lack of resources and political commitment has hindered progress on the Lepaterique Criteria and Indicators.

The World Bank and other international agencies have explored the possibility of initiating a FLEG-like ministerial process in Central America (CPF 2006: 4).

Asia

The ASEAN Agreement on the Conservation of Nature and Natural Resources is a directory biodiversity conservation instrument for South East Asia, which has yet to come into force. The agreement proposes to impose a significant regional forest policy regime characterized by substantive management-prescriptions including an obligation to develop forest management plans (art. 6) (Sands 2003: 540-542).

The East Asia Forest Law Enforcement and Governance Initiative (East Asia FLEG), established in 2001, was the first ministerial process aimed expressly at addressing problems of illegal logging. East Asia FLEG is hosted by developed and developing country governments and the World Bank,

Africa

The SADC Forestry Protocol is a comprehensive directory legal framework for the forests of southern Africa (Sands 2003: 490-491), which is supplemented by a policy framework - the Forest Sector Policy and Development Strategy - and a regional institution the Southern African Development Community.

The ATO Criteria and Indicators are relatively well developed, in part owing to collaboration with the ITTO.

The Africa Forest Law Enforcement and Governance initiative (AFLEG) is a ministerial process that aims to improve forest law enforcement and governance in Africa. AFLEG is hosted by developed and developing country governments and the World Bank,

ITTO C&I

There have thus far been three editions of the ITTO C&I. This C&I process has been relatively well resourced and this is reflected in relatively well-defined criteria and indicators. In addition, the endorsement of these C&I within the ITTO's larger global LBI framework could be expected to contribute significantly to their political legitimacy, and has enabled the ITTO to provide financial and technical support for their implementation.

Within the C&I themselves, Criterion 1 provides legal, policy and institutional guidance at the national and forest management unit levels. This guidance is articulated in 11 indicators addressing policy, legal, governance, economic, institutional and planning frameworks.

Major Gaps, Overlaps, Conflicts:

The express level of political commitment, and the affiliations of regional negotiators, varies considerably between regional instruments. The MCPFE is based on the participation of high-level ministers, constituting a level of formal political commitment. The Treaty on Amazon Cooperation, the Central American Forest Convention, ASEAN and the South African Forestry Protocol are all structured as legally binding instruments.

The C&I processes vary in political commitment at the regional as well as the country level. The ITTO and MCPFE C&I, for example, are part of larger intergovernmental institutional frameworks, involving high-level political commitment on the part of participating countries. The Montreal Process, in contrast, does not involve any express governmental commitments (Rametsteiner and Simula 2003) but has been incorporated into governmental and non-governmental processes in Canada and elsewhere. A lack of resources and capacity has thus far hindered progress in the Lepaterique and Tarapoto processes, among others.

The Forest Law Enforcement and Governance processes are innovative examples of collaboration among both developed (consumer) and developing (producer) countries to address illegal logging and trade in illegal forest products in key forested regions. The multiplication of FLEG processes, from the initial East Asia FLEG ministerial conference in 2001, to processes focused on Africa, Eurasia and potentially Latin America, suggests significant levels support for this type of trans-global collaboration on regional issues.

Non-governmental Approaches⁵¹

Forest certification can be viewed as a form of private “governance” in its inclusion of institutionalized procedures for rule-making, civil society involvement and enforcement. Certification lacks the sovereign authority of the state, however, and instead relies heavily on the marketplace as its means to motivate forest producer participation (Glück, Rayner, and Cashore 2005). The lack of state authority has been viewed as both a strength and weakness of forest certification and other non-governmental approaches, leading to considerable debate about the capacity of these instruments to supplant or backstop the global, regional and national-level forest policy regime (Cashore, Auld, and Newsom 2004; Rametsteiner and Simula 2003).

