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Uses and Impacts of Criteria & Indicators for Sustainable Forest Management at the Field/FMU Level and Other Operational Levels

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LIST OF ACRONYMS

ACTO	Amazon Cooperation Treaty Organization
AF&PA	American Forest & Paper Association
AFS	Australian Forestry Standard
ATO	African Timber Organization
BMP	Best management practices
C&I	Criteria and indicators (for sustainable forest management)
CATIE	Center for Tropical Agricultural Research and Higher Education
CBD	Convention on Biological Diversity
CCAB-AP	Central American Council of Forests and Protected Areas
CERFLOR	Brazilian Program of Forest Certification
CFCI	Cameroon Forest Certification Initiative
CFME	Community Forest Management and Enterprises (ITTO Thematic Programme)
CIFOR	Center for International Forestry Research
CoC	Chain of custody
COP	Conference of Parties
CPF	Collaborative Partnership on Forests
CSA	Canadian Standards Association
CSD	Commission on Sustainable Development
EC	European Community
ECOFOR	Ecosystemes Forestiers
ECOSOC	Economic and Social Council of the United Nations
EFI	European Forest Institute
ED	Executive Director - ITTO
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FMP	Forest management plan
FMU	Forest management unit
FLEG	Forest law enforcement and governance
FLEGT	Forest law enforcement, governance and trade
FPCD	Foundation for People and Community Development
FRA	Global Forest Resources Assessment
FSC	Forest Stewardship Council
G3	Three Rights Holders Group (IFFA, GAFC, IAIPTF)
GAFC	Global Alliance of Community Forestry
GEF	Global Environment Facility
IAIPTF	International Alliance of Indigenous Peoples of the Tropical Forests
IEA	International Energy Agency
IFF	Intergovernmental Forum on Forests
IFFA	International Family Forest Alliance
IPF	Intergovernmental Panel on Forests
ISCI	Intergovernmental Seminar on Criteria and Indicators
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	World Conservation Union
IUFRO	International Union of Forest Research Organizations
JPOI	Johannesburg Plan of Implementation
LEI	Lembaga Ekolabel Indonesia
MAR	Forest monitoring, assessment and reporting
MCPFE	Ministerial Conference on the Protection of Forests in Europe (Forest Europe)
MPWG	Montreal Process Working Group
MTCC	Malaysian Timber Certification Council
NGO	Non-governmental organization
OECD	Organization for Economic Cooperation and Development
P&C	Principles and criteria
PC&I	Principles, criteria and indicators
PEFC	Programme for the Endorsement of Forest Certification
PROFOR	Programme on Forests

PEOLG	Pan-European Operational Level Guidelines for Sustainable Forest Management
REDD	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
REDDES	Reducing Deforestation and Forest Degradation and Enhancing Environmental Services in Tropical Forests (ITTO Thematic Programme)
RIL	Reduced impact logging
Rio+20	United Nations Conference on Sustainable Development (June 2012, Rio de Janeiro)
SADC	Southern African Development Community
SFI	Sustainable Forestry Initiative Program
SFM	Sustainable forest management
SGEC	Sustainable Green Ecosystem Council
SIDA	Swedish International Development Agency
STA	Sarawak Timber Association
TFLET	(Tropical) Forest Law Enforcement, Governance and Trade (ITTO Thematic Programme)
TFF	Tropical Forest Foundation
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UN-REDD	United Nations Collaborative Programme on REDD
VPA	Voluntary Partnership Agreement
WBCSD	World Business Council on Sustainable Development
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development

EXECUTIVE SUMMARY

A. Introduction

1. Criteria and indicators for sustainable forest management (C&I for SFM) have been described as the most important and innovative policy instrument for operationalising the emerging concept of "sustainable forest management". The International Tropical Timber Organization (ITTO) pioneered the development of C&I in the early 1990's to assess the conditions of natural tropical forests in producer member countries and help identify weaknesses in forest practices and improvements needed[1]. Based on this early work and the outcomes of the 1992 Rio Earth Summit, C&I initiatives were launched around the world.

2. By 2000, 9 regional and international C&I processes involving some 150 countries had been introduced (a number with support from FAO, UNEP and ITTO) and subsequently endorsed by the international forest policy community[2] as tools to monitor, assess and report on trends in forest conditions and progress toward SFM and, in turn, inform policy and management decisions. While the resulting sets of C&I differed in various respects, they all reflected a holistic approach to forests as ecosystems with multiple values beyond wood and fiber production. Criteria represented the essential economic, social, environmental and policy elements of SFM; indicators provided the ways to measure them.

3. During the last decade, ITTO has continued to provide leadership in the review, improvement and implementation of C&I, which have been among the Organization's most important policy work. The ITTO has invested USD 30 million in training workshops and projects to build the capacity of tropical timber producer members to apply C&I at national and forest management unit (FMU) levels, with a view to improving tropical forest management. Several other C&I processes, including in the temperate/boreal forest region, have also remained active and improved initial sets of C&I based on the experiences of countries in data collection, analysis and reporting.

4. Today, it is recognized that C&I have contributed to a common understanding, within and across countries, of what is meant by SFM and provided a common approach to assessing forest trends and progress towards SFM, as well as a platform for exchanging knowledge, experiences and lessons learned. C&I have led to identification of the "seven thematic elements of SFM" which are drawn from the criteria common to process-level sets of C&I and now form the basis and organizing framework for the periodic global forest resource assessments (FRAs) coordinated by FAO.

5. At the same time, little information has been compiled on the ways C&I have been operationalized and contributed to improved forest policies and management practices. This study has been undertaken to gain a better understanding of the experiences of countries worldwide in using C&I and the impacts of these uses on SFM, as well as to identify relevant trends, developments and emerging issues. On this basis, proposals are made with a view to strengthening the impact of ITTO's C&I in the field, informing a possible review of ITTO's current C&I (last updated in 2005) and enhancing collaboration among C&I processes.

B. Scope of the study

6. This study is global in nature and focuses on the following five active C&I processes which together involve some 90 countries with tropical, temperate and/or boreal forests:

- ITTO C&I for sustainable management of natural tropical forests
- African Timber Organization/ITTO (ATO/ITTO) principles, criteria and indicators (PC&I) for the sustainable management of African natural tropical forests
- Tarapoto Process on C&I for sustainability of Amazonian forests (coordinated by ACTO)
- Pan-European C&I for SFM (coordinated by Forest Europe)
- Montreal Process Working Group on C&I for the conservation and sustainable management of temperate and boreal forests[3]

7. The sets of C&I currently used by the five processes are conceptually similar, but differ, sometimes significantly, in scale, emphasis and level of detail. ITTO's 2005 C&I closely integrate national and FMU level C&I. Seven criteria and 48 indicators apply at both levels; an additional 9 indicators apply at the national level only. The ATO/ITTO PC&I were developed in 2001 and reflect a highly successful early collaboration between ITTO and African tropical timber producers. The detailed PC&I are normative in

[1] *ITTO Criteria for the Measurement of Sustainable Tropical Forest Management (1992)*
[2] Intergovernmental Panel on Forests (IPF) 1995-1997; Intergovernmental Forum on Forests (IFF) 1997-2000
[3] Many ATO/ITTO and Tarapoto countries are ITTO producers. Many European and Montreal Process countries are ITTO consumers.

nature[4] and comprise 4 principles (1 national, 3 FMU) under which are a total of 20 national and FMU criteria, 90 indicators and 145 sub-indicators. The Tarapoto Process dates from the same period and focuses on a core set of 7 criteria (3 national, 3 FMU, 1 international) and 15 indicators as priorities for field validation in the Amazon region. These priority C&I are drawn from more detailed C&I contained in the 1995 Tarapoto Proposal.

8. The Pan-European C&I were last reviewed in 2002 and include 6 regional/national criteria with 52 quantitative and qualitative indicators. The Montreal Process includes 7 national level criteria with 54 indicators, which were updated in 2007-2008 following a comprehensive review. It is significant that neither process has elaborated FMU level C&I (or plans to do so) due to the significant differences among participating countries noted in paragraph 9. The lack of FMU C&I does not mean that temperate/boreal countries have not operationalized C&I in ways that have had a positive effect on forest management but that such applications may be indirect.

9. In addition to variations among C&I processes, countries within and across processes differ significantly in terms of forest governance structures (e.g. centralized versus decentralized), forest ownership patterns (one government owner versus millions of small private owners), existing forest policy frameworks and forestry traditions, as well as in forest type, extent and distribution. These factors, together with capacity issues, affect how countries use and apply C&I.

C. Methodology

10. The differences among sets of C&I, in particular regarding FMU level C&I, mean there is no common framework across processes to assess field level uses of C&I or their impact on forest practices. This lack of a common C&I structure required a broad approach in order to take into account ways countries may have operationalized C&I through national and subnational forest policies, programmes and regulations which impact how forests are managed at the field level.

11. Based on consultations with the ITTO Secretariat, it was decided that the most effective and efficient way to obtain factual information from a wide range of countries and C&I users at various levels would be through the use of general questionnaires. Two surveys were developed to target:

- Government officials with responsibilities at national or subnational (e.g. state, provincial, regional, local) levels for forest policy, planning, regulation and/or management;5 and
- Private forest stakeholders, including companies, associations and other operators subject to government policies and regulations, as well as forest certification programmes.

12. Between March and December 2011, the Executive Director circulated the government survey to some 100 officials in 40 countries, including 32 ITTO member countries for which contact information was provided by ITTO focal points. During the same timeframe, the second survey was circulated to private and other non-government stakeholders in 70 countries, including virtually all ITTO members, based on contact information drawn from ITTO and consultant databases, internet searches and personal contacts.

13. While survey responses provide the foundation for this study, the consultants also drew on ex-post evaluations of ITTO funded C&I projects in Asia, recent regional and international forest assessments (e.g. State of Europe's Forests 2011, SFM Tropics 2011, FRA 2010), ITTO's *25 Success Stories* commemorating its 25th anniversary (October 2011), and the outputs of recent C&I process collaborative meetings.

D. Overview of government survey results

14. Survey responses were received from 46 forest officials in 25 countries, including 17 responses from 10 ITTO producer countries[6], mostly from Latin America, and 25 responses from 11 ITTO consumer countries associated with the Pan-European or Montreal C&I processes[7]. ITTO ex-post evaluations and

[4] C&I used by the other four processes are formulated as neutral rather than performance measures.
[5] A pilot survey with limited circulation helped determine the suitability of questions for countries participating in processes without FMU level C&I.
[6] Brazil, Colombia, Cote-d'Ivoire, Guatemala, Guyana, Honduras, Malaysia, Mexico, Peru, Togo
[7] Austria, Canada, China, Finland, Japan, Korea, New Zealand, Norway, Sweden, UK, US

success stories were used to bring forward the experiences African and Asian producers which were not represented in survey responses[8]. Four responses were also received from non-ITTO members[9].

15. Together, responding forest authorities own, manage and/or regulate about 1 billion hectares (ha) of public and private forests, of which 40% is in the tropics. This represents 25% of the world's forests and an estimated 45-50% of production forests, which is significant. While responses provide a good overall picture of the range of C&I applications and impacts, specific applications and impacts, which are summarized below, are highly individual by country to factors noted in paragraph 9.

D.1. C&I as a framework for forest monitoring, assessment and reporting (MAR)

16. Within the ITTO, ATO/ITTO and Tarapoto processes:[10]

- C&I are generally, but not consistently, used as a framework for MAR at the national level and for reporting to ACTO, ITTO (for SFM Tropics) and FAO (for the FRAs).
- Several countries have developed their own sets of C&I based on ITTO's C&I to reflect national and FMU circumstances and special forest ecosystems (e.g. mangroves).
- A number of countries, often with ITTO assistance, have used C&I frameworks to strengthen national and FMU baseline data and forest inventories and build data bases on social and environmental indicators.
- Applications of FMU C&I are uneven across countries. Some countries are using FMU C&I to:
    - Monitor and evaluate FMU management based on forest management plans (FMPs) or other operational plans
    - Evaluate and report on progress toward SFM at broader levels by aggregating FMU level data
    - Report on certified forest areas
- ITTO FMU C&I are typically used for MAR of ITTO-financed projects.

17. Within the Pan-European and Montreal processes:

- C&I are widely used as the framework for periodic MAR at the national level and for national reporting at regional/process and international levels, including for the FRAs.
- Process-level C&I have often been stepped down or otherwise adapted to national circumstances (e.g. by developing national-level C&I) to facilitate MAR.
- National level reporting may be more detailed and comprehensive than C&I and draw on additional sources of information.
- In federations, national level data for many indicators is typically obtained by aggregating field data provided by states/provinces.
- Process/national level C&I may provide a basis for MAR at subnational and FMU levels.
- A number of state/provincial forest authorities have identified subsets of C&I (e.g. core indicators) for use as a MAR framework, including in some cases at the FMU level.
- Trends observed through C&I-based MAR have highlighted problems and catalyzed needed adjustments/improvements in forest policies and practices in some countries.
- C&I have been widely used to organize, compile, present and communicate existing forest-related data and information.

D.2. Applications of C&I in forest policies, programmes, plans and regulations

18. A number of countries across the five C&I processes have operationalized C&I by incorporating them in various ways and at various levels into forest policies, plans and/or regulations, sometimes in response to information generated by C&I-based MAR. For example, individual ITTO producers, often facilitated by ITTO training and project support, have applied national and FMU C&I as a basis or framework for one or more of the following:

- Forest-related legislation and regulations at national, local and/or FMU levels
- Forest-related planning at state, river basin and/or FMU levels
- Developing and approving forest management plans and monitoring/evaluating compliance
- Establishing best management practices and other technical standards
- Preparing forest management guidelines, procedures and manuals
- Formulating terms of concession contracts, licenses and logging permits, evaluating performance and auditing
- Developing legality and chain-of-custody control and verification systems

[8] Ghana, Gabon, Indonesia, Philippines, Thailand
[9] Argentina, Chile, Russian Federation, Slovenia
[10] While Mexico is a member of the Montreal Process, its responses are incorporated under ITTO producers.

- Carrying out environmental monitoring and impact assessments
- Developing national forest certification schemes

19. In a number of Pan-European and Montreal process countries, C&I have been integrated into, or helped shape, national forest programmes (NFPs), strategies, plans or guidelines. Individual countries have also applied C&I in the context of:

- Improving forest legislation and regulations at national, local and/or FMU levels
- Developing national or subnational (e.g. provincial/state) forestry standards
- Developing best management practices for experimental or model forests
- Assisting private forest owners to develop FMU management plans
- Evaluating regulatory compliance and effectiveness
- Regulating wood harvesting quotas

D.3. Stakeholder involvement

20. Nearly all respondents indicated making efforts to engage stakeholders in C&I activities. A variety of means are being employed, including establishing committees, roundtables and dialogues at national, state/provincial and/or local levels. Many countries consider that the meaningful involvement of stakeholders, while often challenging, is essential to the effective use and uptake of C&I. A number of European and Montreal Process countries emphasized that stakeholder participation is a basic principle of their wider forest management planning, assessment, reporting and regulatory processes.

D.4. Challenges encountered

21. Nearly all countries reported facing challenges to using C&I. The major challenges across the five C&I processes were:

- Limited financial and technical resources, especially to collect data on social and environmental indicators[11];
- Poor stakeholder understanding of the concept and purpose of C&I (including confusion between C&I and certification); and
- Conflict among stakeholders on the use and management of forest resources

22. ITTO producers also noted the lack of political commitment as a serious constraint, while European and Montreal respondents identified multiple levels or layers of forest authorities. Other challenges were more country-specific and included issues related to land tenure, limited forest mandates, lack of cross-sectoral coordination, agricultural incursions into forests, and the presence in forests of armed groups.

23. Some respondents had encountered challenges with process-level C&I themselves. These included indicators that were redundant, unsuitable or irrelevant to national or FMU circumstances, or overly complex or impractical to use, especially by local and indigenous communities and small FMU operators. It was also noted that C&I sets which had remained unchanged for many years would benefit from review and update to take into account country experiences in using C&I, as well as global trends and developments, e.g. related to climate change and bioenergy.

D.5. Impacts of C&I on SFM

24. In general, forest authorities have not undertaken formal assessments to determine the impacts of C&I uptake on forest operations. The views of experts responding to the government show variations from country to country and sometimes within counties. Despite financial, technical, political and other challenges encountered, 59% of respondents considered that C&I had appreciably improved forest management practices, as follows:

- Great improvement in SFM: 13% of respondents, 6 countries (3 ITTO producers)[12]
- Moderate improvement in SFM: 46% of respondents, 12 countries (6 ITTO producers)
- Slight improvement in SFM: 22% of respondents, 5 countries (1 ITTO producer)
- No improvement in SFM: 17% of respondents, 5 countries (1 ITTO producer)
- Not known: 2% of respondents (1 response from 1 country)

25. The general view was that C&I had contributed to SFM by providing a framework or basis for:

- Developing a common global understanding of SFM and in turn catalyzing improved forest policies, programmes and strategies
- Increasing awareness and appreciation of non-timber forest benefits and values

[11] While all responding countries can report of some indicators, very few countries can report on all indicators.
[12] Some countries with multiple respondents are represented in more than one group, reflecting differing views within a country.

- Improving and expanding forest monitoring and assessment
- Developing management plans and standards and monitoring compliance
- Communicating trends in forest conditions to policy makers and the public
- Communicating with and engaging stakeholders
- Improving forest databases and inventories and systems for collecting, managing, retrieving, updating and analyzing data

26. Among the countries which reported little or no impact of C&I on SFM, reasons given included one or more of the challenges noted in paragraphs 21-23, which had affected C&I uptake; the greater attractiveness of market-oriented certification; a long-standing tradition of SFM; and unique national circumstances which limited C&I relevance (e.g. timber harvesting restricted to plantations).

D.6. Innovative applications of C&I

27. Survey responses revealed that countries are using C&I frameworks in innovative ways which indirectly have positively impacted SFM. Examples include using C&I to identify forest research needs and priorities, develop education initiatives and prepare environmental assessments and management plans for projects impacting forests.

28. One country has used C&I as a basis for creating a conservation bank to generate sustainable financing to conserve unique forests. Under this innovative programme, commercial enterprises, NGOs and other entities can purchase certificates representing 100 square meters of forest protection and rehabilitation. Commercial benefits accrue to companies indirectly in the form of brand imaging to consumers and recognition of corporate social responsibility.

E. Overview of stakeholder survey results

29. Twenty-four survey responses were received from the following stakeholders:

- 8 tropical timber harvesting companies managing 2 million ha of natural forest in Bolivia, Brazil, Cameroon, Ghana and Malaysia (Sarawak)
- 4 industry associations with 760 members representing at least 10 million ha of natural forest in Bolivia, Brazil and Malaysia (Sarawak)13
- 4 plantation companies managing 222,500 ha in Australia, Bolivia, Ecuador and Mexico;
- 1 national NGO working with community production forests in Papua New Guinea (Forests for People and Community Development-FPCD)
- 2 family forest owner associations, including the International Family Forest Alliance (IFFA) whose member organizations represent 25 million families which own an estimated 20-25% of the world's forests, primarily in Europe and North America
- 5 national/regional forest certification programmes covering 94 million ha in Australia, Brazil, Cameroon, Malaysia and North America[14]

30. Despite their small number, these respondents represent a broad cross-section of forest stakeholders, as well as significant forest area, and provide a picture of C&I awareness and use which may well reflect the experiences of stakeholders more widely, particularly in the tropics.

E.1. Harvesting in natural tropical forests (companies and industry associations in Bolivia, Brazil, Cameroon, Ghana, Sarawak)

- All forestry operations are required to be planned and carried out under approved forest management plans, often consistent with SFM. Other requirements may apply as well.
- Most operators are familiar with the ITTO C&I and, depending on country, the ATO/ITTO or Tarapoto C&I. Many had been involved in government discussions on C&I. Several have benefited directly or indirectly from ITTO sponsored C&I training.
- One large association has used ITTO's C&I to train forest managers and workers and establish university curricula.
- Many operators are certified under the Forest Stewardship Council (FSC) and use FSC P&C for MAR. For some, FMU C&I paved the way for certification. Certified operators generally have less need for FMU C&I, although one continues to use them to assess high conservation value forests and forest protective functions.

[13] Two associations could not provide figures on the area of forest represented by their members.
[14] Australian Forest Standard (AFS), CERFLOR (Brazil), Cameroon Forest Certification Initiative (CFCI), Malaysian Timber Certification Council (MTCC), Sustainable Forestry Initiative (SFI - US and Canada)

- A number of non-certified operators use FMU C&I for MAR. Others expressed interest in receiving C&I training, in some cases as a step toward certification.

E.2. Harvesting in tropical plantations (Australia, Bolivia, Ecuador, Mexico)

- All forestry operations are required to be carried out under approved forest management plans. Other internal and external procedures/standards/controls often apply.
- Most operators are FSC or PEFC-certified or in the process of becoming certified.
- Operators generally were unfamiliar with C&I, including FMU C&I.

E.3. Community forestry (PNG)

- While FPCD is very familiar with ITTO's extensive work on C&I, FPCD has developed the Indigenous Community Forestry Group Certification Scheme based on PNG's FSC national standards, which are simple to use and reflect the PNG context.

E.4. Family forestry (temperate/boreal region)

- Government regulations and programmes (e.g. NFPs) apply but vary across countries.
- National forest owner organizations are typically involved in developing national FSC or PEFC standards. Many family harvesting operations are certified.
- In many countries, family forestry is increasingly multiple-use oriented, supplementing or occasionally replacing timber harvesting with income from recreation and non-wood products.
- IFFA uses the Pan-European and Montreal C&I frameworks, together with local/traditional knowledge, as guides to promote SFM, multiple use approaches and locally controlled forests.

E.5. Certification programmes (Australia Brazil, Cameroon, Malaysia, US-Canada)

- All programmes use standards based on one or more C&I frameworks.
- Four programmes are endorsed by PEFC (Programme for the Endorsement of Forest Certification) which is also based on C&I.
- The area of forest certified under these programmes has increased significantly in the last decade and is likely to continue to expand.

F. Trends related to FMU management

31. The following trends and developments are relevant to C&I, including future C&I applications, reviews and updates.

32. Areas under SFM. According to FRA 2010 (which is based on C&I reporting), the area of forest covered by a forest management plan (FMP) -- an important tool for achieving SFM -- has steadily increased over the last 10 years and now exceeds 1.6 billion ha globally. This suggests a positive trend toward SFM, recognizing that not all FMPs are effectively implemented and that a forest may be sustainably managed without a plan. Based on additional data collected from over 100 countries, FRA 2010 also concludes that "significant progress has been made over the last ten years" toward SFM. These trends are reflected in SFM Tropics 2011 (also based on C&I reporting) which estimates that 52 million ha of production-focused natural tropical forests are under SFM (an increase of 50% since 2005) and 131 million ha are covered by an FMP as compared to 96 million ha in 2005. Both FRA 2010 and SFM Tropics 2011 note great improvement in the quality of information provided by countries. While major drivers of these trends include certification and in the tropics climate initiatives, improved C&I-based forest policy, management and databases are also factors globally as indicated in government survey responses, 80% of which indicated that C&I had had some impact on SFM in their countries.

33. Certification. The increase in SFM areas has been driven in part by growing demands in key markets for assurances that wood is sourced sustainably. The area of certified forest has increased 300% in the last 8 years. Today, an estimated 10% of all forests (350-400 million ha) and 20% of production forests are certified under FSC, PEFC or separate national schemes. While most of these forests are in Europe and North America, the area of certified tropical timber producing forests has also increased and now covers 22 million ha. While this trend toward certification is expected to continue, many tropical FMUs may remain

uncertified due to cost and other issues, which suggests a continued value-added for FMU C&I in a number of ITTO producer countries.

34. CoC and legal verification. Chain-of-custody (CoC) certification and legal verification initiatives have come on line in recent years to offer consumer guarantees that wood-based products are sourced legally and sustainably in the country of origin and can be traced back through a "chain of custody". Since 2005, FSC and PEFC have issued 30,000 CoC certificates covering a variety of products. While most of these originate in the temperate/boreal region, tropical forest products are increasingly represented, particularly products originating from Brazil, Malaysia, Vietnam, India and Indonesia. The Tropical Forest Foundation (TFF) has also introduced CoC and RIL (reduced impact logging) certifications, which can also be a step toward FSC/PEFC certification. Government schemes to address the trade in illegally harvested timber include the EU's Voluntary Partnership Agreements with exporting countries; the US Lacey Act amendments which prohibit wood imports illegally sourced in the country of origin; various log tracking systems, many of which have been introduced by ITTO producers; and procurement policies requiring legality documentation.

35. Local forest management. About 1 billion ha of forest are privately owned, the majority by some 25 million families primarily in Europe and North America. As noted in SFM Tropics 2011, local control of tropical forests is also on the rise. Since 2002, some 30 million ha of forest have been turned over to local and indigenous communities in the tropics, particularly in Latin America and to a lesser extent in Asia. Today, 25% of tropical forests are under some form of local control, and this is expected to increase to 30% by 2015. The transition from centralized to local management, and the degraded state of many of the forests involved, can pose significant challenges, some of which might be facilitated by the development of indicators adapted specifically to community circumstances.

G. Relevant Developments and emerging issues

36. Climate change. Concerns that REDD may view and value forests solely or primarily for their carbon storage benefits have led to REDD+ which adds, *inter alia*, "sustainable management of forests" as an element of REDD financial incentives for developing countries to reduce deforestation and forest degradation. While a very positive development, challenges remain in the climate context to fully apply the SFM concept and take a holistic view of the multiple benefits of forests, of which carbon storage is only one. Since most national and FMU C&I sets include indicators relevant to forest carbon (e.g. growing stock, age structure, annual removals, annual harvest, forest carbon pools, storage and fluxes), C&I can provide a useful reference for operationalizing SFM aspects of REDD+. In responding to the government C&I survey, a number of countries also noted that they consider C&I in the context in carbon calculations and methodologies.

37. Forest governance. The legal, policy and institutional components of C&I frameworks are a foundation for a new initiative by FAO and the World Bank's PROFOR programme to develop a "framework for assessing and monitoring forest governance" in the REDD/REDD+ context. Input from ITTO and other C&I processes in future development of the framework could be useful.

38. Biofuels. Rising energy costs and concerns over carbon emissions from fossil fuels have generated interest in increased production of forest-based biofuels as an alternative energy source. Since biofuels are among the products flowing from forests, current sets of national and FMU C&I include relevant a number of indicators relevant to sustainability (e.g. land available for production, growing stock, value/volume of wood products, wood consumption, impact of economic use on resource availability). Building on these indicators, the International Energy Agency (IEA) and FAO have recently developed principles, criteria and indicators (PC&I) for intensive sustainable woodfuel production and harvesting. Again, input from ITTO and other C&I processes on future development of the PC&I could be useful.

39. C&I for other natural resources. In responding to the government C&I survey, some countries noted using C&I for SFM as a model for other domestic indicator initiatives, including developing national environmental indicators, as well as C&I frameworks for other natural resources, such as rangelands/grasslands, water resources and minerals. Drawing on these experiences, there may be further scope to utilize forest C&I frameworks as a reference for other indicator initiatives at various levels.

40. Biodiversity. Several of the 20 Aichi Biodiversity Targets within the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011-2020 encompass forests. An "Indicative List of Indicators" has recently been developed to assess global and national trends towards the targets. Input from ITTO and FAO could help identify measurable forest-related indicators based on national C&I data aggregated in SFM Tropics 2011 and FRA 2010. It would also advance joint work under the March 2010 ITTO-CBD MOU which includes

a focal area on “examining opportunities for harmonized reporting on sustainable use and conservation of tropical forests”.

41. C&I collaboration. There has been significant collaborative work among C&I processes in the last year, including the International Seminar on Challenges of SFM co-hosted by Japan and Indonesia (Tokyo, March 2011), the Regional Workshop on Using C&I to Improve Forest Monitoring Capacity and Promote SFM in Latin America co-hosted by Chile and the US (Valdivia, Chile, April 2011), and the Joint Workshop of the Montreal Process, ITTO, Forest Europe and FAO hosted by Canada (Victoria, Vancouver, October 2011). These meetings underscored the value of C&I in helping address the above global issues and have led to a process to develop a “joint forest resources questionnaire” to streamline and rationalize national reporting for SFM Tropic, FRAs and regional forest assessments.

H. Key conclusions

42. The following conclusions are drawn from survey responses, which together represent a broad cross-section of countries and stakeholders, as well as ITTO ex-post evaluations of C&I projects in Asia and recent international forest assessment reports and C&I collaborative meetings.

- C&I have helped countries and the international community to understand and operationalize the evolving concept of SFM since ITTO pioneered C&I in the early 1990’s.
- Differences among countries in terms of forest governance structures, ownership patterns, existing policy frameworks and forestry traditions, as well as capacity issues, affect how countries use and apply C&I.
- While process-level C&I provide a common reference framework for participating countries, it is often useful for countries step down or otherwise adapt process C&I to reflect national and/or FMU conditions and circumstances, e.g. by developing country/FMU-specific C&I.

Forest monitoring, assessment and reporting (MAR)

- ITTO producers, often with ITTO support, and other countries have made progress in using C&I for MAR, which is reflected in improved forest inventories and databases, systems of data collection and analysis, and information available at national, subnational and FMU levels.
- National and FMU trends observed from monitoring indicator data have helped officials and FMU managers identify weaknesses in forest management and make adjustments needed.
- Improvements in the quality, coverage and consistency in C&I data from countries has led to more comprehensive regional and international forest assessments as reflected in, inter alia, SFM Tropics 2011 and FRA 2010. Countries using C&I for MAR tend to be well-positioned to respond to external forest-related reporting requests.

Contribution to SFM

- While the effect of C&I on SFM varies by country, C&I have had an overall positive impact and have contributed in a variety of ways, sometimes significantly, to improved forest management and the expansion in SFM areas.
- C&I have increased awareness of forest benefits beyond timber/fiber production and highlighted the importance of policy and management frameworks which integrate the economic, social and environmental values of forests.
- The impact of C&I on SFM has generally been greater in countries which have incorporated C&I approaches, with stakeholder involvement, into legislation, policies, programmes, strategies, guidelines and/or standards which govern forest practices.
- FMU level C&I in particular have provided a basis for a number of ITTO producers, often with ITTO support, to formulate, approve and monitor compliance with FMPs, best management practices, and concession contracts, agreements and permits.
- Innovative applications of C&I in the areas of research, education, training, conservation financing and environmental assessments have also positively impacted SFM in some countries.
- C&I have contributed to (and in many cases provided a basis for) forest certification which has expanded significantly in response to market demands for sustainably and legally harvested products. FMU C&I applications have helped private operators move toward certification.

Challenges encountered

- Despite progress in operationalizing C&I, all countries, particularly tropical producers and other developing countries, face challenges in applying C&I due to insufficient capacity, commitment, policy frameworks and/or stakeholder engagement.
- The nature and extent of the challenges vary by country. Some challenges can only be addressed internally by raising the priority of forests on national agendas. Others can be facilitated through enhanced international cooperation, partnerships, and collaborative C&I initiatives.

- Strengthening the ability of countries to collect data and report on indicators, and integrate C&I into policies and programmes at operational levels, will continue to be important for SFM decision-making in many regions.
- Existing sets of C&I may present challenges for some users. FMU indicators in particular may benefit from review regarding their suitability for use by local communities and small enterprises.

Global developments and emerging issues

- C&I are playing a role in wider forest-related developments and issues, including in international initiatives to assess forest governance in the REDD context and establish PC&I for sustainable woodfuel production. C&I are relevant to assessing forest trends under the Aichi Biodiversity Targets.
- At the national level, C&I frameworks are relevant to national forest carbon calculations and efforts to place carbon values in the broader context of SFM and can serve as models for C&I for other natural resources, e.g. rangelands/grasslands, water resources and minerals.
- The value and contribution of C&I in addressing forest-related global challenges is increasingly evident and warrants further attention, including input from ITTO and other C&I processes.

ITTO leadership

- ITTO has been the single major supporter of C&I training, testing and implementation in producer countries, which can continue to benefit from ITTO assistance. Other potential sources of C&I financing, including FAO, GEF and World Bank, could contribute significantly to national efforts and complement ITTO project support.
- ITTO's 2005 C&I would benefit from review and update to take into account the experiences of member countries, progress under other C&I processes and relevant trends and developments.
- Given ITTO's long experience with C&I, enhanced collaboration with FAO, other CPF members and C&I processes can further promote learning, innovation and cooperative activities and enhance the contribution of C&I to global developments and emerging issues.

I. Recommendations

43. In order to continue and strengthen its work and leadership on C&I and the contribution of C&I to SFM, ITTO may wish to consider the following activities:

Strengthen the impact of ITTO's C&I in the field

- Organize additional national and/or sub-regional consultations/workshops involving private stakeholders to focus strategically on C&I uptake at the FMU level, including identifying specific challenges and ways to meet them, for example, by:
    - Adapting ITTO C&I to FMU circumstances in individual countries
    - Establishing mechanisms for effective stakeholder communication and outreach
    - Identifying capacity building priorities for data collection and analysis
    - Establishing demonstration forests for FMU C&I applications
    - Exploring linkages between FMU C&I and applicable certification standards, including TFF's RIL standard, and the potential for harmonization in individual countries
- Incorporate C&I uptake into components of ITTO's thematic programmes which address forest monitoring, assessment and reporting and progress toward SFM.

Review ITTO's 2005 national and FMU C&I

- Initiate a process to comprehensively review and as needed improve ITTO's 2005 C&I based on lessons learned and recent developments, taking into account: (1) ITTO's revised guidelines for sustainable management of natural tropical forests and other relevant guidelines, (2) recent indicator updates by other C&I processes, in particular the Montreal Process, (3) the seven thematic elements of SFM, (4) trends in certification and local control of forests, and (5) relevant global developments and emerging issues related to, inter alia, climate, bioenergy and biodiversity. Consideration might be given to:
    - Streamlining aspects of the national and FMU C&I
    - Identifying a core set of indicators for use by local/indigenous community forest managers
    - Further elaborating and/or grouping indicators related to sustainable wood fuel production, forest contribution to carbon cycles, and forest governance
    - Exploring linkages between FMU C&I and certification standards
    - Exploring connections among the ITTO, ATO/ITTO and Tarapoto C&I and the feasibility/merits of enhanced convergence

Strengthen partnerships and collaboration with CPF members and C&I processes

- Engage with IEA, FAO and PROFOR staff on their initiatives on assessing and monitoring forest governance in the context of REDD+ (FAO-PROFOR) and develop PC&I for sustainable woodfuel production (IEA-FAO). Invite representatives to make presentations on the status of these initiatives during the next ITTC.
- Work with the CBD secretariat (under ITTO-CBD MOU) and FAO Forestry Department to identify indicators for the forest-related components of the Aichi Biodiversity Targets, for which C&I baseline information is available through SFM Tropics 2011 and FRA 2010.

- Organize an expert meeting with FAO, other CPF members, Montreal Process, Forest Europe and representative countries to:
    - Finalize the joint forest questionnaire for national reporting for FRA and SFM Tropics and develop joint data collection schedules and methodologies
    - Explore using the joint questionnaire as a framework for forest-related reporting to other CPF members.
    - Exchange experiences and lessons learned on applying C&I at various levels and for various purposes
    - Examine how C&I can help countries address developments and emerging issues related to climate, bioenergy, biodiversity, etc.
    - Establish a regular framework of communication on C&I and related SFM issues
- Organize in collaboration with FAO, World Bank, GEF and other CPF members, a joint expert consultation to identify ways to improve and expand international financial, technical and scientific cooperation on C&I, including by tapping into climate-related sources of funding.
- Urge ITTO focal points to facilitate enhanced coordination between national forest authorities and focal points for REDD+, GEF, CBD and UNCCD in order to highlight the contribution of C&I to forest-related work under the Rio conventions, avoid duplication of effort in the development of forest-related indicators and measures, and generate funding for C&I implementation to complement ITTO support.
- Encourage ITTO members to consider giving greater priority to FMU C&I implementation in ITTO Thematic Programmes and in project proposals financed through the Special Account, as well as in projects financed through bilateral cooperation, FAO and the GEF.

I. INTRODUCTION

1.1 Criteria and indicators for sustainable forest management (C&I for SFM) have been described as the most important and innovative policy instrument for operationalizing the concept of "sustainable forest management". Criteria characterize the essential components of SFM, and indicators are ways to measure each component. When monitored over time, C&I "indicate" changes and trends in the biophysical, socio-economic and policy conditions relevant to SFM.

1.2 The International Tropical Timber Organization (ITTO) pioneered the development of C&I in the early 1990's to assess the conditions of natural tropical forests in producer member countries and help identify weaknesses in forest practices and improvements needed[15]. By 2000, based on ITTO's early work and the outcomes of the 1992 Rio Earth Summit, C&I initiatives had been launched around the world.

1.3 In the last two decades, ITTO has continued to provide leadership in the review, improvement and implementation of C&I. During this time, the Organization has invested USD 30 million in training workshops and projects to build the capacity of tropical timber producer countries to use and apply C&I at national and forest management unit (FMU) levels, with a view to improving the management of tropical forests, particularly production forests.

1.4 Today, it is recognized that C&I have contributed greatly to a common understanding within and across countries of what is meant by SFM and provide a common approach to assessing forest trends and progress towards SFM, as well as a platform for exchanging knowledge, experiences and lessons learned. C&I have also led to identification of the "seven thematic elements of SFM" which are drawn from the criteria common to process-level sets of C&I and now form the basis and organizing framework for the periodic global forest resource assessments (FRAs) coordinated by FAO.

1.5. However, little information has been compiled on the ways C&I have been operationalized and contributed to improved forest policies and management practices. To generate such information, ITTO commissioned this study to:

- Gain a better understanding of the experiences of countries worldwide in using C&I and the impacts of these uses on SFM;
- Identify relevant trends, developments and emerging issues; and
- Consider ways to strengthen the impact of ITTO's C&I in the field, inform a possible review of ITTO's 2005 C&I, and enhance collaboration among C&I processes.

1.6 The study is particularly timely in view of the current international context. This includes, *inter alia,* ongoing climate talks focused on REDD+; the recent World Bank-FAO initiative on indicators to monitor and assess forest governance; and efforts by FAO and the International Energy Agency (IEA) to develop principles, criteria and indicators for sustainable woodfuel production, as well as recent collaboration among C&I processes and FAO to streamline and rationalize national reporting for the global forest resources assessment in 2015 (FRA 2015). Also relevant are trends in the last decade in forest certification, legal verification and locally controlled forestry. In addition, the International Year of Forests 2011 has highlighted the importance of forests and SFM to people worldwide, while the UN Conference on Sustainable Development (Rio+20) in June 2012 will mark 20 years since the Forest Principles -- the first global consensus on forests -- were adopted at the 1992 Rio Earth Summit.[16]

A. Scope

1.7 The study is global in nature and focuses on the following five active C&I processes which together involve some 90 countries with tropical, temperate and/or boreal forests, including many ITTO producers and consumers[17]:

Tropical forest processes

- ITTO C&I for sustainable management of natural tropical forests
- African Timber Organization/ITTO (ATO/ITTO) principles, criteria and indicators (PC&I) for the sustainable management of African natural tropical forests

[15] *ITTO Criteria for the Measurement of Sustainable Tropical Forest Management* (1992)

[16] Rio+20 will consider two consider seven critical issues (jobs, energy, cities, food, water, oceans, disasters) under two overall themes: (1) Green economy in the context of sustainable development and poverty eradication and (2) institutional framework for sustainable development.

[17] Most participants in the ATO/ITTO and Tarapoto processes are producer members of ITTO. Many Pan-European and Montreal Process countries are ITTO consumer members. Mexico, with significant tropical and temperate forests, is an ITTO producer and a participant in the Montreal Process.

- Tarapoto Process on C&I for sustainability of Amazonian forests

Temperate and boreal forest processes

- Forest Europe's Pan-European C&I for SFM
- Montreal Process Working Group on C&I for the conservation and sustainable management of temperate and boreal forests

1.8 The five processes are conceptually similar but differ in terms of overall structure, level of detail and, most significantly, the elaboration of FMU level C&I. The three tropical processes have each developed C&I for specific application to FMUs, while the Pan European and Montreal processes have not. The absence of FMU C&I does not mean that countries with temperate/boreal forests have not operationalized C&I in ways that positively affect forest management but that such applications may be indirect.

1.9 In addition to variations among C&I processes, individual countries vary widely in terms of forest type, extent and distribution. They also differ significantly with respect to forest governance structures (e.g. centralized versus decentralized), forest ownership patterns (one government owner versus millions of small private owners), and existing forest policy frameworks and forestry traditions. These factors, together with capacity issues, affect how countries use and apply C&I.

B. Methodology

1.10 The differences among the five processes regarding in particular FMU C&I mean there is no common framework across processes to assess field level uses of C&I or their impact on forest practices. This lack of a common FMU structure required a broad approach in order to take into account ways countries may have operationalized C&I through national and sub-national forest policies, programmes or regulations which directly or indirectly impact how forests are managed at the field/FMU level.

1.11 Various options were considered for gathering information about how C&I are being used and their impact on forest practices across diverse tropical, temperate and boreal countries. Based on consultations with the ITTO Secretariat, it was decided that the most effective and efficient way to obtain factual information for a wide range of countries and C&I users would be through general questionnaires. In an effort to balance the need to reach multiple stakeholder groups while avoiding undue complexity in survey design, two surveys were developed to target:

- Government officials with responsibilities at national or sub-national (e.g. state, provincial, regional, local) levels for forest policy, planning, regulation and/or management; and
- Private forest stakeholders, including companies, associations and other operators subject to government policies and regulations, as well as forest certification programmes.

1.12 Between March and December 2011, the Executive Director circulated the government survey to officials in some 40 countries, including 32 ITTO member countries for which contact information was provided by ITTO focal points. During the same timeframe, the private/non-government survey was circulated to stakeholders in 70 countries, including virtually all ITTO members, based on contact information drawn from ITTO and consultant databases, internet searches and personal contacts. While survey responses provide the foundation for this study, the consultants also drew on ex-post evaluations of ITTO funded C&I projects in Asia, recent regional and international forest assessments (e.g. *State of Europe's Forests 2011*, *SFM Tropics 2011*, FRA 2010), ITTO's publication commemorating its 25th anniversary (*25 Success Stories*, October 2011), and the outputs of recent C&I process collaborative meetings.

C. Report structure

1.13 The report is organized in seven sections. Sections II and III provide background and context on the early evolution of, and more recent developments in, C&I and closely related initiatives. Section IV focuses on responses to the government survey and also considers relevant aspects of ITTO ex-post evaluations of C&I projects. Sections V reviews responses to the private/non-government survey. Section VI considers global trends and other developments and emerging issues relevant to C&I. Conclusions and recommendations for future work are contained in Section VII.

1.14 The consultants would like to express deep appreciation to ITTO Executive Director Mr. Emmanuel Ze Meka and the staff of the ITTO Secretariat, in particular Dr. Steven Johnson, Ms. Rosemarie Jungheim and Mr. Kenneth Sato, for their excellent guidance and support in undertaking this study. The consultants also gratefully acknowledge the contribution of Dr. Manoel Sobral Filho who was instrumental in developing the conceptual framework for the study, formulating the initial work plan, and designing the C&I user surveys.

II. EARLY EVOLUTION OF C&I FOR SFM: 1990-2000

2.1 Section II traces the evolution of C&I during the 1990's. Sections II.A describes the early development of regional and international C&I initiatives, beginning with ITTO's pioneering work. Section II.B summarizes the status of nine C&I processes as of 2000 and early endorsement of C&I by the international forest policy community. Section II.C reviews the parallel emergence of forest certification schemes which drew on and were closely related to C&I developments.

A. Development of C&I initiatives

A.1. Emerging concept of SFM

2.2 The 1980's saw growing international concern about the loss of tropical forests due to conversion for agriculture and cattle ranching and over-exploitation for timber production, as well as the degradation and die back of temperate and boreal forests due to acidic deposition by air borne pollutants from industrial operations ("acid rain"). From this concern emerged a new awareness of forests as important renewable resources providing a wide range of essential goods and services at local, national and global levels, including food, fuel, shelter, clean water, soil stabilization, flood control, carbon sequestration, biodiversity, medicine, livelihood and employment.

2.3 This awareness gave rise to a paradigm shift from sustained yield forestry to the concept of SFM -- managing forests as ecosystems which provide multiple economic, social and environmental benefits. With this shift came the need to assess and monitor trends in a range of forest conditions and generate information that could be used by decision-makers to move forest policies and practices toward SFM. This led to the development of "criteria and indicators for sustainable forest management" (C&I for SFM).

A.2. ITTO's pioneering work

2.4 ITTO's members represent about 90% of the trade in tropical timber and 80% of the world's closed tropical forests[18]. The Organization was a pioneer in promoting the concept of SFM as early as 1987 when it commissioned a survey of forest management in the tropics. This led to the publication of *No Timber without Trees* (Poore et. al. 1989) which concluded that only 1 million hectares (ha) of tropical forests were being managed "sustainably". To assist tropical producer members to improve the situation, in 1990 ITTO issued *Guidelines for the sustainable management of natural tropical forests* which outlined a comprehensive set of principles and possible policy and operational actions to achieve SFM.

2.5 In March 1992, ITTO released *Criteria for the measurement of sustainable tropical forest management* which contained the first internationally agreed "criteria for sustainability" and "examples of indicators" to assess forest conditions and help identify weaknesses in forest management practices and improvements needed. These C&I were neutral (rather than normative) in nature. The criteria sought to characterize SFM, while the indicators were ways to measure criteria. By collecting data on indicators, countries could establish critical baseline information on forest conditions and management and subsequently determine trends in those conditions which could be used to inform and adjust forest policies and practices.

2.6 ITTO's 1992 publication provided an early definition of SFM and outlined two sets of C&I, one to assess sustainability at the national level and a second to assess sustainability at the FMU level. The national level C&I (5 criteria, 27 examples of indicators) provided a broad picture of forest management at the country level. The FMU C&I (6 criteria, 23 examples of indicators) were designed to assess and report on forest management practices and to feed into analyses at the national level by aggregating data collected for FMU level indicators. FMU C&I were considered important in the ITTO context since in many tropical producer countries, the government has authority over the management and use of forests, including granting timber concessions to companies for specific FMUs.

2.7 The 1992 publication also recognized that the two sets of C&I were "neither exhaustive not exclusive" and that their use should take into account and be adapted to the specific circumstances of a given country or FMU. While the ITTO C&I focused on sustainability in the context of tropical timber production and did not include, for example, all ecological functions of forests, this early initiative set the stage for all later work on C&I for SFM.

[18] Based in Yokohama, Japan, ITTO is an intergovernmental organization established by the International Tropical Timber Agreement of 1983 and extended by subsequent agreements in 1994 and 2006 to provide a forum for tropical timber producer and consumer countries to discuss all aspects of the world tropical timber economy.

2.8 ITTO followed up in 1993 with *Guidelines for the conservation of biological diversity in tropical production forests* and subsequently organized national workshops and financed projects to help producer countries apply the two sets of C&I and related forest management and biodiversity conservation guidelines. In 1998, based on experiences gained by ITTO members and lessons learned from other C&I processes, especially the Pan-European and Montreal processes (see Section II.A.4), ITTO developed revised national and FMU *Criteria and indicators for the sustainable management of natural tropical forests w*hich covered the full range of forests goods and services. These revised sets of C&I were accompanied by a *Manual for the application of criteria and indicators for the sustainable management of natural tropical forests* to assist producers with C&I uptake and implementation.

A.3. Rio Earth Summit

2.9 In June 1992, the UN Conference on Environment and Development (UNCED), known as the Rio Earth Summit, gave global recognition to the contribution of forests and SFM to sustainable development when it adopted the *Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests,* as well as Chapter 11 of Agenda 21 on *Combating deforestation.* Paragraph 2(b) of the Forest Principles states that: "Forest resources and lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual human needs of present and future generations."

2.10 The Forest Principles and Chapter 11 of Agenda 21 also contain language pointing to the importance of forest assessments. Forest Principle 12(a) notes the need to strengthen "forest inventories and assessments carried out by national institutions which take into account…biological, physical, social and economic variables…of sustainable forest management". Chapter 11 recognizes the need to formulate "scientifically sound criteria and guidelines for the management, conservation and sustainable development of all types of forests". The phrase "all types of forests" reflected an important political dimension of the Rio negotiations, specifically that developed countries were equally responsible for sustainably managing their forests as were tropical forest countries.

A.4. Temperate and boreal forests

2.11 As a response to the Rio Forest Principles, in September 1993 Canada hosted the International Seminar on Sustainable Development of Boreal and Temperate Forests in Montreal. The seminar had broad participation from countries worldwide and focused specifically on the elaboration of "criteria and indicators" as a way to characterize and measure SFM at the "national level" in temperate and boreal forest countries. Drawing on ITTO's early work, the seminar's output provided the basis for the Pan-European and Montreal Process C&I initiatives.

a. Pan-European C&I

2.12 The Pan-European C&I were developed under the auspices of the Ministerial Conference on the Protection of Forests in Europe (MCPFE), a high-level policy process launched in 1990 to address common opportunities and challenges and develop common strategies related to Europe's forests.[19] The MCPFE's work on C&I and other common forest issues was supported by expert level consultations and a Liaison Unit (LU) which rotated with the chairmanship of the Ministerial Conference process. In June 1994, following the 2nd MCPFE (Helsinki 1993), European forest experts adopted 6 Pan-European criteria and 27 quantitative indicators which considered the ecological functions of forests and their socio-economic benefits. Descriptive indicators were added in January 1995 to capture aspects that could not be easily quantified, in particular the legal, policy and institutional frameworks needed to achieve the conditions of SFM expressed in Criteria 1-6.

2.13 Taken together, the Pan-European constitute a common policy instrument for countries to monitor, evaluate and report progress toward SFM. Like the ITTO C&I, they were designed to generate information about trends in forest conditions and management but with a regional and national focus. Early on, forest experts opted not to develop FMU level C&I which were not considered feasible given the significant differences among countries in terms of forest governance and administrative structures (e.g. centralized versus decentralized) and ownership patterns (e.g. many small family forest owners). However, in order to assist countries in operationalizing Europe's broad C&I, experts developed *Pan-European operational level guidelines for sustainable forest management (PEOLG)* as a voluntary framework for C&I implementation.

2.14 The 3rd MCPFE (Lisbon 1998) formally adopted the six Pan-European criteria and endorsed the associated indicators "as a basis for international reporting and for development of national indicators". The

[19] MCPFE signatories are Europe's 46 countries and the EC. Ministerial conferences are held every 3-5 years to establish national and regional SFM commitments.

Conference also endorsed the PEOLG. Ministers further committed to "promote the development and implementation of national C&I using the Pan-European C&I as a reference framework".

b. Montreal Process C&I

2.15 In 1994 in a parallel effort, Canada, Japan, the Russian Federation (also part of MCPFE) and the US launched the Montreal Process Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (Montreal Process). The Working Group was supported by a Liaison Office (LO) hosted by Canada and rapidly expanded to include nearly all countries outside Europe with significant temperate and boreal forests.

2.16 In February 1995, 11 countries[20] adopted the *Santiago Declaration* which affirmed their commitment to conserve and sustainably manage their forests and endorsed a set of 7 criteria and 67 indicators as guidelines for policy-makers to assess national forest trends and progress toward SFM. The C&I provided a common assessment framework for reporting on all forests in a country, including public and private forests, natural forests, plantations and tropical forests, and promoted harmonized approaches to SFM, while allowing flexibility for adaptation to national circumstances. Taken together, the C&I were considered to provide an implicit definition of SFM.

2.17 Early implementation efforts were facilitated by a Technical Advisory Committee (TAC), coordinated by the US, which in 1996 developed *Technical Notes on implementation of the Montreal Process criteria and indicators.* Comparable to Europe's PEOLG*,* the Technical Notes provided rationale statements for indicators, suggested approaches to measurement, and a glossary of terms to facilitate data collection and reporting by countries. In 1997, the Working Group issued the *First approximation report of the Montreal Process* which analyzed, based on national submissions, the status of data availability within countries to report on each Montreal Process indicator.

2.18 The Montreal Process C&I were largely comparable to the Pan-European C&I and similarly designed for use as a reference by countries in assessing and reporting on forest trends at the national level. The Montreal Process did not elaborate FMU level C&I for the same reasons as the Pan-European process and also because "FMU" was not a term that could be meaningfully applied in all participating countries. The Montreal Process differed from the Pan-European initiative primarily by (1) identifying a specific criterion and set of indicators to capture the contribution of forests to global carbon cycles and (2) addressing the legal, policy and institutional framework needed for SFM as a separate Criterion 7 rather than through descriptive indicators applicable to Criteria 1-6.

A.5. Tarapoto Proposal for the Amazon

2.19 In February 1995, a regional workshop was convened in Tarapoto, Peru under the auspices of the Amazon Cooperation Treaty Organization (ACTO)[21] to develop C&I suitable for Amazonian forests. Building on experiences from the ITTO, Pan-European and Montreal processes, participants recommended adoption by respective governments of the *Tarapoto Proposal on criteria and indicators for sustainability of Amazonian forests*. Like the ITTO, the Tarapoto Proposal included C&I for use at the national level (7 criteria, 47 indicators) and the FMU level (4 criteria, 23 indicators). The proposal also included one international criterion on the "economic, social, and environmental services performed by Amazonian forests", with seven associated indicators. As with other sets of C&I, the Tarapoto Proposal was seen as a tool to monitor and assess forest trends and generate information for use by decision-makers.