Among its potential strengths, forest certification provides an avenue for direct civil society involvement in decision-making as a means to by-pass inter-governmental stalemate around key issues of SFM. The substantive analysis of FSC P&C, for example, reveals the holistic treatment of many SFM Themes, as well as prescriptions for action, in a manner not found in corresponding inter-governmental processes. On the other hand, forest certification faces many challenges in motivating producer participation at a regionally and globally significant scale. To the extent that it relies on market demand, certification is relevant only to those forested areas managed for the production of products for commercial consumption within environmentally sensitive markets. Furthermore, the more environmentally and socially demanding the standards, the stronger the necessary market demand needed to compel forest producers to seek certification. Thus far market demand is quite limited, and strongest within developed countries. Certification also appears to rely to some degree on the effectiveness of pre-existing state law and order, serving best as a means to augment rather than supplant state-driven forest governance (Glück, Rayner, and Cashore 2005; Rametsteiner and Simula 2003).

As a result of all these factors, uptake of forest certification has been modest and concentrated in the developed world (Cashore et al. 2006). As of the fall of 2006, FSC and PEFC combined cover roughly 272 million hectares worldwide (FSC-AC 2006; PEFC 2006). Furthermore where there is a choice of standards, industry interests tend to show preference for standards requiring the fewest changes in forest management, and this has contributed to considerable stakeholder controversy (Cashore, Auld, and Newsom 2004). In addition, reliance on the marketplace, rather than area-based conservation strategies, often leads to patchwork of implementation at the forest management unit level.

Forest certification is still a relatively new policy tool, having been first initiated only thirteen years ago in 1993. Hence the medium- and longer-term potential of certification as a means to promote SFM remains to be seen. While its on-the-ground implementation is limited, certification's indirect effects are arguably larger. These include influence on domestic and international forestry norms, domestic governmental law (Ebeling 2005; McDermott 2006) and/or procurement policies, as well as inter-governmental processes such as the European Forest Law Enforcement, Governance and Trade (FLEGT) initiative (Brack and Saunders 2004).

In regards to potential overlap and conflicts with other forest-related instruments, the integration of certification into government policy is bounded in part by the trade rules of the WTA. Efforts to improve the comprehensiveness of forest certification by the blanket certification of a national or sub-national forest policy regime according to a particular certification system, or by the implementation of a national purchasing/importing policy applying to private purchasing policies, have, as mentioned, raised tensions with the WTO.

Major Gaps, Overlaps, Conflicts:

Forest certification represents an alternative form of forest governance that allows direct civil society participation in decision-making, sometimes leading to agreement on important issues that have stymied inter-governmental processes. At the same time, certification's reliance on market demand constrains its application in forested areas that are not managed for commercial production for environmentally sensitive markets. Furthermore the less the market demand, the less leverage that certification systems

⁵¹ The majority of this report's thematic assessment of forest certification has focused on the Forest Stewardship Council's International Principles and Criteria, simply because the FSC P&C constitute the only globally applicable substantive *standards* for forest certification. In regards to the institutional and procedural issues covered by Thematic Area VII, however, our broad analysis applies equally to both the FSC and the Program for the Endorsement of Forest Certification (PEFC), the other major global certification system currently in existence.

have to enforce significant changes in forest practices. Forest certification also does not supplant the need for the adequate design and enforcement of government policies. For these reasons among others, uptake of forest certification has been modest, and has been concentrated in developed countries. Meanwhile certification standards for forest practice have varied considerably between regions and countries contributing to stakeholder controversy.

There is considerable realized and potential synergy between forest certification and other forestry institutions and processes. Forest certification has influenced international forestry norms and in some cases has been adopted into governmental law as well as inter-governmental processes. At the same time government use of certification as a regulatory tool for forest practices and trade may lead to conflicts with the WTO.

Part IV Summary and Conclusions

Many people have come to the conclusion that the international forest policy process has reached an impasse, and that this may be partly due to lack of political will. After taking stock of the abundance of international agreements, processes and initiatives that are of consequence to forest-related issues, we would argue this is not the case-- there is a large amount of interest and political will in addressing forests at the international level. However the lack of consensus on how these issues should be addressed has led to fragmentation, overlap and conflict.