A.6. CIFOR field testing of C&I

2.20 In 1994, the Center for International Forestry Research (CIFOR) initiated a project to field test the application of C&I in seven locations in Austria, Brazil, Côte d'Ivoire, Germany and (with funding from ITTO) Indonesia. Using ITTO's 1992 C&I and the Forest Stewardship Council's initial "principles and criteria" (see Section II.C) as umbrellas, CIFOR identified a list of C&I to test in each location, with a view to developing a methodology to identify a minimum number of cost-effective and reliable C&I for each site that would form a coherent picture of how forests were being managed. Building on initial results, CIFOR subsequently expanded the project to include test sites in Cameroon, Gabon, India and the US, with special emphasis on biodiversity and social C&I which early findings showed were not as well understood as traditional economic indicators (e.g. growing stock, annual wood removals).

[20] Uruguay became the12th member of the Montreal Process in 1996.
[21] Based in Brasilia, ACTO was established to carry out provisions of the Amazon Cooperation Treaty of 1978 which promotes "joint actions toward harmonious development of the Amazon Basin".

2.21 Based on the project's findings, in 1998 CIFOR developed a "generic" set of C&I, which ranged from broad principles to verifiers, and produced the *Criteria and Indicators Toolbox Series* with input from ITTO, FAO and others. The Toolbox included eight manuals and decision-support software to guide users in assessing the sustainability of natural and planted forests for a wide variety of FMU management situations, from community forestry to large-scale timber and pulpwood plantations.

A.7. ATO principles, criteria and indicators (PC&I)

2.22 In 1995 in response to increasing threats of boycotts of African tropical timber in European markets, the African Timber Organization (ATO)[22] developed, with financial support from the European Union (EU) and technical collaboration with CIFOR, an initial set of principles, criteria and indicators (PC&I) for sustainable management of African forests. Five principles relating to forest policy and management were supported by 26 criteria and 60 indicators. The ATO initiative was field tested by CIFOR in a number of locations in Gabon in 1998 (see Section II.A.6).

A.8. FAO-UNEP-ITTO supported regional initiatives

2.23 Between 1995 and 2000, FAO took the lead in facilitating the development of C&I for the following four regions:

- Dry Zone Africa. In November 1995, FAO and UNEP organized a regional expert meeting in Nairobi to launch the Dry-Zone Africa Process. The 28 countries participating identified an initial set of 7 criteria and 47 indicators for the Sub-Saharan region, which were further developed in November 1997. In December 1998, UNEP and FAO organized an expert meeting on national level C&I for the Southern African Development Community (SADC) countries. After detailed reviews, the SADC initiative agreed to 7 criteria and 48 indicators in the framework of the Dry Zone Africa process. In 2000, based on recommendations from regional and national workshops and expert meetings, and on the availability of indicator data and national capacities to collect data, FAO prepared *Practical guidelines for the assessment and measurement of criteria and indicators for sustainable forest management in Dry-Zone Africa* to facilitate C&I implementation.
- Near East. In October 1996, FAO and UNEP organized a regional expert meeting in Cairo to initiate a C&I process for the Near East. The 30 participating countries endorsed 7 national level criteria and 65 indicators for further development at sub-regional and national levels. Follow up meetings of national C&I coordinators and national workshops reviewed the applicability of the C&I to individual countries, as well as data availability and national capacities for data collection and analysis. Based on these meetings, in 2000 FAO published *Practical guidelines for the assessment and measurement of criteria and indicators for sustainable forest management in the Near East region*.
- Central America. The Lepaterique Process of Central America was initiated following recommendations of an expert meeting organized by the Central American Council of Forests and Protected Areas (CCAB-AP) and FAO in Tegucigalpa, Honduras in January 1997. Experts from the seven Central American countries identified a set of 4 criteria and 40 indicators for use at the regional level, and 8 criteria and 53 indicators for use at the national level. Subsequently, a number of national training workshops, seminars and validation exercises were conducted to review the applicability and availability of indicator data.
- Dry forests of South Asia. In December 1999, FAO, UNEP, ITTO India and the US organized a Workshop on the Development of National-Level C&I for the Sustainable Management of Dry Forests in Asia/South Asia, in Bhopal, India. The 9 countries participating identified 8 national level criteria and 49 associated indicators suitable for the region and elaborated an initial two-year plan of action for implementation.

B. Status of C&I by 2000

B.1. Nine C&I initiatives/processes

2.24 By 2000, nine regional and international C&I initiatives or processes had been launched involving some 150 countries worldwide. These processes are summarized in Table 1. Several countries were participants in more than one process. As already noted, many participants in the ATO/ITTO, Tarapoto and Lepaterique initiatives were also producer members of ITTO. Russia was associated with both the Pan-European and Montreal initiatives.

[22] ATO was established in 1994 to promote cooperation on forestry issues among Central-West African countries, with support provided by a small secretariat based in Libreville.

TABLE 1
Summary of nine C&I initiatives/processes as of 2000

C&I Initiative/process	Year launched	Initiated by	Countries	C&I sets/levels
ITTO	1992	ITTO	33 producers	National, FMU
Pan-European	1994	MCPFE	46+EC	Regional/national
Montreal Process	1994	Canada, Japan, Russia, US	12	National
ATO/ITTO	1995	ATO/ITTO	13	National, FMU
Tarapoto Proposal	1995	ACTO	8	National, FMU, International
Dry-Zone Africa	1995	FAO, UNEP	28	Regional/national
Near East	1996	FAO, UNEP	30	National
Lepaterique (Central America)	1997	FAO, CCAB-AP	7	Regional, National
Asia/South Asia	1999	FAO, ITTO, UNEP, India, US	9	National

2.25 As indicated in Table 1, all nine initiatives had elaborated C&I that could be used or adapted by countries as tools to monitor and report on forest trends and progress towards SFM at the national level. Some initiatives also included criteria and/or indicators for application at the FMU level (ITTO, AT/ITTO, Tarapoto Proposal), the regional level (Europe, Dry Zone Africa, Lepaterique) or the international level (Tarapoto Proposal).

2.26. Despite these variations in the levels of C&I identified, as well as differences in the number of criteria and indicators elaborated, the various sets of C&I associated with nine processes were in the main conceptually comparable. They all reflected a holistic approach to forests as ecosystems with multiple values beyond wood and fiber production. Criteria represented the essential economic, social and environmental elements of SFM, and indicators provided ways to the criteria.

B.2. IPF/IFF proposals for action

2.27 The international community as a whole first formally embraced the concept of C&I for SFM in the context of the ad hoc open-ended Intergovernmental Panel on Forests (IPF), which was established in 1995 under the auspices of the Commission on Sustainable Development (CSD) to develop recommendations for the UN General Assembly Special Session (UNGASS, June 1997) on “Rio plus five”. The Panel’s mandate included an agenda item on “Scientific research, forest assessment and the development of criteria and indicators for sustainable forest management”.

2.28 In August 1996, with a view to informing the IPF discussions on C&I, Finland organized, in collaboration with FAO, ITTO and the US, the Intergovernmental Seminar on Criteria and Indicators for Sustainable Forest Management (ISCI) in Helsinki. Drawing on ISCI’s results, the IPF agreed at its final session in February 1997 to several “proposals for action” on C&I which encouraged countries to:

- Prepare and begin implementation of national-level C&I for SFM, recognizing that field testing will be needed to gain experience for further development and refinement of C&I;
- Promote the use of internationally, regionally, sub-regionally and nationally agreed C&I as a framework for promoting best forest practices and facilitating SFM;
- Formulate and implement C&I on a cross-sectoral basis and with the full participation of all interested parties;
- Include C&I in national forest programmes; and
- Establish and clarify links between national level C&I and C&I at sub-national and FMU/operational levels, and promote C&I compatibility at all levels.

2.29 The IPF also:

- Encouraged countries not yet participating in international/regional C&I initiatives to become involved as soon as possible;
- Urged countries and international organizations to work toward a common understanding on the concepts, terms and definitions used in C&I initiatives, mutual recognition among sets of C&I as tools to assess national forest trends, and methods for the collection, assembly, storage and dissemination of indicator data;
- Recommended that FAO and other international organizations draw on the commonalities among C&I initiatives to improve consistency in forest reporting; and
- Requested the Convention on Biological Diversity (CBD) to ensure its work on biodiversity indicators would be consistent and complementary with existing forest C&I initiatives.

2.30 The IPF was succeeded in 1997 by the Intergovernmental Forum on Forests (IFF), which in February 2000 concluded that C&I were important tools for reviewing, monitoring and reporting on the state of and trends in all types of forests and for assessing progress towards SFM. The IFF encouraged countries to further develop and implement C&I to this end and requested FAO, ITTO, UNDP, UNEP and the World Bank to develop harmonized reporting formats incorporating C&I to synthesize national forest information, reduce reporting burdens, and increase the timeliness and consistency of reporting. Like the IPF, the IFF proposals for action focused on national level C&I which all nine processes had developed in some form[23].

C. Emergence of forest certification programmes

2.31 The interest in SFM which led to the development of C&I to assess and monitor forest trends also spurred discussions among NGOs, timber traders and governments to develop recognized norms or performance standards which could be used to "certify" that harvested timber came from well-managed forests. Forest management certification gained momentum following the Rio Earth Summit largely in response to increasing consumer demands in niche markets, especially in Europe, for guarantees that wood imports were sustainably sourced. This led to the development of numerous, sometimes competing certification schemes during the 1990's.

C.1. FSC

2.32 The first certification programme to become operational was the Forest Stewardship Council (FSC) established in 1993 as an independent non-profit NGO. In 1994, FSC issued the *FSC principles and criteria (P&C) for* forest *stewardship* which set forth 9 principles and some 50 criteria designed as standards for managing primarily wood production forests in both the tropics and the temperate/boreal region consistent with SFM. A tenth principle with associated criteria was added in 1996 to cover plantation management[24].

2.33 While the FSC P&C addressed many of the same biological, social, economic and policy elements identified in various sets of C&I, they were normative in nature, rather than neutral measures. Under the FSC system, forestry operations had to meet the P&C to be FSC-certified as sustainably managed, which then entitled forest owners/managers to use the FSC logo in market promotions. A key feature of the FSC programme was that determinations of satisfactory performance in terms of the P&C were not made by FSC itself but rather by independent "third-party" entities accredited by FSC and contracted privately by forest owners/managers to evaluate their forestry operations. The first FSC certificates were issued in 1995-96. By 1998, 10 million ha of forest had been FSC-certified.

C.2. Standards organizations and the forest products industry

2.34 Industry was also looking at standard setting which could be applied in the forest context. The International Organization for Standardisation's (ISO) 14000 series addressed various aspects of environmental management (e.g. environmental management systems, labeling, performance evaluation, communication, auditing, life cycle analysis) which were not forestry-specific but could be applied by forest companies as a reference framework. In 1993 at the request of the Canadian forest products industry, the Canadian Standards Association (CSA) began a process to develop a standard for SFM in Canada consistent with ISO 14000. Three years later, "CSA 1996" was established as a voluntary standard for SFM focused on four performance-based components: Commitment, public participation, management systems and continuous improvement. CSA 1996 required forecasting and monitoring of a broad suite of indicators linked to Canada's national C&I which were based on the Montreal Process C&I.

2.35 In a parallel effort, in 1994 the American Forest and Paper Association (AF&PA) launched the Sustainable Forestry Initiative (SFI) which set forth principles and implementation guidelines based on the Montreal Process C&I. Like CSA 1996, SFI enshrined the performance goal of "continuous improvement" in forest management practices. As a condition of membership, AF&PA's companies (which at the time included some of world's largest forest products companies) had to commit to the SFI principles and guidelines.

2.36 These early initiatives differed from FSC in that they reflected a programmatic approach to improving forest management (rather than "hectare-by-hectare" standards) which set objectives for companies to work toward in managing often extensive timberlands. In addition, SFI did not originally involve third-party evaluations. Companies were expected to report progress and improvements in forest management in annual reports and other relevant public documents. In 1998, SFI separated from AF&PA and became

[23] The full text of IPF and IFF proposals for action is available at www.un.org/esa/forests.
[24] The FSC P&C were updated in 2002.

established as an independent certification standard setting body for timber harvesting operations in the US and Canada.

C.3. National schemes and PEFC

2.37 A number of tropical timber producer countries also began developing national certification schemes early on. Notable among these initiatives were Brazil's initial CERFLOR programme; efforts by the Indonesian Ecolabeling Institute (LEI-Lembaga Ekolabel Indonesia), some of which were supported by ITTO; and the Malaysian Timber Certification Council's early work on the Malaysian Timber Certification Scheme based on ITTO's C&I.

2.38 As national certification schemes began to proliferate worldwide in the late 1990's, there were increasing concerns about competition among schemes and the related burden placed on timber producers in meeting the requirements of different schemes. To facilitate a harmonized approach, the Programme for the Endorsement of Forest Certification (PEFC) was founded as a non-profit, non-governmental umbrella organization for endorsing national certification systems. PEFC established "sustainability benchmark criteria" drawn, *inter alia*, from the Pan-European C&I, the ITTO C&I and related guidelines, and the ATO/ITTO PC&I as the framework for endorsing national schemes, with an initial focus on Western Europe. National systems tailored to national priorities and conditions would be endorsed by PEFC if determined by an independent qualified third party to be consistent with the PEFC's sustainability benchmarks.

C.4. C&I versus certification

2.39 The parallel development of C&I and forest certification, together with their shared goal to promote and operationalize SFM and shared vocabulary (e.g. "criteria"), led to some confusion between the two policy instruments. C&I, as already noted, were conceived and designed as neutral assessment tools which if monitored over time would generate trend information about forests that could inform and improve forest policies and management decisions at national and/or FMU levels. By contrast, certification schemes were designed as performance standards against which specific forest production operations at the FMU level could be evaluated. Applications of C&I were voluntary, while certification, if achieved by a forest owner/manager, involved mandatory requirements to maintain certified status. These distinctions between C&I and certification were sometimes blurred and not always well-understood.

2.40 The involvement of governments in certification (unlike C&I) was also a subject of debate during the 1990's. Some countries actively promoted and facilitated the development of national certification standards. Other countries advocated official "mutual recognition" among certification schemes or, alternatively, intergovernmental action, for example through the ITTO, to develop globally agreed certification standards to bring coherence to the proliferation of national schemes. Still other countries maintained that certification was a consumer-driven market tool in which governments had no role. This last became the general view in ensuing years.

III. DEVELOPMENTS IN FIVE C&I PROCESSES SINCE 2000 AND RELATED GLOBAL DEVELOPMENTS

3.1 Since 2000, the five C&I processes on which this study focuses have taken steps to improve their sets of C&I based on experiences gained by participating countries in operationalizing C&I.[25] (Current participants in the five processes are listed in Annex 1.) Section III.A reviews developments in these processes during the last decade. These developments are summarized in Table 2. Section III.B compares the various sets of C&I currently used by the five processes. Sections III.C traces the development of the seven thematic elements of SFM, which are based on common criteria, and related reporting. Section III.D looks at recent collaborative work among C&I processes.

A. Developments in five C&I processes

A.1. ITTO C&I

3.2 In the last decade, ITTO has continued to be a leader in the field of C&I. Its successive action plans[26] have consistently identified the promotion, strengthening and implementation of C&I as an important strategy to improve information about and management of the tropical timber resource base in member countries. ITTO's extensive work on C&I has encompassed both policy initiatives and capacity building projects and activities.

a. Policy work

3.3 In 2000, the ITTO secretariat initiated a highly successful collaboration with the ATO in order to refine the early ATO PC&I and merge them with ITTO's 1998 C&I. This led to the development in 2001 and publication in 2003 of the *ATO/ITTO Principles, criteria and indicators for the sustainable management of African natural tropical forests* (see Section III.A.2).

3.4 In 2005, following a comprehensive review of lessons learned in implementing the 1998 C&I and relevant international developments, ITTO issued *Revised ITTO criteria and indicators for sustainable management of tropical forests, including a reporting format.* In this update, national and FMU C&I are closely integrated. Seven criteria apply at both the national and FMU levels, as do 48 of 57 indicators. Nine indicators apply only at the national level (e.g. "contribution of forestry to GDP"). A standardized user-friendly reporting format with instructions was also developed to facilitate data collection and reporting by producer members. This format simplified and replaced the 1998 manual for the application of C&I.

3.5 Also in 2005, ITTO published the *Status of tropical forest management: 2005 (SFM Tropics 2005).* This was the first comprehensive report focused on the status of forests in tropical timber producing countries and was based largely on national reporting from 21 of ITTO's 33 producer member countries using the 1998 C&I. The second report, *SFM Tropics 2011,* was released in June 2011 and is based on improved national reporting from 32 ITTO producers. While the capacity of countries to provide data on indicators continues to vary widely, the quality of information provided by many countries was significantly better for the 2011 report, reflecting that countries have been able to strengthen forest inventory and data collection systems, in some cases with ITTO support.

3.6 In 2009, ITTO updated its 1993 biodiversity guidelines in collaboration with the World Conservation Union (IUCN) which led to the *ITTO/IUCN Guidelines for the conservation and sustainable use of biodiversity in tropical timber production forests.* These improved guidelines drew on ITTO's revised indicators for biodiversity conservation. At the time of this writing, ITTO is also in the process of updating its 1992 *Guidelines for the sustainable management of natural tropical forests*. ITTC 48 is expected to consider and adopt revised guidelines in November 2012.

[25] The four regional processes coordinated by FAO in Dry Zone Africa, Central America, Near East and South Asia have been relatively less active in the last decade.
[26] Libreville Action Plan: 1998-2002. Yokohama Action Plan: 2002-2006. ITTO Action Plan: 2008-2011.

TABLE 2
Summary of developments in five C&I processes since 2000

C&I Process	Year	C&I Activity
ITTO	2000+	ITTO organizes 27 national and 3 C&I regional training workshops and funds USD 18 million C&I projects in member countries
	2001	ITTO collaborates with ATO to develop on ATO/ITTO PC&I
	2005	ITTO publishes *Revised ITTO C&I for sustainable management of tropical forests* with reporting format and instructions
	2005, 2011	ITTO publishes *SFM Tropics* reports based on national C&I reporting
	2009	ITTO publishes updated *ITTO/IUCN guidelines for conservation and sustainable use of biodiversity in tropical production forests*
	2010	ITTO initiates process to revise its 1992 *Guidelines for sustainable management of natural tropical forests*
FOREST EUROPE	2002	Experts adopt improved Pan-European indicators for SFM (PEOLG remain unchanged)
	2003, 2007, 2011	State of Europe's forests reports, based on national C&I reporting, are published
	2009	MCPFE is renamed Forest Europe
	2011	Ministers agree to negotiate legally binding agreement on forests in Europe (could address C&I)
MONTREAL PROCESS	2000-2011	ITTO funds USD 1.3 million for tropical forest C&I projects in China & Mexico
	2003	Working Group issues *Quebec City Statement* and adopts *Vision for the Montreal Process; 2003-2008*
	2003, 2009-2010	Members produce national forest reports based on MP C&I and Montreal Process overview reports illustrative of national trends
	2007-2008	Working Group adopts revised indicators for the conservation and sustainable management of temperate and boreal forests
	2008-2009	Working Group adopts revised *Technical Notes* to facilitate data collection on revised C&I. Also adopts *Montreal Process strategic action plan: 2009-2015*
ATO/ITTO	2000+	ITTO organizes 9 national and 1 regional C&I workshops and funds USD 3 million in C&I projects in ATO/ITTO countries
	2001	ATO and ITTO develop ATO/ITTO PC&I for sustainable management of African natural tropical forests
	2003	ITTO publishes the ATO/ITTO PC&I
TARAPOTO PROCESS	2000+	ITTO organizes 7 national and 1 regional C&I workshops and funds USD 3.2 million in C&I projects in Tarapoto countries
	2000	ACTO ministers launch Tarapoto Process on C&I for sustainability of Amazonian forests
	2001	ACTO regional meeting identifies 8 criteria and 15 indicators as "very applicable" for Amazon countries
	2004	ACTO & FAO launch USD 400,000 project on validation of 15 very applicable indicators
	2005	ACTO regional meeting reviews progress on validation project
	2007	ITTO/ACTO initiate discussions on potential project to harmonize Tarapoto and ITTO C&I
	2011	Preliminary report on potential harmonization is presented at ITTC 47
	2012	ACTO regional meeting considers potential harmonization

b. Capacity building

3.7 In the last 15 years, primarily through voluntary contributions from donor members, ITTO has financed USD 30 million in C&I-related training workshops, projects and activities, the majority since 2000, making ITTO the world's largest investor in C&I. In terms of training, ITTO has organized 3 regional training workshops in Africa, Asia and Latin America, as well as 27 national workshops, including in several ATO and Tarapoto countries, to assist producer countries to use C&I. Each national workshop engaged 30 to 50 key stakeholders actively involved in forest management, including representatives from government, the private

sector, communities, NGOs and research institutions. To date, 1300 individuals have been trained in applying C&I through ITTO-funded workshops.

3.8 In addition, ITTO has funded a number of projects designed primarily to assist countries to test and apply C&I and prepare baseline and national reports on progress towards SFM using C&I. Ex-post evaluations of completed projects in Indonesia, the Philippines and Thailand (discussed in Section IV.E) have helped identify lessons learned which can inform future projects.

A.2. ATO/ITTO PC&I

3.9 As noted above, ITTO and ATO collaborated in developing the *ATO/ITTO PC&I for sustainable management of African natural forests* (published by ITTO in 2003[27]) which integrated ITTO's 1998 C&I and ATO's 1995 PC&I. The ATO/ITTO PC&I are comprised of a detailed set of criteria, indicators and sub-indicators which are framed by the following four principles:

- Sustainable forest utilization and maintenance of the multiple functions of forests are a high political priority.
- The FMU, designated for whatever form of land use, is sustainably managed with a view to supplying the required goods and services.
- The main ecological functions of the forest are maintained.
- According to the importance and intensity of forest operations, the FMU manager contributes to the improvement of the economic and social well-being of workers in the FMU and local populations.

3.10 Principle 1 encompasses 5 criteria, 33 indicators and 45 sub-indicators for use at the national level. Principles 2-4 together include 15 criteria, 57 indicators and 100 sub-indicators at the FMU level. Unlike other C&I sets, the ATO/ITTO PC&I are normative in nature, setting forth policy and management objectives that should be met, or conditions that should exist, with respect to forests. They are essentially detailed performance standards not unlike certification principles and criteria.

3.11 Since development of the ATO/ITTO PC&I, ITTO has provided about USD 3 million to assist African member countries with testing and implementation. This has included organizing national training workshops in several countries, as well as one regional workshop, and financing projects in Cameroon, Republic of Congo, Gabon and Togo. These projects have assisted countries, *inter alia*, in developing national C&I based on the ITTO and ATO/ITTO processes, and in testing and applying national and FMU C&I. Applications of the ATO/ITTO PC&I have also helped pave the way to FSC certification for a number of large concessionaires operating in the region.[28]

A.3. Tarapoto Process

3.12 In 2000 ACTO ministers of foreign affairs formally launched the Tarapoto Process on Criteria and Indicators for Sustainability of Amazonian Forests. This began a process of national consultations to identify and definitively adopt the most widely applicable of the C&I contained in the Tarapoto Proposal of 1995. In June 2001, following a series of national consultations, ACTO convened a regional meeting in Tarapoto, Peru which identified 7of the 12 Tarapoto Proposal criteria and 15 of the 77 proposed indicators as "very applicable" for and measurable by all Amazon countries. Another 18 indicators were identified as generally applicable to member countries.

3.13 The seven "very applicable" criteria retain three national level criteria and three FMU level criteria from the original Tarapoto Proposal, as well as the international criterion on services provided by Amazonian forests at the global level. The 15 very applicable indicators were designated as priorities for field testing.[29] In May 2004 with support from FAO, ACTO initiated a two-year USD 400,000 regional project on "Validation of 15 Priority Sustainability Indicators for the Amazon" to assist Tarapoto countries test the indicators. Beginning in 2005, ACTO hosted follow up meetings to review progress on the validation project.

3.14 Since 2000, ITTO has provided about USD 3.2 million to assist ITTO/Tarapoto countries with C&I implementation. This has included organizing national training workshops in seven countries, as well as one regional workshop, and financing projects in Bolivia, Brazil, Colombia, Ecuador, Guyana and Peru. In 2007, ITTO and ACTO initiated discussions on a joint project to consider a process of harmonizing the priority

[27] ITTO Policy Development Series No. 14 available at www.itto.int.
[28] The ATO secretariat in Libreville has recently ceased to function. The Ministry of Forests of Gabon is currently assessing ATO services and future support needs.
[29] A paper on the Tarapoto Process was presented at the International Expert Meeting on Monitoring, Assessment and Reporting on Progress toward SFM hosted by Japan in November 2001 as a UNFF country-led initiative. The paper is available at www.rinya.maff.go.jp.

Tarapoto C&I with the 2005 ITTO C&I. After a significant period spent building political support for the project, ITTO funded a consultancy to make proposals on harmonization. A preliminary report was presented at ITTC 47 in November 2011. An ACTO regional meeting in Suriname will consider the proposals in May 2012.

A.4. Pan-European C&I

3.15 In October 2002, following a review of lessons learned using the early Pan-European C&I framework, forest experts adopted *Improved Pan-European indicators for sustainable forest management*, which include 35 quantitative and 17 qualitative indicators for the 6 Pan-European criteria and were formally endorsed by the 4th MCPFE (Vienna 2003). These improved indicators continue to address the policy/institutional framework for SFM through qualitative indicators covering overall policies, institutions and instruments for SFM, as well as policies, institutions and instruments specific to the six Pan-European criteria.

3.16 Forest Europe (and its MCPFE predecessor) released "State of Europe's Forests" reports in 2003, 2007 and 2011 organized and structured according to Pan-European criteria and improved indicators and based primarily on information provided by Europe's 46 countries in response to a national inquiry. Successive reports have been increasingly robust as countries have enhanced their capacity to collect information on indicators. The 2011 report provides "a comprehensive up-to-date description of the status and trends since 1990 of forests and forest management in Europe", and "aims to stimulate sound policy decisions of forest and forest-related issues...by providing objective and harmonized data for Forest Europe signatories". The report identifies four major challenges and opportunities for forest policy in Europe -- climate change, wood for energy, conservation of forest biodiversity and contribution to a green economy -- and contains for the first time an assessment of progress towards SFM.

3.17 A comprehensive external review of the effectiveness of the MCPFE process was completed in 2009. It noted, among other things, that the work on C&I was one of the most concrete and far-reaching outcomes of the Pan-European policy process. The external review also led to re-naming the ministerial process as "Forest Europe" which was considered more descriptive and accessible to stakeholders.