In the absence of a coordinated forest regime, numerous forest-related instruments have filled the void, each with a unique focus, such as climate change, biodiversity, or global trade. In some cases forest-related issues are embodied in founding agreements and policy documents. In others, forest-related content has emerged later in the instrument's development, whether through decisions made at successive Conferences of the Parties or work programs or guidelines. Overall, the focus on forests has continued to spread and disperse as part of a general broadening of mandates and growing preference for holistic approaches to sustainable development.

The expansion of individual mandates and resulting overlap of objectives has revealed some key areas of incongruity. Central among these is the conflict between trade and environmental objectives, for example as witnessed between WTO and CBD over the protection of indigenous knowledge. To date the environmental MEAs lack the legal and financial resources to place their conservation priorities on equal footing with economic priorities for global trade.

While the diversity of instruments can lead to fragmentation and conflict, it has also promoted a more comprehensive coverage of a wide range of forest issues. This is true not only in regards to substantive mandates, for example biodiversity conservation and the promotion of global trade, but also in regards to instrument type. Non-legally binding instruments (NLBIs) have covered issues too contentious for LBIs to address. Issues of social welfare receive greater emphasis in developing than in developed country regional processes. Non-governmental certification processes employ some of the strongest and most specific language defining particular visions of sustainable forestry at the forest management unit level. Hence, the most effective scale and institutional approach for addressing forest issues of global concern will vary depending on the nature of the problem to be addressed.

On identifying and addressing "Gaps"

This report assesses the coverage of a broad range of commonly accepted themes and criteria for sustainable forest management within international forest-related policy. The identification of "gaps" points to important aspects of SFM that are currently not covered by the various existing instrument types at global and/or regional scales. The use of the term "gaps" is not intended, however, to imply a normative judgment regarding how, when, where and to what extent these issues should be addressed. Rather it points to issues that would need to be covered somehow, if parties are to address commonly accepted visions of SFM. In fact the absence—intentional or otherwise—of guidance on key criteria at any given level may be taken as an indication that addressing the issue in that forum is either undesirable or impracticable. For instance, it could become accepted that it is most appropriate to deal with water conservation among countries that share the same watershed or catchments area (such as the Amazon or Congo basins).

There are a number of possible explanations, beyond matters of efficiency, why some SFM issues are well covered and some not. One could be the level of shared normative support or concern. For example, as climate change has become more firmly established as an international concern, carbon sequestration has been adopted as an important issue by many instruments. Meanwhile, less developed and lower profile issues, such as soil conservation, remain poorly addressed. At the other extreme are high-profile issues that remain unaddressed due to an elevated level of political controversy associated with them. As observed in Thematic Area 6, socio-economic functions, it appears that some issues may not be well covered, or fraught with conflicting approaches, due to a lack of consensus surrounding the nature of the problem and/or its solution.

Regardless of the rationale associated with deciding what should be addressed at what level, at the very least it is reasonable to expect that for reasons of effectiveness and efficiency, globally-applicable agreements should be consistent with each other, particularly when the signatories to these are essentially the same country parties.

The need for coordination: by whom, and how?

The result of inter-relatedness of the issues and mandates dictates that international forest policy requires a high degree of coordination. There have been many efforts to do this, most recently and

notably through the Collaborative Partnership on Forests. The fact that a global forest instrument on forests does not yet exist is not for lack of interest in the issue; rather, it may be due to there being too much interest, fractured amongst many different entities.

Taking a step back to survey the manner in which the various elements fit together, we have also found that membership is an important dynamic to consider – particularly in those cases when many countries are not party to certain key forest-related agreements, a fact that becomes particularly salient with respect to large consumers or producers of forest products.

The CPF institutions do not share the same member composition as the agreements they are tasked with coordinating. Likewise at the country level, different government agencies (e.g. environment or trade and foreign affairs) take the lead within different processes. This has led to inconsistencies, highlighting the need for improved internal coordination. If the disconnect between agencies and sectors is irreconcilable at the domestic level, it is unlikely to improve at the international level.