3.18 At the 6th MCPFE co-hosted by Norway and Spain in Oslo in June 2011, ministers agreed to begin negotiations on a legally binding agreement on forests for Europe. Should C&I be addresses in some way in the final text, this could mark the first time that the application of C&I is required rather than voluntary. The negotiations are expected to be concluded by June 2013, after which the text will be considered by ministers at an extraordinary Forest Europe ministerial conference.[30]

A.5. Montreal Process

3.19 The Montreal Process Working Group remains exclusively focused on C&I. While the emphasis is on temperate and boreal forests, the Montreal Process C&I continue to apply to areas of tropical forests within member countries, notably China, Mexico and the US. In 2003, members issued their first "Country Forest Reports" based on the 1995 C&I. While the Working Group did not prepare a comprehensive assessment report covering all C&I based on the 12 country reports (primarily because the 12 countries do not constitute a coherent region of contiguous countries like, for example, Europe), illustrative forest trends from national reports were highlighted in the *First Montreal Process Overview Report 2003*. Member countries also adopted the *Quebec City Statement* in 2003, reaffirming their commitment to the Montreal Process and setting forth the *Vision for the Montreal Process: 2003-2008.*[31]

3.20 In 2006, the Montreal Process Liaison Office moved from Ottawa to Tokyo. In 2007, after a series of workshops and based on experiences in preparing the 2003 country reports, the Working Group endorsed a revised set of 44 indicators for Criteria 1-6. In 2008, 10 revised indicators were adopted for Criterion 7 (legal, institutional and economic framework for forest conservation and SFM). In 2008-2009, the TAC [32] completed revised *Technical Notes on implementation of the Montreal Process criteria and indicators* to assist forest practitioners in collecting data on revised indicators. The *Technical Notes* provide rationale statements for each indicator, suggested approaches to measurement, a glossary of terms and other information to facilitate data collection and reporting.

3.21 In 2009-2010, countries completed a second round of national forest reports within the framework of the Montreal Process C&I using the revised indicators for Criteria 1-6. The reports showed strengthened

[30] Further information on the Pan-European C&I and Forest Europe is available at www.foresteurope.org and www.forestnegotiations.org.
[31] Mexico has significant areas of tropical forests and joined ITTO as a producer member in 2004.
[32] Coordinated by New Zealand since 2003.

capacity by participating countries to collect better data on a wider array of indicators. Drawing on the national reports, the Working Group developed a second overview report, *A vital process for addressing global forest challenges - the Montreal Process 2009,* which highlights the significant role the Montreal Process has played in helping member countries respond to key challenges and opportunities for forests related to climate change, biodiversity conservation, bioenergy production and water security. During this period, the Working Group also adopted the *Montreal Process Strategic Action Plan: 2009-2015* to guide its work and communicate its objectives and priorities to member countries, domestic stakeholders and the international community.[33]

3.22 While the Working Group fosters bilateral and regional collaboration among member countries, it does not offer project funding to assist with C&I applications. Since 2000, ITTO has provided about USD 1.3 million to assist Mexico and China with C&I-related activities involving their tropical forests. FAO has also supported C&I projects involving the Southern Cone countries of Argentina, Chile and Uruguay, as well as Paraguay. In recent years, FAO has provided support to strengthen national capacities to implement SFM and develop and implement a regional C&I cooperation strategy to generate information and data needed by government and non-government users and stakeholders to improve forest monitoring, evaluation and decision-making.

B. Comparing current sets of C&I

3.23 Developments within C&I processes in the last decade, including C&I revisions and updates and collaborative work among C&I processes, have generally led to increased comparability and convergence among C&I approaches reflecting a common understanding of the concept and role of C&I as tools to help countries monitor and evaluate trends on a range of forest biophysical and management conditions and progress toward SFM. Within this shared conceptual framework, the C&I used by processes differ somewhat in overall structure and level of detail/complexity.

3.24 Table 3 compares the C&I sets identified by the five processes. As can be seen, the ITTO, Pan-European and Montreal Process national level C&I are generally comparable, with 6 or 7 criteria each and 52 to 57 associated indicators. The Tarapoto Process C&I are the most streamlined since they represent priority C&I for the region that are applicable to, and measurable by, all ACTO countries. By contrast, the ATO/ITTO PC&I are very detailed and include both macro principles and a large number of sub-indicators.

TABLE 3
Comparison of current C&I sets used by five C&I processes

C&I process	Principles		Criteria			Indicators			Sub-indicators	
	National	FMU	National	FMU	Global	National	FMU	Global	National	FMU
ITTO	-	-	7	7	-	57	48	-	-	-
ATO/ITTO	1	3	5	15	-	33	57	-	45	100
Tarapoto	-	-	3	3	1	6	5	4	-	-
Pan-European	-	-	6	-	-	52	-	-	-	-
Montreal	-	-	7	-	-	54	-	-	-	-

3.25 All three tropical processes continue to identify FMU level C&I, although they vary widely in number, ranging from 3 FMU criteria with 5 indicators in the Tarapoto Process to the ATO/ITTO's 15 FMU criteria with 157 indicators and sub-indicators. The Tarapoto Process also continues to include an international criterion and associated indicators covering forest services at the global level.

3.26 Annexes 2 and 3 further illustrate variations in the structure and content of collective sets of C&I identified by the five processes.[34] Annex 2 provides a crosswalk among the national level criteria, together with the "seven thematic elements of SFM" (discussed in Section III.D). Annex 3 provides a crosswalk of the FMU level criteria used by the three tropical C&I processes, with the ATO/ITTO FMU principles displayed for context. As can be seen, while there is general convergence on the nature of the essential components of SFM (e.g. biodiversity, forest production, policy framework), these components are not all represented at the same level or in precisely the same way. For example:

- The ATO/ITTO and Tarapoto C&I address some SFM components in the context of FMU level criteria and/or indicators, rather than as national level criteria.

[33] Further information on the Montreal Process is available at www.mpwg.org.
[34] The crosswalks in Annexes 3 and 4 are illustrative only. Differences in the structures of C&I sets do not lend themselves to precise comparisons.

- The Tarapoto Process captures the contribution of forests to global carbon cycles as an as an indicators under its international criterion rather than as national C&I.
- The Pan-European C&I continue to capture the policy and institutional framework needed for SFM through indicators rather than as a separate criterion or principle.
- ITTO applies the same seven criteria (and many of the same indicators) at both national and FMU levels.
- A number of the ATO/ITTO FMU criteria are addressed by ITTO as FMU indicators

3.27 Also evident are some distinctions in how national and/or FMU C&I are formulated. For example, ITTO's criteria are formulated as topics (e.g. biological diversity). The Montreal, Pan-European and Tarapoto criteria are formulated as broad goals using somewhat different language (e.g. conservation of biological diversity; maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems; conservation of forest cover and biodiversity). As already noted, the ATO/ITTO PC&I are formulated as standards or conditions to be met rather than as neutral measures.

3.28 The differences in the overall structure, detail and language among the sets of C&I used by the five processes, while sometimes significant, do not for the most reflect conceptual differences. On the whole, the set or sets of C&I used by each are comprised of the same basic building blocks of SFM, although with different arrangements and areas of emphasis.

C. The seven thematic elements of SFM

C.1. CICI 2003

3.29 In November 2000, FAO, ITTO, UNEP, CIFOR and IUFRO organized an expert consultation to review progress made in developing and applying C&I worldwide and consider opportunities for enhanced collaboration among processes. The meeting recommended, *inter alia,* convening a global conference on C&I, which led in February 2003 to the International Conference on the Contribution of Criteria and indicators for Sustainable Forest Management: The Way Forward (CICI 2003) hosted by Guatemala and organized by FAO, ITTO, Finland and the US. A major outcome of CICI 2003 was the identification of "seven thematic areas" of SFM based on the criteria common to several C&I processes, together with the recommendation that FAO use these thematic areas in the overall framework of the global Forest Resources Assessments (FRAs).[35]

3.30 Building on the outcome of CICI 2003, in March 2003, FAO's 16th Committee on Forestry (COFO16) recommended that FAO strengthen its role in facilitating collaboration among C&I processes, noting in particular the seven common thematic areas of SFM.

C.2. UNFF

3.31 The UN Forum on Forests (UNFF) was established in 2000 as a subsidiary body of the Economic and Social Council (ECOSOC) of the UN, with universal membership, to promote implementation of the IPF/IFF proposals for action and provide a forum for continued policy development and dialogue among governments. The Collaborative Partnership on Forests (CPF) was formed to support the Forum's and enhance cooperation and coordination among the many international organizations with significant forest-related mandates.[36]

3.32 The high level segment of UNFF2 (March 2002) issued the *Ministerial Declaration and Message to the World* Summit *on Sustainable Development* (WSSD) in which ministers responsible for forests UNFF stressed, *inter alia,* the important role of C&I for SFM. The substance of the ministerial message, including the reference to C&I, was incorporated in the *Johannesburg Plan of Implementation* (paragraph 45) adopted by the WSSD in September 2002.

3.33 Two major, interrelated themes of UNFF4 in May 2004 were implementation of the IPF/IFF proposals for action on forest-related monitoring, assessment and reporting, and criteria and indicators for SFM. Drawing on the outcomes of CICI 2003 and COFO16, UNFF4 "acknowledged the following seven thematic elements of SFM, which are drawn from the criteria identified by existing C&I processes and offer a reference framework for SFM":

- Extent of forest resources
- Forest biological diversity

[35] Full text of CICI 2003 is available at www.fao.org/docrep.
[36] CPF includes the executive heads of 15 international secretariats: FAO Forestry Department (chair), CIFOR, CBD, GEF, ITTO, IUCN, IUFRO, UNDP, UNCCD, UNEP, UNFCCC, World Agroforestry Center, World Bank

- Forest ecosystem health and vitality
- Productive functions of forests
- Protective functions of forests
- Socio-economic functions of forests
- Legal, policy and institutional framework

3.34 As illustrated in Annex 2, this acknowledgment represented a significant step towards a common global view of the essential aspects of SFM and how to assess progress. UNFF4 also called for enhanced linkages between the periodic global forest resources assessments (FRAs) coordinated by FAO and existing C&I processes to improve the information base for monitoring, assessment and reporting on SFM, as well as enhanced efforts to harmonize forest-related definitions to facilitate national progress toward SFM, clarify reporting requests, minimize inconsistencies in information provided, and reduce reporting burdens.

3.35 The seven thematic elements and C&I are enshrined in the *Non-legally binding instrument on all types of forests*[37] adopted in 2007 by the UNFF and the UN General Assembly as the first global agreement on forests since the 1992 Forest Principles. Section V of the forest instrument, "National policies and measures", states that: "To achieve the purpose of this instrument, and taking into account national policies, priorities, conditions and available resources, Member States should":

- "Consider the seven thematic elements of SFM, which are drawn from the criteria identified by existing C&I processes, as a reference framework for sustainable forest management and, in this context, identify, as appropriate, specific environmental and other forest-related aspects within those elements for consideration as C&I for SFM" (paragraph b)
- "Further develop and implement C&I for SFM that are consistent with national priorities and conditions" (paragraph g)

C.3. FRA 2005 and 2010

3.36 In response to COFO16 and UNFF4, FAO adopted the seven thematic elements of SFM as the FRA reporting framework beginning with FRA 2005 in order to provide a holistic perspective on the state, management and use of the world's forests. FRA 2010, the most comprehensive global assessment to date, is organized according to the seven thematic elements. The report examines the current status and recent trends in over 200 countries for 18 key "variables" which are linked to the thematic elements and correspond closely to indicators from various sets of C&I. The report also considers another 70 variables, also largely linked to the thematic elements[38].

3.37 Because the seven thematic elements are based on common criteria, and the main FRA variables are linked to indicators, the FRAs are essentially global C&I assessment reports. The analysis is based on data provided by countries through questionnaires and thematic studies closely associated with C&I and supplemented through remote sensing surveys national reporting. Countries already using C&I for national reports are well positioned to respond FAO's questionnaires.

C.4. CPF task force on streamlining reporting

3.38 In 2002, in response to country concerns about the proliferation of forest-related reporting requested by CPF member organizations, the CPF established the CPF Task Force on Streamlining Forest-Related Reporting to seek ways to facilitate national forest reporting and develop common approaches for forest-related data and information collection, storage and dissemination. The task force has since agreed to work towards guidelines for national forest-related reporting to CPF members according to the seven thematic elements of SFM. The UNFF and CBD secretariats have articulated that in principle the forest information from national reports submitted to them could be organized according to the seven thematic elements. At its 8th Session in 2009, the UNFF requested the UNFF secretariat to collaborate with FAO, other CPF members and C&I processes to develop a format for reporting to the Forum on progress towards SFM and implementing the Non-legally binding instrument on all types of forests.

D. Collaborative work on C&I

3.39 As early as 1995, FAO and ITTO organized an expert meeting to consider ways to harmonize key concepts and terms used by the ITTO, Pan-European and Montreal C&I processes. While progress was made toward a common understanding of basic terms (e.g. forest type, criterion, indicator), it was generally

[37] Full text of UNFF resolution 4/3 and the Non-legally binding instrument on all types of forests are available at www.un.org/esa/forests.
[38] FRA 2010 report is available at www.fao.org/forestry/fra/fra2010. Table 1 of the full report displays the 18 key variables (indicators) analyzed for the seven thematic elements of SFM. Reporting on the contribution of forests to carbon cycles is incorporated under thematic element 1 (extent of forest resources).

concluded that more experience in implementing C&I was needed before the merits of harmonization could be determined. This early collaboration continued with a number of scientific meetings[39] and the policy meetings already mentioned which were co-organized by ITTO, including the ISCI conference hosted by Finland in 1996, the FAO-hosted expert consultation in 2000, and CICI 2003 hosted by Guatemala.

3.40 ITTO and FAO followed up CICI 2003 with an expert consultation hosted by the Philippines in Cebu City in March 2004 to improve common understanding of C&I concepts and approaches and communication among processes. In June 2006, ITTO, Forest Europe (then MCPFE) and the Montreal Process, together with FAO, UNECE and the US Forest Service, organized the Inter-Criteria and Indicators Process Collaboration Workshop hosted by Poland. The meeting considered issues common to the three processes, including how to make C&I more visible and useful to policy-makers and stakeholders, and stressed the need to demonstrate practical national and sub-national C&I applications.

3.41 Following the inter-process workshop in Poland, collaboration on C&I slowed down until 2011, during which there were the three important collaborative meetings discussed below.

D.1. International Seminar on Challenges of SFM (Tokyo, March 2011)

3.42 In March 2011, Japan and Indonesia co-hosted the International Seminar on Challenges of Sustainable Forest Management - Integrating Environmental, Social and Economic Values of Forests, which was organized by ITTO, Forest Europe and the Montreal Process as a UNFF country-led initiative. The meeting included 170 participants from 30 countries, international organizations, NGOs and the private sector, and focused on a review of the development and implementation of policy tools and instruments for SFM, including C&I and certification. The Co-Chairs summary concluded, *inter alia*, that:

- Significant progress had been made in the development and application of C&I in the last two decades, which had contributed to the identification of the seven thematic elements of SFM.
- C&I have provided (1) a common tool to monitor, assess and report on forests and forest management, (2) a common understanding of SFM for integrating multiple values of forest into forest policies and management, (3) a common ground for working out shared objectives and collaboration with stakeholders and (4) a common platform for exchanging knowledge, experiences and lessons learned and fostering collaboration and cooperation among associated countries.
- C&I frameworks have provided a substantial basis for the development of forest certification schemes, identification of indicators to monitor and assess forest governance, and the evolution of global forest assessments, notably FAO's FRAs.
- Indicators may vary according to the characteristics of forests, such as forest types, and the scales at which they are applied, while criteria are basically common across geographic regions and scales.
- Countries, particularly developing countries, often face difficulties in implementing C&I at the field level due to insufficient capacity, commitment and funding.

3.43 The Co-Chairs summary also:

- Urged countries make further efforts to undertake concrete actions to implement SFM on the ground thru, *inter alia*, improved in forest monitoring, assessment and reporting.
- Encouraged C&I processes and associated countries to:
    - Strengthen efforts to operationalize their C&I, including prioritizing the development of an efficient monitoring system and the capacity to operate it.
    - Periodically review and update indicators, taking into account the reporting needs emerging from issues related to forest governance, forest and land degradation, climate change mitigation and adaptation and biodiversity conservation, as well as scientific and technical developments.
- Encouraged C&I processes, working with FAO, ITTO and UNFF, to improve the consistency of forest-related reporting among processes and with other forest reporting mechanisms in order to reduce burdens on countries and promote systematic and integrated forest reporting.
- Invited countries and international organizations to continue to support C&I processes and participating countries, in particular developing countries, in operationalising and further improving C&I frameworks.

[39]These include the International Conference on Indicators for SFM organized by Australia, IUFRO, CIFOR and FAO in 1998 in Melbourne to foster stakeholder input to advance development of scientifically-based indicators, and the Conference on C&I for SFM at the FMU Level organized by Ecofor and EFI on behalf of IUFRO and under the auspices of FAO, CIFOR and CATIE in Nancy, France in 2000.

- Invited the Rio Conventions to take existing C&I frameworks into account in developing new forest-related monitoring and reporting mechanisms and to collaborate with C&I processes and the CPF Task Force on Streamlining Forest-Related Reporting to this end.

D.2. Workshop on Using C&I to Improve Forest Monitoring Capacity and Promote SFM in Latin America (Valdivia, Chile, April 2011)

3.44 In April 2011, Chile's National Forest Corporation (CONAF) and the US Forest Service organized a workshop in Valdivia, Chile on Using C&I to Improve Forest Monitoring Capacity and Promote Sustainable Forest Management in Latin America. The 30 participants included forestry experts from Argentina, Chile, Guatemala, Honduras, Paraguay, Uruguay and the US, as well as FAO and CATIE (Center for Tropical Agricultural Research and Higher Education) based in Costa Rica.[40]

3.45 The meeting looked at similarities and differences in reporting efforts and explored opportunities for improving reporting at country and regional levels. While participants raised a number of issues associated with data gathering and reporting, they also noted significant progress in capacity building in recent years in some countries. For example, the three Southern Cone countries -- Argentina, Chile and Uruguay -- have made progress in developing the forest inventory information needed for sustainability reporting. They have also identified and refined a core set of 16 indicators which integrate Montreal Process and FRA data requirements.

D.3. Joint Workshop of the Montreal Process, Forest Europe, ITTO and FAO (Victoria, Vancouver, October 2011)

3.46 In October 2011, Canada organized and hosted a joint workshop with 30 representatives of the Montreal Process, ITTO, Forest Europe and FAO in Victoria, Vancouver to Streamline Global Forest Reporting and Strengthen Collaboration among International Criteria and Indicators Processes.[41] The workshop agreed to develop a "collaborative forest resources questionnaire" that will serve as a basis for reporting to FAO for FRA 2015 and to ITTO for next SFM Tropics report, as well as reporting by respective members to Forest Europe and the Montreal Process Working Group. The joint questionnaire is expected to be finalized at a meeting hosted by the US in August 2012.

3.47 The joint workshop stressed the need for future collaboration among the three C&I processes and FAO to:

- Develop joint data collection schedules and methodologies between the FAO and the three C&I processes;
- Identify similarities and differences among the three indicator sets, with a view to developing a core set of indicators for FRA 2015;
- Examine how C&I can help countries deal with emerging issues; and
- Establish a regular framework for communication on C&I and related SFM issues.

3.48 The workshop also issued a Joint Statement on *Looking after the world's forests and maintaining their services*, which included the following key messages:

- Since UNCED, the Montreal Process, ITTO, Forest Europe and the FAO global forest resources assessment "have utilized sophisticated criteria and indicator frameworks for reporting on forest related environmental, social and economic aspects."
- "The seven internationally recognized thematic elements of sustainable forest management...are a basis for monitoring and reporting, and for revealing challenges and demonstrating progress on forest conditions and sustainable forest management.
- We are confident that our experiences and successes have relevance to other organizations and processes interested in tracking environmental changes, and reporting on sustainable development.
- We recognize the value of working with other processes and organizations to avoid the proliferation of monitoring requirements and associated reporting burdens.
- We recognize that our knowledge and experience in tracking and reporting on forest conditions and trends is of value and relevance to emerging issues such as climate change, bioenergy and water.
- We invite other entities interested in forest-related data, evaluation or expertise to work with us to further improve forest-related data collection and reporting. We see this as the best way to

[40] ITTO was unable to attend the workshop, which took place shortly after Sendai earthquake and tsunami.
[41] Full report of the joint workshop is available at www.mpci.org and www.itto.int.

address emerging issues and to ensure the greatest lasting contributions from sustainably managed forests to sustainable development worldwide.

IV. GOVERNMENT USES/APPLICATIONS OF C&I AND THEIR IMPACTS

4.1 This section focuses primarily on responses to the government survey by officials with responsibilities at national or subnational (e.g. state, provincial, local) levels for forest policy, planning, regulation and/or management. Section IV.A provides an overview of responses received; Section IV.B reviews the experiences of countries in using and applying C&I; Section IV.C reviews responses regarding challenges encountered in using C&I; and Section IV.D looks at the impacts of C&I on forest management practices. Sections IV.B-D are generally organized into two groupings of the five C&I processes: (a) ITTO producers, including ATO/ITTO and Tarapoto Process participants (tropical forests)[42]; and (b) Forest Europe and Montreal Process countries (temperate/ boreal forests)[43]. Section IV.E reviews pertinent information from ex-post evaluations of ITTO funded C&I projects in Indonesia, the Philippines and Thailand.

4.2 As a whole, survey responses, supplemented by ex-post evaluations, provide a good overall picture of the range of C&I applications and impacts. However, specific applications and impacts are highly individual by country due to a number of factors, including those noted below in paragraphs 4.3 and 4.4. The following discussion should be understood in that context.

A. Overview

4.3 Designing a global survey for government officials was a challenge given the differences among C&I processes and sets, in particular regarding FMU level C&I, which the Pan-European and Montreal processes have not elaborated, as well as the performance-based nature of the ATO/ITTO PC&I. This meant there was no common framework across processes to assess field level uses of C&I or their impact on forest practices. The lack of FMU level C&I does not mean that temperate /boreal forest countries have not applied C&I in ways that have had a positive effect on forest management, but that such applications may be indirect, with the impact on forest practices achieved through stepping down or otherwise integrating national level C&I into forest policies or management regulations, rather than through the direct use of field level C&I.

4.4 In addition to variations among C&I processes and sets of C&I, countries within and across processes differ significantly not only in terms of forest type, extent and distribution, but also in terms of forest-related governance structures, ownership patterns, and existing forest policy frameworks and forestry traditions, all of which affect how countries use and apply C&I. For example:

- In many countries, government regulation of public and private forests is a national responsibility. In other countries, including federations, the authority to regulate forests rests largely at a subnational level (e.g. state/province) or is distributed over multiple levels of government (e.g. national, state/province, county, municipality).
- In some countries, the government is the sole or principal owner or trustee of forests and forest resources and oversees their management directly or through government awarded concessions, licenses or contracts. In other countries, forests may be owned and managed by millions of companies, communities, families and individuals, often in small parcels.
- Countries differ in the relationship or distinctions made between government and private operations. In some countries, timber and other forest industry boards facilitate private sector activities and may have a quasi-governmental status. In other countries, forest land management agencies operate as state-owned timber producing private companies. In still other countries, the government and private sector are completely separate.
- Countries also differ widely in the extent and distribution of forest area and diversity of forest types, which can affect how forests are managed and C&I are used. For example in some countries, timber harvesting occurs in both natural/native and planted forests**.** In other countries, native forests are totally protected and timber production is limited to plantations.

4.5 To address adequately the differences among countries and in particular C&I processes, a draft survey was informally pilot tested with a number of Montreal Process and European officials to assess the relevance of some questions for countries without FMU-specific C&I. Feedback led to minor modifications in the final survey (see Annex 5), which aimed to take into account C&I differences while avoiding undue complexity in survey design.

A.1. Survey respondents

[42] Although Mexico is an active member of the Montreal process, its responses are included with ITTO producers.
[43] China's responses are included with the Montreal Process.

4.6 The cooperation and assistance of ITTO members in providing contact information for government officials was essential to gathering information on C&I uses and impacts. Beginning in February 2011, the ED electronically circulated the survey and a draft list of possible official contacts[44] to all ITTO focal points requesting they confirm or update the contact list for their country (see Annex 6). The following members responded to the ED's request or had previously completed the pilot survey:

ITTO Producers: Brazil, Colombia, Côte d'Ivoire, Guatemala, Guyana, Honduras, Malaysia, Mexico, Myanmar, Peru, Togo

ITTO Consumers: Canada, China, Finland, Japan, Korea, New Zealand, Norway, Sweden, UK, US

4.7 Based on information obtained from the Forest Europe Liaison Unit-Oslo and the Montreal Process Liaison Office (Tokyo), contact information was generated for officials in the following additional countries:

ITTO Consumers: Australia, Austria, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Switzerland

Non-ITTO members: Argentina, Chile, Croatia, Hungary, Russian Federation, Slovenia, Turkey, Uruguay

4.8 Between March and December 2011, the government survey was circulated to about 100 officials in the above countries[45]. As shown in Table 4, 46 responses were received from officials in 25 **c**ountries. The greatest number of responses was from Canada (6), Colombia (4), New Zealand (4) and the US (4). China and Mexico, with both temperate and tropical forests, are active in both the ITTO and Montreal C&I processes. Guatemala and Honduras, both ITTO producer members, have participated in the Lepaterique C&I Process for Central America. The Russian Federation, with the largest forest territory in both Europe and Asia (as well as the world) is an active member of both the Pan-European and Montreal Processes. (See Annex 6 for a list of survey recipients and respondents.)

TABLE 4
Responses to the government C&I survey by country

Country	Number of responses	C&I process	ITTO Member
Argentina	1	Montreal	No
Austria	1	Forest Europe	Yes
Brazil	1	ITTO, Tarapoto	Yes
Canada	6	Montreal	Yes
Chile	1	Montreal	No
China	3	Montreal, ITTO	Yes
Colombia	4	ITTO, Tarapoto	Yes
Côte d'Ivoire	1	ITTO, ATO/ITTO	Yes
Finland	1	Forest Europe	Yes
Guatemala	1	ITTO (& Lepaterique)	Yes
Guyana	1	ITTO, Tarapoto	Yes
Honduras	1	ITTO (& Lepaterique)	Yes
Japan	1	Montreal	Yes
Korea	2	Montreal	Yes
Malaysia	2	ITTO	Yes
Mexico	1	Montreal, ITTO	Yes
New Zealand	4	Montreal	Yes
Norway	1	Forest Europe	Yes
Peru	3	ITTO, Tarapoto	Yes
Russian Federation	1	Forest Europe, Montreal	No
Slovenia	1	Forest Europe	No
Sweden	1	Forest Europe	Yes
Togo	3	ITTO	Yes
UK	1	Forest Europe	Yes
US	4	Montreal	Yes
25 countries	**46**		

4.9 Table 5 displays survey responses by C&I process. As indicated, 18 responses were received from 8 ITTO producer countries, including one associated with the ATO/ITTO PC&I (Cote d'Ivoire), four associated with the Tarapoto Process (Brazil, Colombia, Guyana, Peru) and one associated with the Montreal Process (Mexico). Seven responses were received from 7 Forest Europe countries, including 5 ITTO consumers,

[44] The draft contact list was drawn from the ITTO Secretariat's database of participants in national and regional C&I training workshops and from information provided by the Forest Europe LU and Montreal Process LO

[45] With the exception of Myanmar which initially provided 39 contacts, noting a short list would follow, which remains pending.

and 24 responses were received from 10 (of 12) Montreal Process countries, including 6 ITTO consumers and Mexico.

TABLE 5
Number of government survey respondents by C&I process

C&I Process	Countries	Responses
ITTO producers total:	9(a)	18(a)
• ATO/ITTO	1	1
• Tarapoto	4	9
• Other producers	4(a)	6(a)
Forest Europe:	7(b)	7(b)
Montreal Process:	10 (a)(b)	24(a)(b)

(a) Includes Mexico. (b) Includes Russian Federation.

4.10 Table 6 displays the distribution of responses received from ITTO producer and consumer members by region and group. A total of 42 responses were received from 19 ITTO member countries, with the greatest number from consumers and from Latin American producers (12 responses from 7 countries) and the fewest from tropical Africa (Côte d'Ivoire, Togo) and Asia (only Malaysia).

TABLE 6
Number of ITTO respondents to the government survey

ITTO Member	Countries	Responses
Producers – Africa	2	4
Producers – Asia	1	2
Producers – Latin America	7	12
Consumers – EU	4	4
Consumers – Non-EU	7	20
Total	**21**	**42**

4.11 Respondents included a mix of national and subnational forest agencies, organizations and institutions. As shown in Table 7, the majority represented national forest authorities.

TABLE 7
Types of organizations represented by government respondents

Forest agency/organization	ITTO, ATO/ITTO, Tarapoto	Forest Europe	Montreal Process	Total
National ministry/authority	13(a)	5(b)	10(a)(b)	28(a)(b)
National research organization	-	2	4	6
State/provincial authority	4	-	7	11
Local authority	-	-	1	1
University	1	-	-	1
Total	**18(a)**	**7**	**22**	**47(a)(b)**

(a) Includes Mexico. (b) Includes Russian Federation.

A.2. Forest area represented by respondents

4.12 Table 8 displays the forest area which responding entities own and/or manage, the extent of this area which is certified, and the additional forest area responding agencies regulate (but do not own or manage). Where a country had more than one response, the areas listed are the total reported for that country. As shown, responding entities own and/or manage 579 million hectares (ha) of private and public forest and regulate another 461 million ha of forests[46], for a total of over 1 billion ha, of which 40% is in the tropics. This represents 25% of the world's forests, many of which are production forests, which is significant.

4.13 As shown in Table 8, 25% (156 million ha) of the forest owned or managed by respondents are timberlands certified under FSC, PEFC and/or an independent national scheme, with the largest area reported for Canada. In many cases, the certified area reflects only a portion of all certified forests in the country. For example, Finland noted that 97% of its forests (21 million ha) are PEFC-certified. Norway indicated that basically all commercial harvest is PEFC-certified. Japan noted that about 1.13 million ha of mostly planted forest for commercial timber production are certified under their domestic SGEC system and/or FSC.

[46] Responding entities from Argentina, Austria, Finland and Mexico do not own, manage or regulate forests but are involved in C&I uses/applications.

TABLE 8
Area of forests owned/managed and regulated by responding organizations

Process/country*	Forest owned/ managed (1000 ha)	Area certified (1000 ha)	Additional forest regulated (1000 ha)
ITTO-AFRICA			
• Côte d'Ivoire (ATO/ITTO)	4,200	0	0
• Togo	820	0	400
ITTO-ASIA			
• Malaysia (Sabah)	3,607	112	0
ITTO-LATIN AMERICA			
• Brazil (Tarapoto)	100	0	290,000
• Colombia (Tarapoto)	9,338	0	0
• Guatemala	1,835	35	0
• Guyana (Tarapoto)	12,900	0	0
• Honduras	124	114	113
• Peru (Tarapoto)	68,000	*	22,000
FOREST EUROPE			
• Norway	0	-	12,000
• Russian Fed. (also Montreal)	114,600	2,600	0
• Slovenia	0	-	1,185
• Sweden	0	-	28,000
• UK	753	753	2,000
MONTREAL PROCESS			
• Canada	244,200	146,000	70,355
• Chile	4,000	0	12,000
• China	6,000	6,000	0
• Japan	7,625	*	17,623
• Korea	1,404	238	0
• New Zealand	5,058	47	1,300
• USA	94,348	0	4,456
Total	**578,912**	**155,899**	**461,468**

* Forests "owned/managed" are partly certified but exact figures on the area certified are not available.

B. Government uses/applications of C&I

4.14 This section reviews how forest authorities are using or applying C&I. The discussion is largely descriptive due to differences among C&I sets (e.g. regarding FMU C&I) and among countries in terms of forest governance structures, as well as to differing and overlapping interpretations by respondents of key survey terms (e.g. planning, management, standards) based on their particular national/ subnational legal, policy and institutional context, as well as on variations in language. The responses are illustrative of the ways countries in various regions have operationalized C&I in their forest-related assessments, legislation, policies, plans and/or programmes, recognizing that ITTO producers from Africa and Asia are not well-represented. To the extent these experiences can be generalised to governments which did not respond to the survey, they provide a cross-section of C&I implementation worldwide.

B.1. Monitoring, assessment and reporting (MAR)

a. ITTO, ATO/ITTO and Tarapoto processes

4.15 National, regional, international levels. A number of tropical producer respondents are using C&I as a framework to monitor, assess and report on forest trends and progress toward SFM at the national level, often building on ITTO training or project support. Some countries have developed their own C&I sets based on the ITTO framework to better reflect national conditions. Togo is in the process of developing national C&I based on the ATO/ITTO PC&I as part of a wider initiative of forest sector reform to include development of a national forest policy, forestry action plan and standards for SFM. Brazil and Togo noted that while they do not use C&I to monitor and assess forests, they do report using a C&I framework. Several countries, including Colombia, Guyana and Peru, specifically mentioned using C&I as a framework for regular reporting to relevant regional and international organizations such as ACTO, ITTO for SFM tropics, and FAO for the FRA.

4.16 Subnational/FMU levels. Some ITTO producers are using national/FMU C&I as a framework or basis for MAR at subnational and FMU levels, again often building on ITTO support. For example:

- In Sabah, Malaysia, information gathered using the ITTO C&I are used as a basis for regular reporting on progress toward SFM at state, local and FMU levels, and are somewhat applied in monitoring and assessing SFM implementation at the FMU and other operational levels.

- In Honduras ITTO's C&I are used to assess and monitor management plans and operational plans for all forests.
- In Mexico, C&I are used for reporting on forest areas certified under national regulations for SFM or under FSC national standards.
- In Brazil, the ITTO FMU C&I are applied in ITTO financed projects.
- In Togo, C&I are used in annual reports on technical activities at subnational and FMU levels.
- Côte d'Ivoire noted that while it does not use C&I as a basis for MAR, a working group has recently been introduced to SODEFOR (Societé de Développement des Forêts) to oversee implementation of C&I development at the FMU level.
- In Colombia, ITTO funded an early project (1998-2001) on "Implementation and evaluation of criteria for sustainable management of natural forests" in the departments of Putumayo and Nariño, the results of which have been partially applied.

b. Pan-European and Montreal processes

4.17 National, regional, international levels. European and Montreal process countries widely use C&I as a framework for periodic MAR on forest trends and progress toward SFM at national, regional and international levels, including for the FRA. Some countries have stepped down or otherwise adapted process level C&I to national conditions. For example, the Canadian Council of Forest Ministers has developed national level C&I based on the Montreal Process framework. Respondents from Austria, Norway, Slovenia and Sweden noted that national level reporting encompasses the Pan-European C&I but is more detailed and comprehensive. In other countries, such as Japan, New Zealand and Russia, where forest monitoring and assessment is based on existing laws and inventory systems, C&I are used primarily for broad-scale reporting as members of C&I processes.

4.18 Subnational level. Several respondents from Canada, Chile, China, Finland, Sweden, the UK and the US indicated using C&I as a framework for forest monitoring and assessment at subnational (e.g. state/provincial) and local levels, in some cases by stepping down/adapting national level C&I to subnational scales. For example:

- In Canada, a number of provincial governments and institutions have developed provincial and local level indicators drawn from the Montreal and Canadian C&I framework.
- In the US, 16 states in the northeast have identified a subset of Montreal Process indicators for regional forest assessments. In the northwest, the state of Oregon has endorsed 19 indicators for achieving SFM. Other US states and localities have also identified subsets of indicators applicable to their situations, although the approaches are not uniform or widespread.
- In Sweden, C&I are partly used for subnational forest MAR, complementing other means and sources of information.
- China has carried out national pilot studies aimed at promoting SFM and establishing C&I at various subnational levels.

4.19 FMU level. Although the Pan-European and Montreal processes do not have FMU level C&I, national level data for many indicators, especially in decentralized government structures, is typically obtained by aggregating field/FMU level data provided by states/provinces or other subnational forest authorities. Chile, Finland and the UK also noted that process or national C&I sets have provided a framework for MAR at the FMU level. In Alberta, Canada, FMU level reports by forest industry are based on approved forest management plans (FMPs) which include indicators that incorporate the Canadian C&I. Both China and the US noted limited pilot applications of C&I at the FMU level.

B.2. Forest planning and programmes

a. ITTO, ATO/ITTO and Tarapoto processes

4.20 The majority of respondents, including Colombia, Côte d'Ivoire, Guyana, Honduras, Malaysia (Sabah), Peru and Togo, reported using C&I as a framework for national forest-related planning and development of national forest programmes (NFPs) or comparable strategies. Several also reported using C&I in plans and programmes at subnational, local and/or field levels. For example:

- In Sabah, the ITTO C&I are applied as a basis in planning at the state, FMU and "compartment" levels which have been identified to translate SFM policy into a set of coordinated actions.
- Within the framework of ITTO project PD 438/06 Rev. 2(F), the Colombian Autonomous Regional Corporation[47] of Central Antioquia is developing a forest management plan which will include C&I for the area covered by the project.

[47] Regional Autonomous Corporations in Colombia are the first environmental authority at the regional level. They are public agencies created by law, composed by local authorities, and endowed with their own assets, legal personality and administrative and financial autonomy. They are responsible for the implementation of policies, master plans, programmes and projects on the environment and

- Similarly, Colombia's Autonomous Regional Corporation of Valle del Cauca is elaborating a forest plan covering 36 river basins which takes into account the conceptual framework of the ITTO C&I.
- In Côte d'Ivoire, C&I are used in approving FMPs at the FMU level.

b. Pan-European and Montreal processes

4.21 Respondents from Austria, Canada, China, Finland, Korea, Slovenia and the US reported using C&I as a framework for forest-related planning, programmes and strategies at various levels. For example:

- C&I parameters are integrated into the NFPs of Finland and Slovenia, as well as into their subnational forest programmes and forest management plans.
- In Austria, C&I contribute to planning at various levels and to the country's more comprehensive national inventory which provides the main source of information for planning, particularly at local and FMU levels.
- China's State Forestry Administration used C&I as a basis for their 2008 Guidelines on National SFM and for forestry development plans at national, provincial and county levels.
- In Canada, C&I have played an important role in developing national forest strategies for more than two decades. The provinces of Alberta, British Columbia and Ontario and the Yukon Territory have taken C&I into account in provincial/territorial forest strategies and in some cases in local/FMU level management plans.
- In the US, the strategic forest plan for the state of Oregon ("Forestry Program for Oregon") sets forth seven goals related directly to the seven Montreal Process criteria. In Baltimore County, Maryland, the Montreal Process C&I framework, together with related national forest reports, have helped in the development of local programmes to expand, protect and restore forests and set urban forest canopy goals.

B.3. Developing regulations and guidelines

a. ITTO, ATO/ITTO and Tarapoto processes

4.22 Most tropical producer respondents indicated that C&I have provided a framework for regulating and developing guidelines for forest use and management practices at various levels and in various ways. For example:

- In Guyana, the ITTO C&I have provided guidance for developing and implementing forest policy and are taken into account in the Code of Practice for Timber Harvesting which provides specific inventory, planning and harvesting requirements and guidelines for all forest concessions. The Guyana Forestry Commission has also used the ITTO C&I to structure key mechanisms for SFM.
- In Togo, the ATO/ITTO PC&I are a basis for the country's 2008 forest code.
- Côte d'Ivoire has used C&I used to identify forestry rules for classified forests (*Forets Classees*) zoned for production and protection and to some extent for forest concessions. Management plans prepared for classified forests follow the C&I framework for best management practices.
- Sabah, Malaysia has applied the ITTO C&I in formulating SFM License Agreements which are used to regulate forest management within the state, as a basis for official audit and compliance reports, and in developing guidelines for SFM auditing, reduced impact logging, forest restoration, planting, silvicultural practices, and the establishment of "permanent sample plots", as well as for conducting social baseline surveys.
- In Peru, C&I provide a legal framework for the management of all forests in the country.
- In Honduras, C&I are also reflected in regulations covering all forests and are used to evaluate compliance of forest management plan activities.
- In Brazil, some aspects of sets of C&I are covered in national regulations. The Brazilian Forest Service concession framework includes some indicators to assure best practices in the field.
- Colombia's Ministry of Environment, Housing and Territorial Development has conducted partial evaluations on issues related to managing forest resource supplies and compliance with regulations and local community rights. Based on these evaluations, the government has promoted in pilot areas work with local communities and initiated the revision of the current regulatory framework for timber harvesting. Valle del Cauca also noted that once management planning is completed for the 36 watersheds mentioned above, detailed management guidelines at the FMU level will be prepared using the ITTO C&I.
- In Mexico, the Federal Attorney for Environmental Protection uses a set of C&I to assess compliance with logging permits at the FMU level and to determine whether a forest area can obtain SFM certification in accordance with Mexican law enacted in 2008.

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renewable natural resources, as well as existing legislation, according to the regulations and guidelines issued by the Ministry of Environment.

- In Ghana, the ITTO C&I and ATO/ITTO PC&I have been used in the Forestry Commission's forest management manuals and guidelines, providing a corner stone of natural resource management.[48]

b. Pan-European and Montreal processes

4.23 Responses indicate that C&I provide a framework for forest regulation and guidelines in some form in many European and Montreal Process countries. For example:

- The Pan-European C&I are the reference for the UK Forestry Standard which provides the framework for all forest management in the UK.
- In Norway, C&I are a basis for forest legislation and standards developed for the regulation of forest management at national, local and FMU levels.
- In Finland, C&I are a framework for developing and recommending specific improvements to forest management practices based on monitoring indicators.
- Quebec, Canada has integrated national level criteria into provincial laws governing the management of government and privately owned forest lands.
- Slovenia has included C&I parameters in national regulation of forest management planning which applies to management plans developed for all forests.
- Similarly in Chile, C&I are contained as a reference framework in the national law governing the "rehabilitation of native forests and forest development" which is aimed at the protection, rehabilitation and improvement of native forests.
- In Korea, C&I are a basis for regulating forest practices for government owned/managed forests. Korea has developed a "Guideline for Sustainable Forest Resources" which covers all forests, including plantations.
- In China, C&I are a reference for the annual regulation of wood harvesting quotas for all forests based on forest resource conditions. In addition, based on the national pilot studies mentioned above, forest management schemes are compiled by FMUs based on C&I.

4.24 Some respondents noted that while C&I are not used directly for forest regulation, they have helped shape forest policy and management guidelines and in turn have influenced management practices. For example:

- In the US, the National Association of State Foresters have used the C&I framework as a guide to assist private owners in developing FMPs. The state of Oregon has used C&I as a feedback loop to evaluate regulatory compliance and effectiveness.
- In Chile, C&I provide the framework for developing best management practices (BMPs) for experimental forests.
- C&I also provide the framework for developing BMPs for Russia's three model forests which are part of the International Model Forest Network launched by Canada in 1992.
- Canada's Yukon Territory is in the early stages of developing a regulated forest management regime and is using C&I to obtain essential baseline information.

4.25 In a few countries, such as New Zealand, existing national and/or subnational laws and codes of best practice govern forestry practices. Such regulations enshrine the principles and goals of SFM but are not based on or integrate C&I *per se*.

B.4. Developing standards/certification

a. ITTO, ATO/ITTO and Tarapoto processes

4.26 Several respondents, including Cote d'Ivoire, Guyana, Honduras, Malaysia, Mexico and Peru, indicated that C&I have provided a basis for forest management certification schemes and other performance standards used in their countries, including national standards developed under the Forest Stewardship Council (FSC) or endorsed by PEFC. (Survey responses from certification programmes are discussed in Section V.) For example:

- In Guyana, C&I are reflected in the Legality Assurance System which checks forest operations and supply chains from harvesting to export and provides a reliable means to certify that forest products are derived from legal sources.
- As noted above, Mexico has used FMU C&I at the FMU level in the development and implementation of, and compliance with, their national system of forest management and chain-of-custody certification.
- The Peruvian Council for Voluntary Forest Certification has developed certification standards, based on FSC principles and criteria (P&C), for production forests in the Peruvian Amazon which take into account the Tarapoto and ITTO C&I.

[48] Information contained in ITTO's publication commemorating the Organization's 25th anniversary (*25 Success Stories*, October 2011).

- Colombia has established a national NGO to promote voluntary forest certification under FSC and develop standards for good forest management. The Autonomous Regional Corporation of Valle del Cauca has used FSC P&C to certify private bamboo operations in Caicedonia.
- Sabah, Malaysia has applied the ITTO C&I as a basis for developing a standard used in evaluating the performance of SFM License Agreement holders in implementing SFM on the ground.
- In Gabon, the ATO/ITTO PC&I have been harmonized with PEFC certification standards to create PAFC Gabon (Gabonese Forest Certification Scheme).[49]

4.27 In some cases, market-oriented certification appears to be overtaking the use of C&I at the FMU level. Guatemala, for example, noted that since national FSC standards were approved for the country, forest operators are focused on obtaining FSC certification. As of April 2012, 12 forest management certificates covering 500,000 ha and 13 chain-of-custody certificates had been issued under FSC.

b. Pan-European and Montreal processes

4.28 Many European and Montreal Process respondents indicated that governments are not involved in the certification of forest management practices, which is considered a voluntary, market-driven activity of the private sector. Several noted, however, that C&I have provided a framework for certification programmes and schemes operating in their countries. For example, the Austrian PEFC standard is based on the Pan-European C&I.

4.29 In addition, some governments have developed standards drawn from C&I to guide forest management. Already mentioned are the UK forestry standard and Norway's performance standards at national, local and FMU levels, which take into account the Pan-European C&I. In addition:

- The Alberta (Canada) Forest Management Planning Standard is based on Canada's national C&I and sets out requirements for, *inter alia,* watershed management, soil conservation, forest several stage development and species at risk for the province's government owned timberlands.
- China has released national guidelines and standards for certification of forest management and chain-of-custody, which are being gradually applied, for example in demonstration applications involving government-owned plantations.
- New Zealand is in the process of developing a national standard based on FSC P&C and existing national laws and codes of best practice.

B.5. Innovative uses/applications of C&I

4.30 A number of respondents indicated using C&I as a tool for various purposes in addition to those mentioned above. Among ITTO producers, for example:

- Sabah, Malaysia has applied the ITTO C&I as a basis for creating, in partnership with New Forests, the Malua Wildlife Habitat Conservation Bank (Malua BioBank) to generate sustainable financing for the conservation of unique forests in the Malua Forest Reserve (34,000 ha). Under this innovative programme, commercial enterprises, NGOs and other entities can purchase Biodiversity Conservation Certificates representing 100 square meters of forest protection and rehabilitation. While there is no direct financial incentive for investors, commercial benefits accrue to companies in the form of brand imaging to consumers and recognition of corporate social responsibility.
- Togo is using C&I for the preparation of environmental management plans in implementing projects that have impacts on forests.
- Peru is using C&I as guidance regarding the status of forests for watershed protection.
- Colombia has used C&I as a monitoring tool to verify logging permits which have been granted in the municipality of Buenaventura.

4.31 In the temperate/boreal region, respondents from Canada (Natural Resources Canada, Quebec) and Finland noted using C&I to keep policy makers and the public informed about forests and forestry, identify forest-related research needs and priorities, and develop education initiatives. Canada also uses C&I as a framework for coordinating national and international forest information collection and management, and noted that C&I reporting has been helpful in demonstrating the country's commitment to SFM and in promoting Canadian forest products to environmentally sensitive international market places.

[49] Information contained in ITTO's publication commemorating the Organization's 25th anniversary (*25 Success Stories*, October 2011).

B.6. Stakeholder involvement

a. ITTO, ATO/ITTO, and Tarapoto processes

4.32 Nearly all respondents indicated involving stakeholders in the above C&I-related activities. For example:

- Honduras indicated that all forest evaluation using C&I involve consultations with forest owners and users of national forests.
- Guyana has established a comprehensive and transparent consultation process which includes public and private organization and individuals and involves stakeholders in all major policy and legislative decisions, including as related to C&I.
- Mexican authorities consulted with various stakeholders, including forestry producer organizations, the private business sector, academia and state and local governments, in the process of formulating its 2008 national law governing certification.
- In Malaysia, multi-stakeholder consultations were conducted at national and state levels in developing the forest management certification standards used in the Malaysia Timber Certification Scheme. In Sabah, these consultations involved government agencies, NGOs and community-based organization.
- Cote d'Ivoire reported consultations involving riverside populations, local and riparian communities, NGOs and representatives of various private actors in the forest sector.

4.33 While most respondents considered the involvement of stakeholders a key factor in the successful application of C&I at national, subnational and/or FMU levels, challenges were also noted in this regard. For example, Togo noted that a number of stakeholders have been resistant to the use of the ATO/ITTO PC&I which were perceived as burdensome. With the support of the EU and FAO, the government has established a National Working Group (Groupe National de Travail-GNT) comprised of public and private organizations and NGOs as part of its wider effort on forest sector reform. Through this group, the country hopes to overcome stakeholder resistance and hasten the development and application of national C&I based on the ATO/ITTO PC&I, recognizing that it will take time for all actors to become open to the process. (Challenges related to stakeholders are further discussed in Section IV.C)

b. Pan-European and Montreal processes

4.34 Again nearly all respondents indicated that stakeholders were actively involved in C&I-related activities, and several countries, including Finland, Slovenia, Sweden and the US, emphasized that stakeholder participation is a basic principle of their wider forest management planning, assessment, reporting and regulatory processes. For example:

- The US Forest Service chairs the "Roundtable on Sustainable Forests" which is comprised of a wide range of federal, state, industry and environmental stakeholders. The state of Oregon involves stakeholders through public meetings, advisory committees, public comment solicitations and the "Oregon Roundtable on Sustainable Forests". Baltimore County, Maryland has a steering committee of citizens and county representatives which helps inform the county's forest program and participates as a partner in county projects.
- In Alberta, Canada, all new or updated performance standards are reviewed with stakeholders prior to approval and implementation. Ontario involves stakeholders in forest management planning and relevant legislative initiatives. The Forest Resources Management Plans of the Yukon Territory, Canada have significant public consultation with First Nations, Renewable Resources Councils, interest groups, industry and the public.
- Chile has established a "Forest Users' Committee" comprised of universities, research institutions and representatives of professional associations, NGOs and community groups, which has identified a set of most representative indicators for swift implementation and monitoring of SFM.
- In Norway forest management performance standards are developed by stakeholders.
- The "State of Forests in Finland" report, which is based on the Pan-European C&I and Operational Level Guidelines, is prepared with stakeholder consultation.
- In the Russian Federation, stakeholders are involved in activities related to managing model forests and obtaining forest management certification.
- New Zealand's current initiative to develop an FSC-based national forest standard includes input from economic, social and environmental interests, as well as indigenous peoples.

C. Challenges encountered in using/applying C&I

4.35 All respondents have encountered challenges in undertaking activities related to the effective use and application of C&I as a basis or framework for forest MAR, planning, regulation or the development of other policy instruments. These challenges are summarized in Table 9 and illustrate both similarities and

differences among tropical countries and temperate/boreal countries regarding issues and constraints encountered.

TABLE 9
Challenges encountered by forest authorities in using/applying C&I

Issue/constraint	Number of respondents citing issue/constraint		
	ITTO/ATO/ Tarapoto	Europe/ Montreal	Total
1. Lack of financial resources	13	12	25
2. Lack of technical resources	10	8	18
3. Limited stakeholder understanding of C&I and confusion with certification	9	9	18
4. Lack of political will	11	5	16
5. Conflict among stakeholders on forest use	9	7	16
6. Multiple forest ownerships	7	4	11
7. Multiple layers/levels of forest authorities	3	6	9
8. Limited legal mandates re forests	3	4	7
9. Problems with land tenure	4	2	6
10. Unsuitable, impractical or outdated indicators	2	2	4
11. Lack of cross-sectoral coordination	1	2	3
12. Preference by forest operators for certification over C&I	1	1	2
13. Agricultural incursions into forests	1	-	1
14. Armed groups/conflict	1	-	1

C.1. ITTO, ATO/ITTO and Tarapoto processes

4.36 Lack of capacity. As shown in Table10, among the top challenges cited by tropical respondents are limited financial and technical resources and related capacity issues, particularly to collect data on social and environmental indicators for which baseline information and inventory systems are limited or not available, as well as to enforce laws and regulations. The specific nature of these issues varies across countries. For example:

- Guyana indicated that financial resources for forests/forestry compete with multiple agencies and a range of services.
- In Valle del Cauca, Colombia, the lack of financial resources is a problem given the large scale of investment required to finance programs and projects for preparing and implementing FMPs. A comprehensive financial strategy involving all social and institutional stakeholders related to the forest sector's development is needed, but currently only the Regional Corporation is participating with financial resources.
- Mexico noted limited human resources with capacity and necessary training for the use of C&I, and the lack of financial resources for the implementation and expansion of good forest management practices.
- In Sabah, Malaysia, some of their SFM License Agreement holders are unable to generate adequate financial surpluses to reinvest into SFM, and the lack of adequate technical resources limits their ability to implement the concept of multiple use of forests under SFM principles.
- In Togo, the lack of financial resources is a serious issue given that Togo has recently emerged from two decades of suspended international financial cooperation which had previously provided significant private investment for the forestry sector development.

4.37 Lack of political will. Lack of political, which is closely related to lack of financial and technical resources, was widely cited as a challenge to C&I uptake at national, subnational and FMU levels. Lack of political will generally equates with a lower priority given to achieving SFM relative to other development needs and goals, and results in limited resource availability for forests, including for developing, implementing and enforcing policy instruments, such as C&I.

4.38. Stakeholder issues. Many respondents highlighted difficulties in engaging stakeholders in C&I-related activities. In some cases, the problem was a limited understanding on the part of stakeholders regarding the concept and purpose of C&I and/or confusion between C&I and certification (Colombia, Côte d'Ivoire, Honduras, Peru, Togo). In other cases, issues arose due to conflicts among groups of stakeholders (forest owners, industry, local communities, etc.) about how forests and forest resources should be used and managed (Colombia, Honduras, Peru, Sabah, Togo). As already mentioned, Togo noted resistance on the part of some stakeholders to use of the ATO/ITTO PC&I, which were perceived as placing an additional burden on forest managers.