Future Research Needs

Scope of Forest-Related Issues and Instruments Examined

While this report has covered a great deal of ground, both in terms of the number and type of instruments examined, as well as the scope of forest-related issues considered, there exist many opportunities for further research. First, with so many issues related in different ways to forests, it is difficult to decide which instruments, agreements and processes to include, and at what level of detail. Furthermore, as the issues are interrelated, delineating the various thematic sections is problematic and somewhat subjective. Future research may choose to expand the scope of the thematic elements, or chose one particular issue and examine the effects from several different sectors.

Furthermore, the plethora of instruments not covered in this report provides fertile soil for future research. For example, more analysis could be done on illegal logging and forest governance, by addressing such processes as the G8 Illegal Logging dialogue and GLOBE (Global Legislators Organization for a Balanced Environment), and by conducting more in-depth study of the Forest Law Enforcement and Governance (FLEG) processes. Other agreements that could be considered include regional trade agreements and their environmental components, such as the North American Free Trade Agreement and its Commission for Environmental Cooperation. Furthermore, while this study chose to focus on instruments and processes affecting heavily forested and/or major wood producing countries, future research may benefit from including low forest cover countries and processes relevant to them, as these are often at the greatest risk of irreversible land degradation and desertification.

Monitoring Developments Within Instruments Examined in this Study

The instruments that affect international forest policy are dynamic entities, and are in a constant state of change. Future research efforts should be devoted to a systematic and ongoing assessment of new “regime layers” as they are added, and build upon this existing work to understand how new developments such as COP decisions fit into the larger policy context, thereby encouraging synergy and preventing redundancy. The maintenance of a multi-lateral forest policy database could facilitate such an effort.

Instrument Scale, Institutional Structure, and Effectiveness

The plethora of existing MEA's provide a unique opportunity for systematic research assessing the appropriate scale (from global to regional) and institutional structure (legal, non-legal, market-based, etc.) of international forest governance. The most effective approach, furthermore, may vary depending on the nature of the problem. This report's substantive and institutional analysis of existing instruments lays the groundwork for the systematic study of the effectiveness of different approaches to different forest-related priorities.

In regards to the type of instrument—legal versus non-legal, governmental versus market-based, there are pros and cons associated with each, and there is a growing body of research devoted to studying this. Increasingly, the efficacy of “hard” forms of international legalization are being questioned, and greater recognition is being given to the “compliance pull” or moral suasion of certain non-legally binding instruments, particularly market-based instruments such as forest financing. While the former have been criticized as catering to the lowest common denominator and plagued by poor compliance, it has been argued that non-binding agreements are easier to achieve, more likely to adopt ambitious albeit non-binding targets and to encourage substantive technical discussion (Victor 2006). The magnitude and complexity of forest issues and the reality of international agenda-setting strongly suggests that it would be best to adopt a suite of approaches (Gunningham and Grabosky 1998), tailored

to address the particular challenges both political and substantive, and designed to complement each other (Glück, Rayner, and Cashore 2005).

More research and monitoring are needed to determine which approaches are working and under what conditions. This study was limited to the evaluation of documents supporting the instruments examined, and is unable to comment on their actual implementation. The report has shown, however, that in comparison with other forms of international law, most of these agreements are very weak in terms of commitments required and their ability to be enforced, as they are commonly expressed in highly discretionary language. This highlights the need for research on the implementation of the agreements and their on-the-ground consequences.

Forest Financing

This report has shown that even legally binding MEAs and their forest-related obligations are founded upon largely advisory language, and associated compliance mechanisms are often inconsequential when compared to those associated with trade agreements. This increases the importance of relying on other means of achieving “compliance pull”. For many countries, meeting these additional obligations is not only a matter of political will, but is also contingent on the provision of financial and technical means of implementation. More than a mere incentive mechanism, forest financing may enable the circumvention of barriers to implementing projects in support of meeting international objectives.