4.39 Other challenges. Other challenges to effectively using C&I were more country-specific and included the following:

- Problems associated with multiple forest ownerships (Brazil, Colombia, Côte d'Ivoire, Mexico, Peru, Sabah, Togo)
- Land tenure issues (Colombia, Cote d'Ivoire, Peru)
- Limitations in existing laws and lack of incorporation of C&I into legal and policy instruments, including in terms of logging and post-logging monitoring (Colombia, Cote d'Ivoire)
- Issues associated with multiple levels of government with forest responsibilities (Colombia)
- Lack of cross-sectoral coordination (Cote d'Ivoire)
- Enforcement issues, such as large-scale incursions of agricultural producers in land classified as forests (Côte d'Ivoire) and the presence of armed groups (Colombia)
- Greater attraction of market-oriented certification to owners/managers of production forests and limited value-added provided by FMU C&I to certified companies (Guatemala)

4.40 Issues with C&I sets. Some respondents have encountered challenges with process-level sets of C&I themselves, which have limited the application of C&I. Brazil noted that existing C&I do not adequately reflect the country's characteristics and circumstances. Similarly, Honduras pointed out that a number of indicators have little or no practical application in the Honduran context. Honduras also noted a lack of national-level indicators designed to measure social and economic impacts of forestry activities, as well as a lack of profitability indicators. Peru and Colombia noted that the ITTO C&I are too complex for easy use by local and indigenous communities, which are increasingly forest managers. Guatemala cited certification as the biggest constraint to using FMU C&I, mentioning that C&I do not provide value-added benefits to certified companies.

C.2. Pan-European and Montreal processes

4.41 Major issues cited by temperate/boreal forest authorities were similar to those identified by tropical producers, with the notable exception of lack of political will, which significantly fewer respondents identified as a problem.

4.42 Lack of capacity. A number of respondents noted limited financial and technical resources, particularly to collect the data needed to effectively measure a number of indicators. While countries typically are able to generate or capture data for many indicators from existing forest inventory grids, research data, and baseline economic and demographic information, some indicators require costly new or expanded inventory systems, for which resources were not available. To address these limitations, some respondents have focused on a core subset of indicators or relied on proxy indicators, such as case studies.

4.43 Stakeholder issues. Engaging stakeholders was a key issue for many European and Montreal process countries (Austria, Canada, Chile, Finland, Korea, Norway, UK, US). Limited stakeholder understanding of C&I included perceptions (e.g. by non-certified private operators) that C&I involved added costs and requirements and confusion among stakeholders about the differences between C&I and certification. Conflicts among stakeholders on how forests should be managed, including environmental campaigns against logging practices, are significant limiting factors in some countries.

4.44 Other challenges. The following challenges were more country-specific:

- Jurisdictional issues related to multiple levels of government forest responsibilities (Canada, Chile, US)
- Multiple forest ownerships (Canada, Slovenia, US)
- Limitations in existing laws (Russian Federation) and lack of integration of C&I into government mandates and accountability (Canada, US)
- Land tenure issues (Canada, US)
- Lack of a mechanism for cross-sectoral coordination (Canada, China)
- Greater attraction of certification to owners/managers of production forests (Japan)

4.45 Issues with C&I sets. As with ITTO producers, some countries noted issues with the process C&I. For example, Finland considered that a number of indicators were overly complicated, irrelevant or outdated. Chile noted the some Montreal Process indicators were highly scientific in nature and could only be measured by countries with a high degree of technical sophistication. British Colombia mentioned the unsuitability of some Canadian and Montreal process C&I for FMU level applications. Chile It was also noted that C&I sets that had not been reviewed for some time should be reviewed and improved to take into account recent experiences in using C&I as well as global trends and developments related to forests and climate change, forest-based biofuels, forest certification and human health issues.

D. Impacts of C&I on SFM

4.46 An important aspect of this study is to gain a better understanding of how and to what extent the above uses and applications of C&I have positively impacted forest management in the field. In general, responding forest authorities have not undertaken formal assessments to determine the direct and indirect effects of C&I uptake on FMU operations. However, the government survey provided an opportunity for officials to provide expert views on the impacts of C&I on SFM over time based on their organization's experiences.

4.47 Table 10 summarizes the views of respondents regarding the contribution of C&I to SFM[50]. As can be seen, evaluations of the impact of C&I vary from country to country and in some cases among officials within a given country. However, the majority of forest authorities (59%) from both tropical countries (14 respondents) and temperate/boreal countries (13 respondents) consider that the introduction and uptake of C&I have led to "great" or "moderate" improvement in forest management practices in their countries, despite the implementation challenges discussed in the Section IV.C. This is significant since together these agencies are responsible for nearly 825 million ha of forest worldwide -- 20% of all forests -- many of which are production forests.

TABLE 10
Evaluations of the impact of C&I on SFM by respondents

Contribution of C&I to SFM	Countries (# of respondents)	Total responses	Forest area owned/ managed/regulated by respondents(1000 ha)
Great	Austria, Brazil, Finland, Guyana, Malaysia (Sabah), UK	6 (13%)	309,360
Moderate	Canada (5), Colombia (2), Cote d'Ivoire, Honduras, Japan, Mexico, Norway, Peru (3), Russia, Slovenia, Togo (3), US (1)	21 (46%)	514,936
Slight	Colombia (2), Chile, China (3), Korea (1), US (3)	10 (22%)	129,221
None	Argentina, Guatemala, Korea (1), NZ (4), Sweden	8 (17%)	36,198
Did not know	Canada (1)	1 (2%)	28,235
	Total	**46 (100%)**	**1, 017,950**

4.48 Twenty-two percent of respondents, primarily in the temperate forest region, considered that C&I have had a positive impact on forest management but only to slight degree. Respondents from five countries considered that C&I have had no impact on SFM in their countries, and one respondent could not judge the impact of C&I uptake on SFM. These views are discussed in more detail below.

D.1. Great to moderate impacts on SFM

4.49 Respondents associated with the ITTO, ATO/ITTO and Tarapoto processes who rated the impact of C&I on forest management practices as great to moderate specifically noted that C&I have catalyzed and provided a basis or framework for:

- Improving forest inventory, monitoring, assessment and reporting and improving procedures for forest management planning, implementation, monitoring and auditing;
- Developing improved technical standards for forest management;
- Guiding and enhancing SFM at the field/operational level, improving forests management plans and encouraging private operators to sustainably manage forest concessions;
- Promoting private forest certification; and/or
- Implementing log tracking systems, environmental monitoring assessment, and GIS handling capabilities.

4.50 Respondents from the Pan-European and Montreal processes who rated the impact of C&I on SFM as great to moderate specifically mentioned that C&I have been instrumental in:

- Increasing awareness, appreciation and understanding of broader forest resource issues, benefits and values beyond timber/fiber production, including biodiversity protection, soil and water conservation and community perspectives;

[50] Where a country had more than one respondent, column 2 of Table 10 indicates in parentheses the number of respondents from that country who shared the rating of the impact of C&I on SFM.

- Improving forest inventory and monitoring systems and hence the data on which to base forest management policies, priorities and decisions;
- Catalyzing changes in forest management policies and regulations based on changes in forests observed over time through the application of C&I;
- Providing a framework for stakeholder consultation and dialogue and in turn improved decision-making;
- Providing a tool for reaching a variety of forest-related goals and meeting forest-related mandates; and/or
- Providing the basis of a common international understanding of SFM which has contributed to improvements in forest legislation, administration and in turn management practices within countries.

D.2. Slight impacts on SFM

4.51 Several ITTO, ATO/ITTO and Tarapoto process respondents who rated the impact of C&I on forest management as slight acknowledged that C&I have been useful tools in a number of ways at national and subnational levels but noted one or more of the following limitations:

- Existing sets of national and FMU C&I were good references and benchmarks for forest management, but each country needs to consider indicators in light of its own legal, political, socio-economic and environmental context and characteristics.
- The absence of harmonized C&I at the national level for forest plantations and natural forests has prevented some countries from making better use of existing forest assets.
- The complexity of some sets of C&I have made them difficult to apply at the local and field levels, especially for indigenous communities.
- The principles of C&I have been taken into consideration in promoting policies and practices for SFM, but countries have faced resource, capacity and other challenges which have limited C&I implementation (see Section IV.C).

4.52 Among Pan-European and Montreal process respondents who rated the impact of C&I on SFM as slight, one or more of the following reasons were given:

- Forest management certification has become more attractive than C&I for many forest companies and other owners of timber forests since certification schemes are recognized in the market place and include requirements for forest monitoring and assessment at the FMU level.
- C&I have helped organize, present and communicate existing data and ensure a rational and comprehensive compilation of existing information, but they have not become a framework for collecting and generating new data.
- Many positive forest-related policy initiatives and on-the-ground management changes in recent decades would likely have taken place in the absence of C&I.
- Policy reviews and changes are often driven by immediate issues and political priorities rather than by C&I reporting.
- C&I are successful only to the extent they are aligned with what people more generally feel is important regarding forests.
- Countries face many challenges in expanding inventory systems to collect data on non-traditional social and environmental indicators, as well as stakeholder issues and other constraints (see Section IV.C)

D.3. No impact on SFM

4.53 The few respondents from the five processes who indicated that C&I had not led to improved forest management in their countries provided one or more of the following explanations:

- The country had a long-standing tradition of SFM which pre-dated the operationalization of C&I.
- Because forest owners/managers were increasingly interested in obtaining forest certification, C&I offered little value-added to certified operators.
- Unique national circumstances limited the relevance of C&I (e.g. timber harvesting occurs only in plantations)

4.54 It is interesting to note that the views of tropical producers and temperate/boreal producers are not widely different overall. Generalisations about how effective C&I have been in moving countries toward SFM is difficult given the highly individual nature of perceptions of C&I success. However, the following factors were noteworthy in many of the responses received: (1) Relevance of process level C&I sets to national and FMU circumstances and conditions; (2) the extent of issues/constraints encountered and the capacity and political will to overcome such challenges; and (3) the extent to which forestry traditions, including laws and management requirements, already encompass SFM principles and are well-enforced.

E. Ex-post evaluations of ITTO-funded C&I projects

4.55 In 2010, ITTO commissioned ex-post evaluations of the following ITTO-funded C&I projects, which provide additional insights into country uses and applications of C&I, impacts on SFM and the value of ITTO support, particularly for tropical Asia[51]:

- PD 389/05 Rev.2(F): Application of the Internal Monitoring of SFM Performance at FMU Level (Indonesia)
- PD 225/03 Rev.1(F): Adoption and Implementation of an Appropriate System of C&I for the Philippines
- PD 195/03 Rev.2(F): To Establish a National Monitoring Information for the Effective Conservation and Sustainable Management of Thailand's Forest Resources

E.1. Indonesia

4.56 Indonesia proposed PD 389/05 Rev. 2(F) to accelerate implementation of SFM practices at the FMU level by improving the capacity of FMU managers to internally monitor forest conditions and operations using C&I and by developing government regulations to make monitoring a requirement for FMU managers. Through the project, the government of Indonesia was able to:

- Adapt the ITTO FMU C&I to the Indonesian context, which included developing specific indicators for mangrove forests, eliminating indicators considered too broad to be assessed by FMU managers (e.g. indicators related to climate), and reducing apparent redundancy among ITTO's indicators when examined across the seven ITTO criteria. The result was the identification of a core set of FMU indicators which formed the basis of "internal performance monitoring guidelines" suitable for monitoring FMU forestry practices.
- Initiate development of national and FMU level forest database system to be built based on monitoring reports submitted by FMUs.
- Design and test a training package for FMU managers and workers (over 200 trained) on how to apply the C&I-based monitoring guidelines, which included a component on verification of legality of timber sources.
- Approve an independent auditor to assess FMU performance against the C&I-based guidelines, and provide for rewarding well-performing FMU managers by granting them responsibility to self-assess the issuance of annual logging licenses.
- Convened a workshop of government officials, which made recommendations leading to the landmark Ministerial Decree 38/2009 consolidating "Standards and Guidelines on Assessment of Performance in Sustainable Production Forest Management and Timber Legality Verification" covering all types of forests.

E.2. Philippines

4.57 The Philippines prepared PD 225/03 Rev. 1(F) to help develop institutional mechanisms to assess progress toward SFM. Through the project, the government of the Philippines was able to:

- Identify, test and adopt sets of national and FMU level C&I based on the ITTO C&I but applicable to their own circumstances.
- Initiate development of GIS-compatible national and FMU forest databases using the Philippines' C&I frameworks and complete an initial baseline report from which to assess future trends in forest conditions and progress toward SFM.
- Develop a computer-based C&I audit system linked to the national and FMU C&I databases which can show yearly indicator trajectories to help independent auditors assess FMU performance.
- Make progress in mainstreaming C&I into the programmes and projects of relevant forest authorities and increase awareness among government agencies and high level officials of the importance of SFM and the role C&I can play in helping achieve it.

E.3. Thailand

4.58 Thailand prepared PD 195/03 Rev.2 (F) to help establish a national monitoring information system to provide regular data on timber and non-timber forest resources. Through the project, the government of Thailand was able to:

- Develop a template for C&I reports based on ITTO format guidelines.
- Establish a national network of forest monitoring plots covering the entire country which can be used to prepare a GIS-compatible baseline report on forest conditions and resources and monitor trends on the range of biophysical C&I.

[51] Synthesis Report on the Ex-Post Evaluation of Three ITTO Completed Projects on Criteria and Indicators for Sustainable Forest Management, prepared for ITTO by Don Wijewardana and B C Y Freezailah.

- Collect initial baseline data and produce thematic maps and overlays indicating locations of monitoring plots within the network.

4.59 While Thailand has since banned timber harvesting from natural forests, the baseline data and monitoring network established under the ITTO project continue to be useful for assessing forest conditions and trends.

E.4. Contribution to SFM

4.60 The ex-post evaluation noted that the outputs of all three projects would have been facilitated and strengthened by the greater involvement of stakeholders in project planning and implementation. Nonetheless, the evaluators generally considered that the projects had, *inter alia*, contributed significantly to the development and application of C&I within respective countries, increased capacity to monitor forest trends and progress toward SFM at national and FMU levels, enhanced policy awareness of the benefits of C&I and SFM, and created momentum for countries to build on project outcomes.

V. ANALYSIS OF PRIVATE/NON-GOVERNMENT SURVEY RESPONSES

5.1 This section considers responses to the second ITTO C&I survey directed to private/independent forest stakeholders, including industry owners/managers, small forest owners, NGOs and others subject to a country's forest-related laws, policies and programmes. Stakeholders are typically not members of C&I processes but, as noted in Section IV, their understanding of and involvement in C&I activities, and perspectives on the value of C&I, is often critical to successful uptake of C&I within countries, particularly at the field level. Section V.A provides an overview of survey respondents. Sections V.B-E examine responses by different stakeholder groups based on the nature of their forest-related operations and connections to C&I.

A. Overview

5.2 Forest stakeholders within ITTO and other producer countries represent a wide range of objectives and interests and take a variety of forms. For example, timber companies typically own or lease large forest areas for the purpose of wood production and revenue generation. Family and other small forest owners also engage in timber harvesting to generate income but do so on a non-industrial scale and often in conjunction with other forest uses, such as recreation. Forest-related associations represent the interests of their members (owners, producers, processors, exporters, etc.) and are typically non-profit organizations which do not directly own or manage forests. Certification programmes set standards for forest management which owners/managers may choose to meet but, like associations, are non-profit entities which do not directly manage forests or certify operations.

5.3 In order to avoid a proliferation of surveys targeted to different stakeholders, one survey was developed with questions tailored to key stakeholder groups (see Annex 8). Between March and December 2011, the ED circulated the survey electronically to some 250 individuals based on contact information obtained from ITTO and consultant databases and drawn from internet searches and personal contacts. (A complete list of survey recipients is contained in Annex 9.)

5.4 Twenty-four responses, fewer than hoped for, were received from the following entities:

- 8 tropical timber harvesting companies managing 2 million ha of natural or plantation forests in Bolivia, Brazil, Cameroon, Ghana and Malaysia (Sarawak);
- 4 industry associations with 760 members representing more than 10.8 million ha of natural tropical forest in Bolivia, Brazil and Malaysia (Sarawak[52]);
- 4 companies managing 222,500 ha of tropical plantations in Australia, Bolivia, Ecuador and Mexico;
- 1 national NGO working with communities in Papua New Guinea (PNG);
- 2 family forest associations, including one international association whose members represent 25 million families owning an estimated 20-25% of the world's forests, primarily in Europe and North America; and
- 5 national/regional forest certification programmes covering 94 million ha in Australia, Brazil, Cameroon, Malaysia[53] and North America

5.5 Table 11 summarizes these respondents by country and region. Despite their small number, they represent a broad cross-section of forest stakeholders, as well as significant forest area. As such, they provide a picture of C&I use by private and independent operators, particularly within the tropics, and may well reflect the experiences of industry and other stakeholders more widely across ITTO producer countries.

[52] Information on the use of C&I by the Sarawak Timber Association (STA) was provided informally by an STA senior manager and by the former chairman of ITTO's Trade Advisory Group (TAG) who was also General Manager of STA for many years.
[53] Includes the Malaysian Timber Certification Council which also responded to the government survey.

TABLE 11
Number of private/non-government respondents by country and region

Country/region	Company	Association	Certification	NGO	Total
Australia	1	-	1	-	2
Bolivia	3	1	-	-	4
Brazil	1	2	1	-	4
Cameroon	3	-	1	-	4
Denmark	-	1	-	-	1
Ghana	1	-	-	-	1
Ecuador	1	-	-	-	1
Malaysia	1	1	1	-	3
Mexico	1	-	-	-	1
PNG	-	-	-	1	1
North America	-	-	1	-	1
Temperate/boreal region	-	1	-	-	1
Total	**12**	**6**	**5**	**1**	**24**

B. Companies and industry associations with harvesting in natural tropical forests

B.1. Forest areas and requirements for SFM

5.6 Respondents included eight companies and four associations of companies with operations in natural tropical forests. Table 12 summarizes information for the responding companies which together own or manage under concessions about 1.8 million ha of forest in Bolivia, Brazil (State of Mato Grosso), Cameroon, Ghana and Sarawak, Malaysia. In Cameroon, this includes 157,000 ha which the Netherlands-based company Wijma & Zonen co-manages either with the Government of Cameroon (76,461 ha) or with CAFECO (80,800 ha), another company operating in the country, as well as 76,891 ha which TRC (Transformation Reef Cameroun) Bois manages under partnership arrangements with two other companies which have been awarded concession rights by the government.

TABLE 12
Overview of companies operating in natural tropical forests

Country/company	Forest area (1000 ha)			Certification	Laws require	
	Own	Lease	Co-manage		FMP	SFM/BMP
BOLIVIA						
• La Chonta Woods Ltda	-	100	-	FSC	Yes	Yes
• Exotic Woods	1	-	-	FSC CoC in process	Yes	Yes
BRAZIL						
• Guavirá Industrial e Agroflorestal Ltda	60	-	-	-	Yes	Yes
CAMEROON						
• PALLISCO–CIFM	-	341		FSC, OLB	Yes	Yes
• TRC Bois	-	140	77	FSC, OLB	Yes	Yes
• Wijma & Zonen BV	-	118	157	FSC, OLB	Yes	
GHANA						
• John Bitar & Co Ltd	-	54	-	FSC	Yes	Yes
MALAYSIA (SARAWAK)						
• Jaya Tiasa Holdings Bhd	-	700	-	-	Yes	Yes
Totals	**61**	**1,443**	**234**			

5.7 Table 13 summarizes information for the responding forest industry associations whose 760 member companies are engaged in timber harvesting, primary wood processing and/or secondary processing in Bolivia, Brazil and Sarawak, Malaysia. These companies own or manage more than 10.8 million ha of forests. This figure does not include AIMEX members since the association did not have data on the area of forests owned or managed by its members.

TABLE 13
Overview of industry associations with timber production/processing members

Country/association	Members		Forest area (1000 ha)	Certification) (1000 ha)	Laws require	
	Number	Type			FMP	SFM/BMP
BOLIVIA						
• Bolivian Forestry Chamber (CFB)	120	primary & secondary processing	3,200	1,200 (FSC)	-	-
BRAZIL						
• Association of Timber Industries Exporters of State of Pará (AIMEX)	32	primary & secondary processing	not known	6 members (ha not known)	Yes	Yes
• Center for Wood Producers & Exporters of Mato Grosso (CIPEM)	8	timber industry unions	2,600 (estimate)	-	Yes	Yes
MALAYSIA						
• Sarawak Timber Association (STA)	600	timber harvesting & primary/ secondary processing	5,000 (estimate)	-	Yes	Yes
Total	**760**		**10,800**			

5.8 Certification. As shown in Tables 12 and 13, some harvesting operations are certified. La Chonta Woods and several members of CFB in Bolivia, as well as the four companies operating in Cameroon and Ghana, are certified under FSC national standards for both forest management and chain-of custody (CoC). The companies operating in Cameroon are also certified under the government's system for verification of timber origin and legality (Origine et Legalite des Bois - OLB). Six members of AIMEX in Para, Brazil are certified but AIMEX did not have data on the forest area or certification programme involved. Exotic Woods in Bolivia is in the process of obtaining chain-of-custody certification under FSC. The FMU operations of two STA members were certified under the early Malaysian Timber Certification Scheme (MC&I-2001). This ended when MTCS was upgraded in 2009 to achieve PEFC endorsement. One company is pursuing certification under the current system (MC&I Natural Forest).

5.9 Government requirements. Most respondents reported that the national and/or state laws and regulations under which they operate require their harvesting operations to be planned and carried out under approved forest management plans (FMPs), typically consistent with SFM and best management practices (BMPs). Other requirements often apply as well. In addition to Cameroon's OLB system mentioned above, Pallisco-CIFM noted that Cameroon's Offices of Audit and Administration conducted external audits of its operations, and that internal audits were based on national legislation and environmental management plans, as well as FSC national standards. The results of these assessments informed the direction for actions taken in the field. John Bitar noted that under Ghanaian law, logging operations may not violate the rights of workers and forest fringe communities. AIMEX indicated government requirements related to land title, rural environmental registration and licensing, and geo-referenced maps of forest areas to be harvested, as well as specific legislation which includes C&I.

B.2. Awareness and use of C&I

5.10 Responding companies and industry associations vary in their knowledge of C&I. As shown in Table 14 many respondents are aware of the ITTO C&I and, depending on the country, the ATO/ITTO or Tarapoto processes. Among these respondents, all have been involved at some time in discussions or workshops with forest authorities on the purpose and use of C&I, and several have benefited from C&I training through ITTO and other entities. For example, Jaya Tiasa has received training on using ITTO's FMU C&I from the Sarawak Timber Association (STA). Guavirá Industrial has received C&I training through local consultants knowledgeable in the field and through the Brazilian National Service of Industrial Learning (SENAI), linked to the Federation of Industries of the State of Mato Grosso which has its own forest training area. AIMEX has received training from the Tropical Forest Foundation (TFF) on low impact logging, which included C&I. Wijma & Zonen has not received training specifically on C&I but has received training and assistance on certification and SFM from the World Wildlife Fund, ONFI (Office National des Forêts International, a private research bureau), CIFOR and FORM International (a Dutch consulting firm).

TABLE 14
Familiarity of responding timber companies/industry associations with C&I

Country & company/ Association	Familiar with C&I process	Involved by authorities in C&I	Received C&I training
BOLIVIA			
• La Chonta Woods Ltda	Tarapoto	Yes	Yes - ITTO
• Exotic Woods	No	-	-
• CFB (120 members)	ITTO	Yes	Yes - ITTO
BRAZIL			
• Guavirá Industrial e Agroflorestal Ltda	ITTO	Yes	Yes - Gov't
• AIMEX (32 members)	ITTO, Tarapoto	Yes	Yes - TFF
• CIPEM (8 members)	No	-	-
CAMEROON			
• PALLISCO–CIFM	ITTO, ATO/ITTO	Yes	Yes - ITTO
• TRC Bois	ITTO, ATO/ITTO	Yes	Yes - ITTO
• Wijma & Zonen BV	ITTO, ATO/ITTO	Yes	-
GHANA			
• John Bitar & Co Ltd	ITTO, ATO/ITTO	Yes	Yes - ITTO
MALAYSIA (SARAWAK)			
• Jaya Tiasa Holdings Bhd	ITTO	Yes	Yes - STA
• STA (600 members)	ITTO	Yes	-

5.11 Using FMU C&I for MAR. As shown in Table 15, use of C&I to evaluate FMU operations varies and often depends on whether harvesting operations are certified. Generally, certified companies are using FSC P&C for forest monitoring and assessment and updating management plans. In some cases, applications of FMU C&I have helped pave the way to certification. In Africa for example, the ATO/ITTO PC&I served as a baseline for some companies to move toward certification and are still considered a useful reference since they were developed through a multi-stakeholder process. John Bitar in particular noted that FMU level assessments using C&I contribute directly to improving forest management practices and, in turn, help clarify issues related to environment and trade in forest products, including forest product certification. The company continues to use the ATO/ITTO PC&I in preparing reports on the protective and environmental functions of forest resources and assessing high conservation value forests under all their concessions and timber utilization contracts.

5.12 In Sarawak, Malaysia, STA has used C&I as the basis for designing in-service training for forest managers of member companies, including Jaya Tiasa Holdings, on the concept and implementation of SFM. STA has also worked with Lincoln University in New Zealand to incorporate STA's C&I-based training curriculum into the university's post-graduate forestry diploma programme (first year of a two-year master's degree), and has since sent two groups of forest managers through the diploma programme.

5.13 In Brazil, AIMEX informed that they use C&I to assess and monitor forest management by quantifying verifiers classified by forest evaluation unit in order to comply with IBAMA's implementing regulations of 2006. Both Guavirá Industrial and CFB are using FMU C&I to monitor, assess and report on the state of management in their forest areas. CFB also uses C&I guidelines in preparing quarterly reports and annual reports on forest operating plans.

TABLE 15
FMU C&I use and related training needs identified by responding timber companies/industry associations

Country & company/ Association	MAR scheme employed	C&I still useful	C&I-related training needs
BOLIVIA			
• La Chonta Woods Ltda	FSC	-	None indicated
• Exotic Woods	-	-	None indicated
• CFB (120 members)	C&I	Yes	None indicated
BRAZIL			
• Guavirá Industrial e Agroflorestal Ltda	C&I	Yes	Use of C&I & RIL techniques
• AIMEX (32 members)	C&I	Yes	Use of C&I & RIL, leading to certification
• CIPEM (8 members)	-	-	Developing an evaluation system for SFM & capacity building for CoC certification
CAMEROON			
• PALLISCO–CIFM	FSC	Yes	None indicated
• TRC Bois	FSC	-	None indicated
• Wijma & Zonen BV	FSC	-	None indicated
GHANA			
• John Bitar & Co Ltd	FSC, C&I	Yes	
MALAYSIA (SARAWAK)			Further use of C&I
• Jaya Tiasa Holdings Bhd	-	-	None indicated
• STA (600 members)	C&I	Yes	None indicated

5.14 C&I related training needs. Generally, certified companies and associations with a majority of certified members did not express interest in receiving training or assistance related to C&I. One exception was John Bitar which would welcome further training in applying C&I in order to increase the knowledge base of their field workers. The respondents from Brazil are also interested in receiving C&I related training, with a view to moving toward certification. AIMEX noted that many of its non-certified members are interested in training workers on low impact logging techniques and related C&I applications which may lead to a process of certification. Guavirá Industrial is also interested in receiving training on C&I and new techniques for low impact forest management and logging, as well as information about innovations that allow greater control and knowledge on forest increment and proper cutting-cycle. CIPEM expressed the need for assistance to develop an evaluation system for SFM based, for example, on C&I and to build capacity to obtain chain-of-custody certification.

5.15 In general, the responses from forest industry tend to reinforce responses from forest officials in Section IV regarding the importance of government outreach and communication with stakeholders, as well as training, to the uptake of C&I at the field/FMU level. The responses also indicate that: (a) large-scale harvesting operations are now widely required to be carried out and reviewed under approved forest management plans consistent with SFM, (b) companies with certified operations may find less value-added in applying FMU C&I, and (c) there appears significant scope in some countries for non-certified companies to benefit from C&I-related training in order better evaluate and improve management practices and, in some cases, as an initial step toward future certification.

C. Plantation companies

5.16 Table 16 summarizes information for the four plantation companies responding to the survey, which together own or lease about 222,500 ha of tropical plantations in Australia, Bolivia, Ecuador and Mexico. The companies are certified or in the process of becoming certified and three reported that national and/or state laws and regulations require harvesting operations to be planned and carried out under approved forest management plans (FMPs). Other requirements may apply as well. For example, Proteak noted that the Mexican National Forest Commission (CONAFOR) reviews the use of funds the company receives through government subsidies.

TABLE 16
Summary of responses from plantation companies

Country/ company	Forest area (1000 ha)		Certification	Laws require		Familiar with C&I	Use C&I
	Own	Lease		FMP	SFM/BMP		
AUSTRALIA • Forestry Plantations Queensland	-	204	AFS/PEFC FSC in process	Yes	Yes	No	No
BOLIVIA • Agroindustrial El Cedro	.015	-	FSC in process	-	-	ITTO	No
ECUADOR • Aglomerados Cotopaxi	12.500	-	FSC in process	Yes	-	ITTO	No
MEXICO • Proteak Renewable Forestry	6. 00	-	FSC	Yes	Yes	No	No
Total	**18.5 0**	**204**					

5.17 Awareness and use of C&I. El Cedro in Bolivia and Cotopaxi in Ecuador are familiar with the ITTO C&I. Cotopaxi is aware of ITTO-funded training on C&I implementation carried out by the Juan Manuel Durini Forest Foundation but uses its own procedures, rather than C&I, for forest inventory, assessment and follow up. El Cedro has been involved in C&I discussions with Bolivian forest authorities with respect to developing national FSC standards. El Cedro is a member of the board of the national Council for Voluntary Certification (CVC) and is pursuing FSC certification. El Cedro considers that the use of ITTO's C&I as an alternative or in addition to forest certification can contribute significantly to SFM in both natural forests and forest plantations. However, the C&I must be easy to understand and simple to apply in order for forest operators to adopt them as a management tool.

5.18 While four is a small sample size from which to draw conclusions, these responses suggest that in many cases, tropical plantation operations: (a) are subject to government requirements for management plans comparable to those required for natural forest operations, (b) are less familiar generally with FMU C&I than companies operating in natural forests, and (c) are pursuing certification and therefore less likely to have an interest in FMU C&I applications.

D. Community and family forestry

5.19 Three survey responses were received from community and family forestry organizations. As shown in Table 18, these included the Foundation for People and Community Development (FPCD) in Papua New Guinea, the International Family Forestry Alliance (IFFA) based in Washington, DC, and the Danish Forest Association. Despite their small number, these organizations represent an interesting spectrum of small-scale forest operations, as well as significant forest area, and provide insight into the relevance of C&I to these stakeholders.

TABLE 17
Overview of responding community/family forest organizations

Organization	Members		Forest region	Forest area (1000 ha)	Certification
	number	types			
Foundation for People Community Development (PNG)	NA	local communities	tropical	7	FSC based
International Family Forestry Alliance (IFFA)	21	national forest owner organizations	temperate/ boreal	800,000 estimate	PEFC/FSC partial
Danish Forest Association (IFFA member)	500	family & small forest owners	temperate	142	PEFC/FSC partial

D.1. Community forestry in PNG

5.20 FPCD is a national NGO which co-manages nearly 7,000 ha of forests with indigenous forest land and resource owners in Papua New Guinea. The organization works directly with local communities and clan members to help them establish small-scale forestry operations based on managing their forests and timber resources sustainably.

5.21 Certification versus FMU C&I. FPCD is a long-time observer to ITTO meetings and is familiar with ITTO's extensive work on national and FMU C&I, as well as ITTO's activities more broadly. However, FPCD's forest management assessment framework follows the FSC approach, which is simple to use, market-oriented and relevant in the PNG context. Based on FSC national standards approved for PNG in 2009, FPCD has developed the Indigenous Community Forestry (ICF) Group Certification Scheme, which is designed to demonstrate and promote SFM and improved markets under the FSC label, and to bring access to FSC certification to PNG's forest resources owners. When clans agree to comply with the ICF scheme in managing their forests, they are basically complying with the 10 FSC P&C. Thus far, five clans have committed to the ICF scheme, which is in the process of being accredited under the country's national FSC system.

D.2. Family forestry in the temperate/boreal region

5.22 The IFFA is a global network of 21 national forest owner organizations (including the Danish Forest Association) which represent the interests of some 25 million families owning an estimated 20-25% of the world's forests and woodlands, primarily in Europe but also in Australia, Canada, Kenya and the US. The Confederation of European Forest Owners and PEFC are among the associate members of IFFA, and IFFA is an international stakeholder member of PEFC. Although IFFA focuses on the temperate and boreal forest region, where 40% of forests are owned by families and managed, it also cooperates with the Global Alliance of Community Forestry (GAFC)[54] and the Panama-based International Alliance of Indigenous and Tribal Peoples of the Tropical Forests (IAITPTF) through the Three Rights Holders Group (G3) which aims to promote locally controlled forestry and SFM.

5.23 In a number of IFFA countries, including Denmark, Finland, Norway, Sweden and the US, 50-80% of forest lands are owned by families, many of whom are also small farmers. Family forests and woodlands are often managed for multiple uses, including recreation and non-wood products (e.g. berry picking), as well as timber production.

5.24 Certification. The area of certified family forestry operations varies from country to country. In some IFFA countries, such as Finland, all or most family operations are certified under PEFC and/or FSC. Denmark reports that about 45% of its forests (240,000 ha) are PEFC-certified, often under group certificates, which help to reduce certification costs for families managing small areas of forest and woodlands. In other IFFA countries, the percentage of certified family forests is relatively small. A number of IFFA organizations, including the Denmark Forest Association, have been involved in the development of national certification systems endorsed by PEFC.

5.25 Government requirements. Small-scale forest and woodlot owners represented by IFFA members are typically subject to government regulations that require harvesting to be planned and carried out under approved FMPs. The specific nature of the requirements varies across countries. In many countries, especially in Europe, NFPs are an important framework for family forestry operations.

5.26 Awareness and use of C&I**.** The IFFA and many of its member organizations, including the Danish Forest Association, are familiar with C&I, in particular the Pan-European and Montreal processes, and have been involved in C&I discussions with forest authorities. As previously noted, while these two processes have not developed FMU C&I, some participating governments have integrated process-level C&I into NFPs and other forest strategies and guidelines which govern FMU management practices by family and other forest owners. Although many individual family owners may not be conversant with C&I *per se,* their management practices are consistent with C&I principles.

5.27 Some owner associations have assisted families to meet C&I related forestry requirements by providing practical information, handbooks and extension services. IFFA uses C&I, together with local and traditional knowledge, as guides in promoting SFM and locally controlled forestry. IFFA is also working on the use of C&I to monitor and assess forest management practices with a number of partner organizations and initiatives, such as the joint World Bank-FAO-IUCN-IIED initiative on Growing Forest Partnerships (GFP).[55]

[54] GAFC's 11 national and regional member organizations manage about 9 million ha of primarily tropical forests and represent 12 million people, most of whom depend directly on community forestry for subsistence and livelihood.

[55] Launched in July 2008, GFP facilitates local and international forest partnerships and investment in locally controlled forests. GFP countries include Ghana, Guatemala, Liberia, Mozambique and Nepal. An independent evaluation of the initiative through June 2012 is planned.

E. National/regional certification programmes

5.28 Survey responses were received from five certification programmes operating in Australia, Brazil, Cameroon, Malaysia and the US and Canada. As shown in Table 18, nearly 94 million ha have been certified under these programmes. The Sustainable Forestry Initiative (SFI), based in Washington, DC, is the third largest certification programme after PEFC and FSC. The area certified under the Australian Forestry Standard (AFS) represents 90% of the country's large public and private native and plantation forests.

TABLE 18
Overview of responding national/regional certification programmes

Certification program	C&I reference framework	Forest area certified (1000 ha)	Associated with
Australian Forestry Standard (AFS)	-	10,273	PEFC
Brazilian Program of Forest Certification (CERFLOR)	ITTO, Tarapoto	1,335	PEFC
Cameroon Forest Certification Initiative (CFCI)	ATO/ITTO	938	FSC
Malaysian Timber Certification Council (MTCC)	ITTO	4,649	PEFC
Sustainable Forestry Initiative Program (SFI)	Montreal Process	Canada 53,193 US 23,493	PEFC
	Total	**93,881**	

5.29 The five programmes are independent entities which set standards for forest management and chain-of-custody certifications, usually in consultation with a wide range of stakeholders. The programmes do not themselves certify forest management practices, although the programmes in Brazil, Cameroon and Malaysia are associated with an independent accreditation body. Typically, a forest owner/manager pays an accredited private certification body or company to evaluate their forest practices and determine if they meet the standards of a given certification programme.

5.30 Relationship to C&I. Respondents from the following four programmes noted that their forest management standards are or have been closely aligned with various sets of C&I as follows:

- Brazil: CERFLOR's forest management standards, which were developed by the Brazilian Association for Standardization (ABNT), a private and non-profit organization, are based on the ITTO and Tarapoto C&I, as well as on forest management criteria defined in Brazilian law.
- Cameroon: The CFCI is based primarily on FSC P&C. However, the ATO/ITTO C&I provided a basis for elaborating standards for community forestry certification and continue to be used as training tools to audit/verify forest practices in forest concessions, as well as education tools in university programmes.
- Malaysia: The initial Malaysian Timber Certification Scheme (MTCS) standard, known as the Malaysian Criteria, Indicators, Activities and Standards of Performance for Forest Management Certification (MC&I-2001), was based on a subset of the 1998 ITTO C&I which was identified through broad-based consultations among stakeholders in Sabah, Sarawak and Peninsula Malaysia. The MC&I scheme was upgraded in 2009 when it achieved PEFC endorsement and is now known as MC&I Natural Forest. The current scheme continues to be administered by the MTCC.
- US and Canada: SFI standards are based on the Montreal Process C&I. Periodic reviews of the standards take into account improvements in the Montreal Process C&I. SFI's 2010-2014 standard includes new language to address the emerging issues of climate change and bioenergy feedstock harvesting. (Section VI reviews developments and emerging issues relevant to C&I.)

5.31 These responses reinforce the close relationship between the ITTO, ATO/ITTO, Tarapoto and/or Montreal sets of C&I and national certification standards. Four of the responding national programmes (AFS, CERFLOR, MTCS and SFI) have been endorsed by PEFC, which uses benchmark standards that build on the Pan-European, ITTO and ATO/ITTO C&I frameworks.

VI. TRENDS AND EMERGING ISSUES RELATED TO C&I

6.1 Section VI considers global trends and other developments relevant to C&I applications, C&I reviews and updates, and future collaboration among C&I processes and their members. Section VI.A reviews trends related to SFM, including forest certification, legal verification, and local control of forests. Section VI.B discusses relevant developments and initiatives, as well as the contributions of C&I, in the context of REDD+, sustainable wood fuel production, assessment frameworks for other natural resources, and the Strategic Plan for Biodiversity 2011-2020.

A. Trends related to FMU management

A.1. Increased area of forest under sustainable management

6.2 According to FRA 2010, the area of forest covered by a management plan -- an important tool for achieving SFM -- has steadily increased over the last 10 years and now exceeds 1.6 billion ha globally. This suggests an overall positive trend toward SFM, recognizing that not all FMPs are effectively implemented and that a forest may be sustainably managed without a plan. Based on additional information on the "area of forest under SFM" collected from over 100 countries representing 62% of forests, FRA 2010 concludes that "significant progress has been made over the last ten years" toward SFM.[56] This is borne out by responses to the government C&I survey where 80% of respondents indicated that C&I have contributed to improvements over time in forest management in their countries (see Section IV.D).

6.3 SFM Tropics 2011 confirms these trends for the tropics. The report notes that the area under SFM in ITTO producer countries has increased 50% since 2005 and now covers 53 million ha. An estimated 131 million ha of production-focused natural tropical forests are currently under management plans, as compared to 96 million in 2005. These figures reflect improved forest management practices, including in FMUs where SFM may not yet be fully achieved but is progressing under management plans. ITTO training and project support over the last several years has contributed to these positive developments.

6.4 A major driver of improved FMU management globally has been the growing demand in significant markets for certified wood and wood products (see Section VI.A.2). Based on government survey responses discussed in Section IV, another important factor has been improved forest policies, programmes and regulations which integrate or utilize C&I, as well as better enforcement of forest-related laws. According to SFM Tropics 2011, a further driver of sustainable management of tropical forests has been emerging climate initiatives (see Section VI.B).

A.2. Trends in forest certification and legal verification

a. FMU certification

6.5 As noted above, the trend in sustainably managed forest areas has been driven in part by growing demands in key markets for assurances that wood and wood products are sourced legally and sustainably. In response, forest owners and managers, from families to large-scale operators, have increasingly sought to tap into these markets. The area of certified FMU operations worldwide has expanded 300% in the last 8 years, from about 95 million ha in 2004 to an estimated 370-400 million ha today. This represents close to10% of the world's forests and an estimated 20%[57] of timber producing forests. The great majority of these forests[58] are certified under national schemes endorsed by PEFC or under national FSC standards and, as shown in Tables 19 and 20, are located primarily in the temperate/boreal region.[59] Five countries alone -- Canada, US, Russia, Finland and Sweden -- account for about 73% of PEFC-certified forest and 70% of FSC-certified forest.

[56] For FRA 2010, countries were asked to provide information on the "area of forest under sustainable management" using national definitions, criteria and assessment methods, including expert estimates. = Due to the country-specific nature of the 100+ responses, FRA 2010 does not aggregate national SFM data to provide statistics (e.g. percentages, hectares) at the global scale.

[57] According to FRA 2010, 30% of forests are designated for production and another 24% for multiple use, often including production. Assuming roughly 50% (2 billion ha) of forests are used for production, and most certified forests are timberlands, it is estimated that about 20% of production forests are certified.

[58] Mainly natural and semi-natural forests but also some planted/plantation and mixed forests.

[59] All figures in Section VI for PEFC are from March 2012. All figures for FSC are from April-May 2012. While there may be some overlap in PEFC and FSC certificates where forest owners/managers have both certifications, this is not widely the case.

TABLE 19
Certified forest area under PEFC and FSC by region

Region	PEFC (m ha)	Countries	FSC (m ha)	Countries
Africa	---	---	7.3	12
Asia/Pacific	14.7	2	7.8	16
Europe	79.6	21	66.5	32
Latin America/Caribbean	3.2	2	11.3	17
North America	145.8	2	57.8	3
Total	**243.3**	**27**	**143.3**	**81**

TABLE 20
Countries with largest areas of FSC or PEFC certified forests

Country	PEFC (m ha)	Country	FSC (m ha)
Canada	110.1	Canada	43.4
US	35.6	Russia	29.9
Finland	21.1	US	14.1
Sweden	11.0	Sweden	11.6
Australia	10.1	Poland	7.0
Norway	9.1	Brazil	6.5
Belarus	8.5	Belarus	3.2
Germany	7.4	China	2.7
France	5.0	Congo, Rep of	2.5
Malaysia	4.6	Croatia	2.0

6.6 Certified FMU operations in ITTO producer countries are also expanding, although more modestly. This trend is indicated in a number of C&I survey responses discussed in Section V. As shown in Table 21, about 16.4 million ha of tropical FMU operations are currently certified under FSC, including 9.4 million ha in Latin America, 5.2 million ha in Africa, and 1.8 million in the Asia/Pacific region. Another 5.9 million ha are certified under PEFC-endorsed national programmes in Malaysia (4.6 million ha) and Brazil (1.3 million ha). From 2007 to 2010, PEFC also endorsed the Gabonese Forest Certification Scheme (PAFC Gabon), which is based on the ATO/ITTO PC&I. Revisions to PAFC Gabon are expected to lead to renewed PEFC endorsement.

TABLE 21
Forest area certified under FSC in ITTO producer countries

ITTO Producer	FSC certified forest (1000ha)	ITTO Producer	FSC certified forest (1000ha)
AFRICA		LATIN AMERICA	
• Congo	2,500	• Brazil	6,500
• Gabon	1,900	• Bolivia	1,100
• Cameroon	821	• Peru	746
• Ghana	2	• Guatemala	500
Total	**5,223**	• Honduras	153
ASIA/PACIFIC		• Venezuela	140
• Indonesia	985	• Colombia	106
• Malaysia	602	• Suriname	89
• Solomon Islands	64	• Ecuador	38
• Vietnam	41	• Panama	9
• PNG	33	**Total**	**9,381**
• Thailand	23		
• India	20		
Total	**1,768**		

6.7 Additional forest areas have been certified under national schemes which have become operational in the last decade. These include Mexico's national system of SFM and CoC certification and Peru's Council for Voluntary Certification, as well as Japan's Sustainable Green Ecosystem Council (SGEC) which, as of January 2012, had issued 116 certificates covering 864,351 ha of forest, including some forests owned by major companies, such as Oji Paper and Nippon Paper.

6.8 The trend toward forest certification is likely to continue as producers seek access to environmentally-sensitive domestic and foreign markets (recognizing that many markets will remain open to uncertified products). Although the growth rate is likely to be slower in the tropics due to capacity and governance issues and costs associated with certification, increases in certified forest areas and products are still expected. This may have implications for FMU C&I. Based on survey responses reviewed in Section V, the

value-added of FMU C&I is generally less for certified tropical operators given the FMU monitoring and evaluation requirements that accompany certification.

b. CoC and legal verification

6.9 In the last decade, consumer concerns about illegal logging and the trade in illegally harvested timber have stimulated various initiatives to guarantee that wood and wood-based products are sourced legally in the country of origin and can be traced back through a "chain of custody" (CoC) to sustainably managed forests.

6.10 PEFC and FSC. Between 2001 and 2005 PEFC and FSC introduced CoC certification for processed products (e.g. building products, paper, packaging) which involved certifying all entities along a supply chain before a product could be labeled as legally and sustainably sourced. CoC certification has since expanded rapidly and, as shown in Table 22, currently involves over 30,000 certificates. While most cover products from the temperate/boreal region, tropical forest products are increasingly represented, particularly products originating in Brazil (909 certificates), Malaysia (305 certificates), Vietnam (270 certificates), India (217 certificates) and Indonesia (183 certificates), as well as a smaller number of products from Mexico, Thailand, Bolivia, Colombia, Cameroon, Gabon, Ghana, Philippines, Ecuador, Congo and Cote d'Ivoire.

TABLE 22
Chain-of-custody certificates issued under PEFC and FSC by region

Region	PEFC certificates	Countries	FSC certificates	Countries
Africa	6	4	133	14
Asia/Pacific	784	17	4,957	29
Europe	7,047	21	11,631	39
Latin America/ Caribbean	86	6	945	17
North America	547	3	4,724	3
Total	**8,886**	**51**	**22,390**	**101**

6.11 Tropical Forest Foundation. In 2006, TFF introduced its Forest-Market Linking Program which provides standards for both legal verification/CoC and reduced impact logging in a two-step process. The first step is TFF's "Legal Verified with CoC" certification which is granted when a company meets widely accepted principles of marketing, documentation and administration, including third party verification, and all parties in the supply chain have systems in place which identify and document the flow of logs and derived products from the forest to the finished product. The TFF Legal Verified CoC mark asserts that the timber supplier has performed due diligence and the product is legally sourced. The timber supplier must also commit to training in reduced impact logging (RIL) within two years of receiving the certification.

6.12 The second step is the TFF "RIL Verified" programme which goes beyond legal sourcing to require that an FMU meet a set of standards associated with effective RIL and demonstrate a substantial commitment to SFM. TFF assists in linking tropical supplier companies certified under its CoC and RIL standards with buyers around the world and offers onsite training to help forest operators and manufacturers achieve its certifications. Since the TFF certifications became operational, five plywood product suppliers in Indonesia have achieved Legal Verified CoC and three suppliers have received the RIL Verified mark. Some of these operators have been successful in pursuing "higher level" certification under FSC or PEFC based on the TFF marks.

6.13 EU voluntary partnership agreements. In 2005, as a follow up to the Forest Law Enforcement and Governance (FLEG) regional processes launched in response to the 1998 G8 Action Program on Forests, the EU adopted its Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan. The plan includes a voluntary licensing scheme to verify that timber and timber products imported into the EU were legally harvested in the country of origin.[60] The scheme is being implemented through bilateral "voluntary partnership agreements" (VPAs) negotiated with timber exporting countries with input from the private sector and civil society. The VPAs set forth licensing procedures and measures for determining legality along the supply chain and include commitments for, *inter alia*, improving forest-related governance and law enforcement. Only licensed products from VPA partners are allowed access to the EU. To date, the EC has signed VPAs with Ghana (2009), Cameroon (2010) and Republic of Congo (2010) and has concluded negotiations with the Central African Republic and Indonesia. Discussions are in process with the Democratic Republic of Congo, Gabon, Malaysia and Viet Nam.

[60] Implementation of the FLEGT Action Plan is supported by a FLEGT Facility established in 2007 and hosted and managed by EFI headquartered in Joensuu, Finland.

6.14 EU timber regulation. In December 2010, the EU took the FLEGT action plan a step further by enacting the EU Timber Regulation. Under the regulation, the importation and sale of illegally harvested timber and timber products in the EU market place will be banned as of March 2013. Subsequently, evidence of legality (e.g. PEFC/FSC certificate, VPA license) will be required for all wood and wood products.

6.15 US Lacey Act. In 2008, the US significantly amended the Lacey Act of 1900, which combats trafficking in illegal wildlife, fish and plants, to encompass a broader range of plants and plant products, including timber and timber products, and address illegal logging and other illegal plant trade. The Lacey Act, *inter alia*, now prohibits the import into the US of lumber, furniture and other wood products originating from illegally harvested timber in the country of origin, requires importers to declare the country of harvest origin and the species names of plants contained in their products, and establishes penalties for violations. Implementation of the revised Lacey Act is being phased in. In June 2011 the US Department of Agriculture (USDA) solicited public comments on potential declaration requirements, including products to be covered; possible exceptions (e.g. for products with minimal plant material content); and consolidated naming of genus/species groups commonly used in commercial production (e.g. along the lines of the SPF acronym currently recognized for "spruce, pine and fir"). USDA is also working on a definition of "common cultivar".

6.16 Government and private procurement policies**.** In 2005 G8 Ministers agreed to "encourage, adopt or extend public timber procurement policies that favour legal timber" (Derby, England, March 2005). In follow up, some G8 members, including the UK and Japan, introduced policies limiting government procurement to legally harvested wood products. The UK procurement policy specifically requires all central government departments to purchase only timber and timber products shown to derive from sustainably and legally managed forests or licensed under a VPA. Similar policies are being considered for subnational and local levels of government and publicly-funded organizations. Private procurement is also on the rise. For example, SFI offers certification for responsible procurement of wood and paper products sourced in North America or sold in North America but sourced in other countries. The SFI procurement standard requires that organizations buying raw materials have an auditable procurement process designed to improve forest management on all suppliers' lands.

6.17 National tracking systems. Tropical producer countries have also taken steps to establish and implement log tracking systems. Already mentioned in Sections IV and V are Guyana's Legality Assurance System, Mexico's national system of SFM and CoC certification, and Cameroon's system for verifying timber origin and legality (OLB). ITTO has funded log tracking activities in nearly half its producer member countries, including through the recently-established Thematic Programme on tropical Forest Law Enforcement, Governance and Trade (TFLET). ITTO is also working with Germany on a DNA tracking project in Africa. In view of the expanding range of tracking options available to producers, ITTO is convening an international workshop on Tracking Technologies for Forest Governance in Malaysia in May 2012. Workshop results were not available at the time of this writing.

A.3. Increased local control of tropical forests

6.18. An estimated 1 billion ha of forests are privately owned, the majority by some 25 million families primarily in Europe and North America. As noted in SFM Tropics 2011, local control of forests in the tropics has also expanded significantly in recent years. Since 2002, an estimated 30 million ha of tropical forest have been turned over to local and indigenous communities, particularly in Latin America and to a lesser extent in Asia. Today, 25% of tropical forests are under some form of local control and this is expected to increase to 30% by 2015.

6.19 Local and indigenous communities are therefore increasingly important stakeholders and factors in achieving sustainable management of tropical forests, including production forests. This has been recognized by ITTO, most recently in its Thematic Programme on Community Forest Management and Enterprises (CFME), as well as by a number of other international and regional organizations and initiatives.

6.20 The transition from centralized to local forest control has not been without challenges. In addition to administrative issues and the limited capacity of some communities, many of the forests being transferred are degraded and warrant special management approaches. As suggested by some respondents to the government C&I survey, a simplified set of FMU C&I adapted to community circumstances could be helpful in establishing forest baseline information, management objectives and a practical forest assessment and monitoring framework. Community-oriented FMU C&I could also advance efforts by the G3 Three Rights Holders Group (IFFA, GAFC and IAIPTF) which is working with PEFC to promote group certifications as a cost-sharing tool to promote sustainable management of locally controlled forests.

B. Relevant developments and emerging issues

6.21 SFM is increasingly recognized as integral to wide array of sustainable development issues various levels. In May 2009, in its resolution on "Forests in a changing environment", UNFF 8 emphasized that "sustainable forest management... aims to maintain and enhance the economic, social and environmental benefits of all types of forests and as such can significantly contribute to addressing climate change, desertification, forest and land degradation, forest biodiversity and soil and water conservation".[61]

6.22 UNFF 8 invited the governing bodies of CPF member organizations, in particular the COPs to the UN Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD) and the UN Convention to Combat Desertification (UNCCD), to integrate SFM into their strategies by, *inter alia*, "building on existing and well-established forest-related tools, processes, programmes and activities available at the national, regional and international levels to implement SFM, for example…criteria and indicators for sustainable forest management...".