Future research efforts should be directed at assessing the amount of financial and human resources allocated to forest issues within each of the forest related instruments, to understand the relative importance of forests within their greater mandate, as well as to assess the relative financial importance of each organization. Further, this information could be used in combination with the findings of this project to help coordinate forest financing, use resources more efficiently, and identify areas that are lacking financing.

As important as finding out where financing comes from, it is also important to know where it goes. Further research could be directed towards assessing forest-related aid effectiveness- to understand what conditions contribute to the maximum on-the-ground impact, to learn from successful projects and partnerships, and to increase the ability to distinguish between the need for means of implementation and the need for political will.

In closing, it is clear that support for addressing forests as an international issue is sufficiently strong as to make it politically very difficult to ignore. However, efforts are currently fragmented amongst many institutions, and although attempts at coordination exist, such as the CPF, they have yet to be given sufficient resources or the mandate to determine the actions of component regimes. Furthermore, these regimes have yet to be given equal footing with trade agreements with which they may conflict. This is reflective of corresponding domestic-level conflict among trade and environment interests and associated governmental agencies within each country Party.

The challenges facing the world's forests are complex, and will likely require multiple approaches at a variety of levels. Systematic information sharing and collaboration is needed to coordinate these efforts. This report, and its accompanying database, aims to contribute to such a process and facilitate a more focused global forest policy dialogue.

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Appendix A – Other Comparative Reports

The following paragraphs provide an overview of four other comparative studies focused on the substantive coverage of SFM under existing multilateral instruments and processes. This overview is not intended to be exhaustive but rather to point the reader to other studies of interest prepared at different stages in the development of a global forest-related regime. The focus of this appendix is on substantive analyses and does not include studies primarily concerned with the institutional structures of existing and potential future international arrangements on forests (Pülzl, Rametsteiner, and Tarasofsky 2004; Scholz 2004; etc.).

The Costa Rica-Canada Initiative (CRCI) was formed to aid the IFF by identifying possible elements and developing consensus on an international arrangement on forests. As part of this effort, an interim report prepared for the CRCI initiative identified key gaps and overlaps in the existing international forestry regime. The themes and associated criteria framing this gap analysis were selected based on literature and expert consultation, and included 1) the international forest regime infrastructure, 2) capacity building, 3) environmental issues, 4) forest management issues, 5) economic issues, and 6) social and equity issues. For each of these six thematic areas, five to thirteen sub-themes or “issues” were also identified. A series of “hard law”, “soft law”, and “civil society” instruments were assessed for their coverage of these six themes. Among the studies findings, were observations common to many comparative assessments, including the lack of a global forest fund, a fragmentation of forest-related governance across multiple instruments, lack of attention to land tenure and to economic incentives for sustainable management (RFI 1998).

A background document prepared for the IFF in 1998 also provides a useful analysis of existing gaps and overlaps in global forest-related governance (E/CN.17/IFF/1998). The instruments covered in this report include ten global and seven regional legally binding instruments, as well as the Forest Principles, Agenda 21 and the IPF PFA. The report observes that most of the “functions and roles of forests have been regulated to some extent” but that there is an overall lack of coordination and fragmentation of instruments addressing forest-related issues. It concludes that forest conservation issues are generally covered, but that the instruments lack a coordinated and holistic approach to SFM. The document also includes a table indicating the degree to which 16 elements of forest management are addressed by the major instruments under analysis.

The International Union for the Conservation of Nature (IUCN) has conducted a detailed analysis entitled “Assessing the Forest Regime” (Tarasofsky 1999b). This study assesses a number of legally binding and non-legally binding global instruments regarding their progress towards addressing key IPF Proposals for Action under each of the IPF PFA’s four major Programme Elements.⁵² Major gaps identified include the lack of coverage of the underlying causes of deforestation, agrarian land reform for landless peasants, indigenous entitlements, environmental aspects of mining, activities of Transnational Corporations, the lack of international mechanisms for addressing illegal trade in forest products, and inadequate developed country financing for developing country efforts. The report suggests that overlapping efforts is not a major problem, given the different emphasis of each instrument. Nevertheless, instruments could benefit from increased harmonization. In particular, the report’s authors emphasize the potential for conflict between international trade law and sustainable development.

The International Institute for Environment and Development (IIED) commissioned a report that summarizes existing legal and institutional frameworks for global forest policy (Chaytor 2001). This report identifies several issues as of key importance in the multilateral regulation of forests. These are attention to the causes of deforestation, a focus on SFM not just timber production, the equitable treatment of forest dwellers and local communities, inter-governmental support, and the implementation of existing legal instruments. The report focused its analysis on the UNCED Forest Principles, the IPF and IFF, the three Rio Conventions (CBD, UNCCD, UNFCCC) and the ITTA. Three primary reasons were identified regarding why the current international forestry regime has failed to slow “the destruction of ecosystems” and protect “the socio-economic interests of producer countries”. The first reason is the North/South split of forestry problems, with consumption in the North and forest destruction in the South. The second are differing development priorities in the North and the South. The third is the

⁵² The four Programme elements of the IPF PFA are: I. Implementation of Forest-related Decisions of UNCED; II. International Cooperation in Financial Assistance and Technology Transfer; III. Scientific Research, Forest Assessment and the Development of Criteria and Indicators for Sustainable Forest Management; IV. Trade and Environment in Relation to Forest Products and Services.

weakness of existing global forest governance institutions, due in part to increasing fragmentation, a lack of coordination, and inadequate financing.

Appendix B – List of Forest-related Instruments, Agreements and Processes Covered in Thematic Analyses

Global, Legally-binding Forest-related Instruments	Abbreviation
1. Convention on Biodiversity	CBD
2. United Nations Framework Convention on Climate Change	UNFCCC
3. United Nations Convention to Combat Desertification	UNCCD
4. Convention on International Trade in Endangered Species	CITES
5. World Heritage Convention	WHC
6. The Ramsar Convention on Wetlands	Ramsar
7. International Tropical Timber Agreement	ITTA
8. World Trade Agreement	WTA

Global, Non Legally-binding Forest-related Instruments	Abbreviation
1. Intergovernmental Panel on Forests	IPF
2. Intergovernmental Forum on Forests	IFF
3. United Nations Forum on Forests	UNFF

Regional Forest-related Instruments	Abbreviation
1. Regional Convention for the Management and Conservation of Natural Forest Ecosystems and the Development of Forest Plantations	Central American Forest Convention
2. Amazon Cooperation Treaty	ACT
3. Ministerial Conference for the Protection of Forests in Europe	MCPFE
4. European Union Action Plan for Forest Law Enforcement, Governance and Trade	FLEGT
5. Europe and North Asia Forest Law Enforcement and Governance	ENAFLEG
6. Association of Southeast Asian Nations Agreement on the Conservation of Nature and Natural Resources.	ASEAN Agreement
7. South African Development Community's Forestry Protocol	SADC Forestry Protocol
8. The East Asia Forest Law Enforcement and Governance Initiative	East Asia FLEG
9. Africa Forest Law Enforcement and Governance initiative	AFLEG

Criteria and Indicator Processes for Forest Management	Abbreviation
1. Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests	Montreal Process
2. Lepaterique Process of Central America on Criteria and Indicators for Sustainable Forest Management	Lepaterique Process
3. Tarapoto Proposal of Criteria and Indicators for Sustainability of the Amazon Forest	Tarapoto Proposal
4. Ministerial Conference for the Protection of Forests in Europe Improved Pan-European Indicators for Sustainable Management	MCPFE C&I
5. ATTO/ITTO principles, criteria, and indicators for the sustainable management of African natural tropical forests	ATO/ITTO C&I
6. International Tropical Timber Organization Criteria and Indicators	ITTO C&I

Global Forest Certification Systems	Abbreviation
1. The Programme for the Endorsement of Forest Certification Schemes	PEFC
2. The Forest Stewardship Council	FSC