6.23 This message is underscored in the outcomes of recent C&I collaborative meetings discussed in Section III.D, including the recommendations of the International Seminar on Challenges of Sustainable Forest Management (Tokyo, March 2011) and the Joint Statement of the Montreal Process, ITTO, Forest Europe and FAO (Victoria, Vancouver, October 2011). The value and contribution of C&I for SFM in addressing global challenges and opportunities is increasingly evident as discussed below.

B.1. REDD+ and forest carbon accounting

6.24 The UNFCCC REDD[62] initiative aims to create a financial value for the carbon stored in forests and offer incentives for developing countries to reduce emissions from deforestation and forest degradation (which account for an estimated 20% of annual carbon emissions) and invest in low carbon paths to sustainable development. Concerns that REDD may view and value forests solely or primarily for their carbon storage benefits ("trees as carbon sticks") have led to REDD+, which goes beyond REDD to include the role of forest conservation, "sustainable management of forests" and enhancement of forest carbon stocks.

6.25 Most of the national and FMU sets of C&I identify a number of quantifiable indicators, under various criteria headings, which are relevant to forest carbon accounting. These include indicators on forest area and type, growing stock, age structure, annual removals, annual harvest, and amount of carbon stored in forest stands. Criterion 5 of the Montreal Process (forest contribution to global carbon cycles) also includes indicators on total forest ecosystem carbon pools and fluxes, total forest product carbon pools and fluxes and avoided fossil fuel carbon emissions by using forest biomass for energy.

6.26 Responses to the government C&I survey illustrate how a number of countries are drawing on the above C&I indicators and data sets in the forest carbon context. For example:

- Guyana is using C&I to help guide their approach to the REDD+ objective of "sustainable management of forests".
- In Sabah, Malaysia, C&I are taken into account in carbon stock baseline assessments in various types of forests.
- In Canada, C&I are closely linked with forest carbon accounting methodologies and calculations at the national level.
- Similarly in Finland, Russia and Slovenia, C&I and related national forest inventories are considered in carbon calculations. Finland noted its relevant work on forest inventories with Nepal, Vietnam and Kenya
- Since 2009, China has been developing nationwide carbon accounting models for major tree species which draw on the Montreal Process C&I and will provide basic support for macro carbon monitoring and accounting within the country.
- The US has used Montreal Process Criterion 5 in organizing and presenting existing carbon-related information and trends, which have helped shape national and some state and local carbon estimates and reporting.
- In Japan, carbon forest inventory reports and reports on Montreal Process Criterion 5 are both sourced largely from data generated through the national forest inventory, which provides detailed data on the status of and change in the volume of standing trees needed to estimate carbon stocks and fluxes.

[61] The UNFF 8 report is available at www.un.org/esa/forests.
[62] Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD).

- Colombia considers some ITTO C&I, as well as some FSC P&C, in the approval process for projects potentially eligible under the Clean Development Mechanism.

6.27 The 2009 Montreal Process report*, A vital process for addressing global forest challenges*, further notes that C&I "provide a tool for countries to integrate and understand the effects of climate change on a country's forests, as well as the role of forests in mitigating and adapting to climate change". Criterion 5 and associated indicators have helped member countries "develop approaches to carbon accounting, enhancing carbon sinks, and increasing consciousness of the importance of sustainable forest management for climate mitigation."

6.28 Challenges remain in the REDD+ context to fully apply the concept of SFM and take a holistic view of the multiple benefits of forests, of which carbon storage is only one. C&I can help meet these challenges by providing a framework for placing forest carbon values in the broader context of SFM.

B.2. Framework for assessing and monitoring forest governance

6.29 One of the most important and innovative aspects of C&I is the inclusion of criteria and/or indicators designed to assess the governance framework needed to achieve SFM. This includes forest laws and policies; broader laws and policies related to, for example, land tenure and taxation; transparent and participatory decision-making; and the capacity of forest-related institutions to carry out programmes and plans and enforce regulations.

6.30 C&I on the legal and institutional framework for SFM[63] help form the basis for a new initiative by the World Bank Programme on Forests (PROFOR) and FAO to develop a framework for assessing and monitoring forest governance in the REDD/REDD+ context. The proposed framework, which was released in March 2011,[64] identifies six principles (accountability, effectiveness, efficiency, equity, participation and transparency) and three pillars: (1) policy, legal, institutional and regulatory frameworks, (2) planning and decision-making processes and (3) implementation, enforcement and compliance. Each pillar has 3-5 sub-components with a total of 77 associated indicators which apply at national, subnational and/or FMU/field levels.

6.31 While the structure of the PROFOR-FAO framework is more elaborate and detailed than C&I indicators related to governance and institutional capacity, the nature of the indicators is similar, particularly in the case of the ITTO and Montreal Process C&I. Input from ITTO and other C&I processes in future development of the forest governance framework could be useful. The governance framework could also help inform future C&I reviews and updates.

B.3. PC&I for sustainable wood fuel production

6.32. Rising energy costs and concerns over carbon emissions from use of fossil fuels have catalyzed interest in increased and sustainable production of forest-based biofuels as an alternative energy source. In Europe, for example, ambitious targets for renewable energy have led to greater use of wood for energy, and there are clear signals that this trend will continue in the region. In 2009, a Forest Europe working group on "sustainability criteria" for forest biomass production, including bioenergy, recommended that Forest Europe tools such as the Pan-European indicators and operational guidelines be refined to further take into account these aspects of sustainability.

6.33 Since bio fuels are among the wood products flowing from the forest, they are captured in existing sets of C&I, typically under criteria on productive forest functions and socio-economic forest functions. These criteria encompass indicators on land available for production, growing stock, value/volume of wood products, wood consumption, and impact of economic use on resource availability -- all of which relate to the sustainability of woodfuel production.

6.34 Building on these C&I elements, the International Energy Agency (IEA)[65] and FAO have launched an initiative to establish standards specifically for intensive sustainable woodfuel production, which encompass all types of bio fuel derived directly or indirectly from trees and shrubs (i.e. woody biomass). In 2010, IEA and FAO released *Criteria and indicators for sustainable wood fuels* (FAO Forestry Paper 160) which

[63] The 7th thematic element of SFM is "legal, policy and institutional framework".
[64] In September 2010, the World Bank, FAO and SIDA organized an international symposium in Stockholm to consider the development of indicators for forest governance. The PROFOR-FAO framework draws on the symposium's outcomes and subsequent consultations.
[65] IEA is an autonomous agency linked to the OECD. Task 31 on Biomass Production for Energy from Sustainable Forestry is 1 of 13 task groups under the IEA Bioenergy Implementing Agreement. Task 31 has 9 members (Canada-chair, Denmark, Finland, Germany, Netherlands, Norway, Sweden, UK, US).

assesses environmental, social, economic, legal and institutional factors for sustainable production, and proposes a detailed set of PC&I performance measures for sustainable wood fuel production and harvesting.

6.35 Again, input from ITTO and other C&I processes in future development of the PC&I could be useful. The PC&I could also help inform C&I reviews/updates regarding the sustainable utilization of forest residues, by-products and fuel crops, and factors related to livelihood, food security and climate change mitigation. Based on responses to the government C&I survey, many forest officials may not be familiar with their country's activities related to forest-based biofuels. It may be helpful to forest authorities to become more informed about and, if appropriate, involved in forest biofuels discussions.

B.4. C&I for SFM as a model for other indicator initiatives related to sustainable development

6.36 As recognized in Agenda 21, a number of natural resources and ecosystems, in addition to forests, are vital to sustainable development and human well-being. The last several years have seen interest in assessing management trends for some of these resources, as well as broader environmental trends. In responding to the government C&I survey, a few countries noted using C&I for SFM as a model for other indicator initiatives. For example:

- In the US, the Montreal Process C&I have helped inform multi-stakeholder development of national C&I frameworks for rangelands, water resources and minerals. They have also been used in discussions on possible C&I for sustainable management of coral reefs.
- In Côte d'Ivoire, C&I are providing a framework for monitoring and assessing water resources.
- In Togo, C&I are contributing to integrated management of water resources and management of grazing land and forest restoration.
- In Canada, C&I have contributed to other national indicator initiatives related to sustainable development, including national environmental indicators.

6.37 Drawing on these experiences, there may be scope for other countries to utilize the forest C&I framework, and lessons learned in implementing C&I, as a reference in developing indicators for other sectors or natural resources at regional, national and/or field levels.

B.5. Indicators for CBD's strategic plan for biodiversity 2011-2020

6.38 CBD COP 10 (Nagoya, Japan, October 2010) adopted a Strategic Plan for Biodiversity 2011-2020 to promote effective implementation of the Convention and provide a "flexible framework for establishing national and regional targets". The plan includes 5 strategic goals and 20 targets, known as the Aichi Biodiversity Targets, a number of which encompass forests in some way.[66] For example:

Target 5: The rate of loss of all natural habitats is halved
Target 7: Areas under agriculture, aquaculture and forestry are managed sustainably
Target 9: Invasive alien species and pathways are identified and controlled or eradicated
Target 11: Terrestrial, inland water, coastal and marine areas are conserved through protected areas
Target 14: Ecosystems that provide essential services are restored and safeguarded
Target 15: Ecosystem resilience and carbon stocks are enhanced through conservation and restoration of degraded ecosystems

6.39 In June 2011, an ad hoc expert group developed a broad "Indicative List of Indicators" to assess trends related to the Aichi targets and progress toward achieving the Strategic Plan. For each target, the indicative list includes one or more "headline indicators" which "present policy relevant information" (e.g. Target 7 includes a headline indicator on "trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture").

6.40 Under the headlines are three categories of "operational indicators". Category A and B indicators are for use in assessing trends in targets at the global level. Information on Category A indicators already exists or can be compiled from existing databases or assessments. Category B indicators need further development. Category C indicators are for voluntary use by countries "according to national priorities and circumstances".

6.41 The strategic plan indicator framework will be kept under review to allow for additional and improved indicators. This means there is an opportunity for ITTO and FAO in particular to contribute to and enhance

[66] The full text of the Strategic Plan for Biodiversity 2011-2020 and Aichi Biodiversity Targets, the database for the Indicative List of Indicators, and related reports and documents are available at www.cbd.int.

the current indicator list based on national C&I data aggregated in SFM Tropics 2011 and FRA 2010. Such a contribution would strengthen the strategic plan's forest-related indicators, as well as linkages with C&I frameworks. It would also advance joint work under the March 2010 ITTO-CBD MOU which includes a focal area on "examining opportunities for harmonized reporting on sustainable use and conservation of tropical forests".

VII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

7.1 The following conclusions are drawn from responses to the government and private/non-government surveys which together represent a broad cross-section of countries and stakeholders. They also draw on ITTO ex-post evaluations of C&I projects in Asia and recent international forest assessment reports (e.g. SFM Tropics 2011 and FRA 2010) and C&I collaborative meetings, as well as other information contained in this report.

A.1. Overall

- The forest sector has been a leader and in many ways a laboratory for understanding and addressing the complex issues associated with sustainable management of renewable natural resources and their contribution to sustainable development.
- C&I for SFM have been an important innovation in this regard, enabling countries and the international community to understand and operationalize the evolving concept of SFM. Significant progress has been made in developing C&I as a policy instrument since the concept was pioneered by ITTO in the early 1990's. C&I are not an end in themselves but a tool for adapting management so that forests deliver the range of needed goods and services.
- The sets of C&I currently in active use under five C&I processes are conceptually similar, reflecting a holistic approach to forests as ecosystems which provide multiple benefits. Criteria are the essential components of SFM, and indicators are ways to measure them. The criteria common to C&I processes have led to identification of the "seven thematic elements of SFM".
- At the same time, C&I sets differ in structure, level of detail, types of forest addressed and, most significantly, FMU level C&I which have only been elaborated by tropical C&I processes. These variations affect how C&I are used and applied.
- Differences among countries in terms of forest governance structures, ownership patterns, existing policy frameworks and forestry traditions, as well as capacity issues, also affect how countries use and apply C&I.
- While process-level C&I provide a common reference framework for participating countries, it is often useful for countries step down or otherwise adapt process C&I to reflect national and/or FMU conditions and circumstances, for example by developing country/FMU-specific C&I.

A.2. Monitoring, assessment and reporting (MAR)

- C&I provide a common policy tool for countries to monitor, assess and report on trends in forest conditions and progress toward SFM at various levels, while allowing for differences within and across countries.
- ITTO producers, often with ITTO support, and other countries have made progress in using C&I for MAR, which is reflected in improved forest inventories and databases, systems of data collection and analysis, and information available at national, subnational and FMU levels.
- National and FMU trends observed from monitoring indicator data have helped officials and FMU managers identify weaknesses in forest management and make adjustments needed, for example in harvesting quotas and practices. FMU C&I have also been used by some concessionaires to assess and monitor high value conservation forests and the protective functions of forest resources.
- Improvements in the quality, coverage and consistency in C&I data from an increasing number of countries has led to more comprehensive regional and international forest assessments as reflected in SFM Tropics 2011, FRA 2010 and the State of Europe's Forests 2011. Countries using C&I for MAR tend to be well-positioned to respond to external forest-related reporting requests.

A.3. Contribution to SFM

- While the contribution of C&I to SFM is highly individual by country, C&I have had an overall positive impact and have contributed in a variety of ways, sometimes significantly, to improved forest management and the expansion in forest areas under sustainable management.
- C&I have increased awareness of forest benefits beyond timber/fiber production and highlighted the importance of governance systems which integrate the economic, social and environmental values of forests, including through cross-sectoral coordination and the meaningful involvement of stakeholders at all levels.

- The impact of C&I on SFM has generally been greater in countries which have incorporated C&I approaches, with stakeholder involvement, into legislation, policies, programmes, strategies, guidelines and/or standards which govern forest practices.
- FMU level C&I in particular have provided a basis for a number of ITTO producers, often with ITTO support, to formulate, approve and monitor compliance with forest management plans, best management practices, and concession contracts, agreements and permits.
- Innovative applications of C&I in the areas of research, education, conservation financing and environmental assessments have also had a positive impact on SFM in some countries, as has the use of FMU C&I by public and private operators as a tool to train forest managers and workers on the concept and implementation of SFM.
- C&I have contributed to (and in many cases provided a basis for) forest certification which has expanded significantly in recent years in response to demands in key markets for sustainably and legally harvested products. FMU C&I applications have helped private operators move toward certification, reflecting the linkages between C&I and certification standards.
- While certified FMU operators are obliged to meet requirements consistent with SFM as a condition of certification, they may continue to find aspects of FMU C&I applications useful as well.

A.4. Challenges encountered

- Despite progress in operationalizing C&I, all countries, particularly tropical producers and other developing countries, face challenges in applying C&I due to insufficient capacity, commitment, policy frameworks and/or stakeholder engagement. For example, while all countries are able to collect data on some indicators, very few countries can report on all indicators.
- The specific nature and extent of the challenges vary widely by country. Some challenges can only be addressed internally by raising the priority of forests on national agendas. Others can be facilitated through enhanced international cooperation, public-private partnerships, and collaborative initiatives among C&I processes and associated countries.
- Strengthening the ability of countries to collect data and report on indicators, and integrate C&I into policies and programmes at operational levels, will continue to be important for SFM decision-making in many regions.
- Existing sets of C&I may present challenges for some users. FMU indicators in particular may benefit from review regarding their suitability and feasibility for use by local communities and small forest enterprises.

A.5. Global developments and emerging issues

- C&I are playing a role in wider forest-related developments and issues, including as a foundation for international initiatives to assess forest governance in the REDD context and establish PC&I for sustainable intensive woodfuel production. C&I are also relevant to assessing forest-related trends under the Aichi Biodiversity Targets.
- At the national level, C&I are considered in the national forest carbon calculations of a number of countries and related efforts to place carbon values in the broader context of SFM. C&I frameworks have served as models for developing national environmental indicators and C&I for other natural resources, such as rangelands/grasslands, water resources and minerals.
- The value and contribution of C&I in addressing forest-related global challenges is increasingly evident and warrants further attention. Enhanced input from ITTO and other C&I processes and experts on recent initiatives could be useful.

A.6. ITTO leadership

- ITTO has been the single major supporter of C&I training, testing and implementation in the tropics. A number of producer countries could benefit from continued ITTO assistance, for example, to adapt ITTO C&I to national/FMU circumstances, engage stakeholders and strengthen databases and monitoring systems, particularly for social and environmental indicators.
- Other potential sources of C&I financing, including FAO, GEF and World Bank, could contribute significantly to national efforts and complement ITTO project support.
- ITTO's 2005 C&I would benefit from review and update to take into account the experiences of member countries, progress under other C&I processes and relevant trends and developments.
- Given ITTO's long experience with C&I, enhanced collaboration with FAO, other CPF members and C&I processes can further promote learning, innovation and cooperative activities (e.g. joint reporting) and enhance the contribution of C&I to global developments and emerging issues.

B. Recommendations

7.2 In order to continue and strengthen its work and leadership on C&I and the contribution of C&I to SFM, ITTO may wish to consider the following activities:

B.1. Strengthen the impact of ITTO's C&I in the field

- Organize additional national and/or sub-regional consultations/workshops involving private stakeholders to focus strategically on C&I uptake at the FMU level, including identifying specific challenges and ways to meet them, for example, by:
    - Adapting ITTO C&I to FMU circumstances in individual countries
    - Establishing mechanisms for effective stakeholder communication and outreach
    - Identifying capacity building priorities for data collection and analysis
    - Establishing demonstration forests for FMU C&I applications
    - Exploring linkages between FMU C&I and applicable certification standards, including TFF's RIL standard, and the potential for harmonization in individual countries
- Incorporate C&I uptake into components of ITTO's thematic programmes which address forest monitoring, assessment and reporting and progress toward SFM.

B.2. Review ITTO's 2005 national and FMU C&I

- Initiate a process to comprehensively review and as needed improve ITTO's 2005 C&I based on lessons learned and recent developments, taking into account: (1) ITTO's revised guidelines for sustainable management of natural tropical forests and other relevant guidelines, (2) recent indicator updates by other C&I processes, in particular the Montreal Process, (3) the seven thematic elements of SFM, (4) trends in certification and local control of forests, and (5) relevant global developments and emerging issues related to, *inter alia*, climate, bioenergy and biodiversity. Consideration might be given to:
    - Streamlining aspects of the national and FMU C&I
    - Identifying a core set of indicators for use by local/indigenous community forest managers
    - Further elaborating indicators related to sustainable wood fuel production, forest contribution to carbon cycles, and forest governance
    - Exploring linkages between FMU C&I and certification standards
    - Exploring connections among the ITTO, ATO/ITTO and Tarapoto C&I and the feasibility/merits of enhanced convergence

B.3. Strengthen partnerships and collaboration with CPF members and C&I processes

- Engage with IEA, FAO and PROFOR staff on their respective initiatives to (1) establish a framework for assessing and monitoring for forest governance in the context of REDD+ (FAO-PROFOR) and (2) develop PC&I for sustainable woodfuel production (IEA-FAO). Invite representatives to make presentations on the status of these initiatives during the next ITTC.
- Work with the CBD secretariat in the context of the ITTO-CBD MOU and the FAO Forestry Department to identify indicators for the forest-related components of Aichi Biodiversity Targets, for which C&I baseline information is available through SFM Tropics 2011 and FRA 2010.
- Organize an expert meeting with FAO, other CPF members, Montreal Process, Forest Europe and representative countries to:
    - Finalize a joint forest questionnaire for national reporting for FRAs and SFM Tropics and develop joint data collection schedules and methodologies
    - Explore using the joint questionnaire as a framework for forest-related reporting to other CPF members.
    - Exchange experiences and lessons learned on applying C&I at various levels and for various purposes
    - Examine how C&I can help countries address developments and emerging issues related to climate, bioenergy, biodiversity, etc.
    - Establish a regular framework of communication on C&I and related SFM issues
- Organize in collaboration with FAO, World Bank, GEF and other relevant CPF members, a joint expert consultation to identify ways to improve and expand international financial, technical and scientific cooperation on C&I, including by tapping into climate-related sources of funding.
- Urge ITTO focal points to facilitate enhanced coordination between national forest authorities and focal points for REDD+, GEF, CBD and UNCCD in order to highlight the contribution of C&I to forest-related work under the Rio conventions, avoid duplication of effort in the development of forest-related indicators and measures, and generate funding for C&I implementation to complement ITTO support.

- Encourage ITTO members to consider giving greater priority to FMU C&I implementation in ITTO Thematic Programmes and in project proposals financed through the Special Account, as well as in projects financed through bilateral cooperation, FAO and the GEF.

ANNEX 1

CURRENT MEMBERS/PARTICIPANTS IN FIVE C&I PROCESSES: ITTO, ATO/ITTO, TARAPOTO PROCESS, FOREST EUROPE AND MONTREAL PROCESS

ITTO (PRODUCER MEMBERS)

Africa
Cameroon, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Ghana, Liberia, Nigeria, Togo

Asia/Pacific
Cambodia, Fiji, India, Indonesia, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vanuatu

Latin America/Caribbean
Bolivia, Brazil, Colombia, Ecuador, Guatemala, Guyana, Honduras, Mexico, Panama, Peru, Suriname, Trinidad and Tobago, Venezuela

ATO/ITTO

Angola, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Ghana, Honduras, Liberia, Nigeria, Sao Tome et Principe, Tanzania

TARAPOTO PROCESS (ACTO MEMBERS)

Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela

FOREST EUROPE

Albania, Andorra, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, European Union, Finland, France, Georgia, Germany, Greece, Holy See, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, The Former Yugoslav Republic of Macedonia, Turkey, Ukraine, United Kingdom

MONTREAL PROCESS

Argentina, Australia, Canada, Chile, China, Japan, Mexico, New Zealand, Republic of Korea, Russian Federation, United States of America, Uruguay

ANNEX 2

CROSSWALK OF NATIONAL LEVEL CRITERIA FROM FIVE C&I PROCESSES AND THE SEVEN THEMATIC ELEMENTS OF SFM

7 Thematic Elements of SFM (2004)	ITTO National Criteria (2005)	Tarapoto Process "Very Applicable" National Criteria (2005)	ATO/ITTO National Level Principle 1 & related Criteria (2001/2003)	Pan-European Criteria (1994)	Montreal Process Criteria (1995)
1 .Extent of forest resources *In FRA 2010 this includes the contribution of forests to global carbon cycles*	2. Extent & condition of forests	Conservation of forest cover & biodiversity *Also international criterion on economic, social & environ-mental services of the Amazon forest*	*Not addressed directly*	1. Maintenance & appropriate enhancement of forest resources & their contribution to global carbon cycles	5. Maintenance of forest contribution to global carbon cycles
2. Forest biological diversity	5. Biological diversity	Conservation of forest cover & biodiversity	*FMU Principle 3 and relevant FMU level criteria (normative)*	4. Maintenance, conservation & appropriate enhancement of biological diversity in forest ecosystems	1. Conservation of biological diversity
3. Forest ecosystem health & vitality	3. Forest ecosystem health	*FMU criterion – Conservation of forest ecosystems*	*FMU Principle 3 and relevant FMU level criteria*	2. Maintenance of forest ecosystem health & vitality	3. Maintenance of forest health & vitality
4. Productive functions of forests	4. Forest production	*FMU criterion – Sustainable forest production*	*FMU Principle 2 and relevant FMU level criteria*	3. Maintenance & encouragement of productive functions of forests (wood & non-wood)	2. Maintenance of production capacity of forest ecosystems
5. Protective functions of forests	6. Soil & water protection	*FMU criterion – Conservation of forest ecosystems*	*FMU Principle 3 and relevant FMU criteria*	5. Maintenance & appropriate enhancement of protective functions in forest management (notably soil & water)	4. Conservation & maintenance of soil & water resources
6. Socio-economic functions of forests	7. Economic, social & cultural aspects	*International criterion on economic, social & environmental services of the Amazon forest*	*FMU Principle 4, and relevant FMU level criteria*	6. Maintenance of other socio-economic functions and conditions	6. Maintenance & enhancement of long-term multiple socio-economic benefits to meet needs of societies
7. Legal, policy & institutional framework	1. Enabling conditions for SFM	Policies & juridical & institutional framework for sustainable forest development Science & technology for sustainable forest development	Principle 1: Sustainable forest utilization & maintenance of multiple functions of forests are high political priority (*includes 5 criteria on State policies & capacity for SFM)*	*Qualitative indicators for (a) overall policies, institutions, instruments for SFM & (b) specific policy areas under Criteria 1-6 (agreed 2002)*	7. Legal, institutional & economic framework for forest conservation and SFM

ANNEX 3

CROSSWALK OF FMU LEVEL CRITERIA FROM THREE C&I PROCESSES

ATO/ITTO FMU Principles 2003	**ATO/ITTO FMU Criteria** 2003	**ITTO FMU Criteria** 2005	**Tarapoto FMU Criteria** 2004
Principle 2: The FMU, designated for whatever form of land use, is sustainably managed with a view to supplying required goods & services	2.1 Forest management complies with national policies and legislation in force in the country where it is implemented and with all treaties the country has ratified	1. Enabling conditions for SFM 4. Forest production	
	2.2 FMU is managed with well-defined & clearly established objectives compatible with SFM	1. Enabling conditions for SFM 4. Forest production	Juridical & institutional framework
	2.3 Sustainable production of timber is ensured both in quantity & quality	4. Forest production	
	2.4 Silvicultural techniques implemented in FMU are compatible with objectives for SFM & well adapted to needs of management in FMU & expected production	4. Forest production 7. Enabling conditions for SFM	Sustainable forest production
	2.5 Within the FMU, NTFPs are harvested on a sustainable basis, in consultation with stakeholders	1. Enabling conditions for SFM 4. Forest production	
	2.6 Forest management is revised periodically or when necessary due to unforeseen circumstances	1. Enabling conditions for SFM	Juridical & institutional framework
Principle 3: The main ecological functions of the forest are maintained	3.1 Sustainable management of forest resources is based on a dynamic acquisition of knowledge on ecology	1. Enabling conditions for SFM 7. Economic, social & cultural aspects	*National criterion*
	3.2 The impact of harvesting activities on the structure of the forest is minimized	3. Forest ecosystem health 4. Forest production	
	3.3 The impact of harvesting on biodiversity is minimized	5. Biological diversity	Conservation of forest ecosystems
	3.4 The natural regeneration capacity of the forest is ensured	3. Forest ecosystem health 4. Forest production	
	3.5 The impact of harvesting of water, soils & slopes is minimized	6. Soil & water protection	Conservation of forest ecosystems
Principle 4: According to the importance & intensity of forest operations, FMU manager contributes to improving economic & social well-being of workers in the FMU & local populations	4.1 Rights & responsibilities of workers in the FMU & local populations are clearly defined, acknowledged & respected	7. Economic, social & cultural aspects	
	4.2 Concessionaire encourages participation of local populations present in the FMU in the management of forest resources	1. Enabling conditions for SFM 7. Economic, social & cultural aspects	
	4.3 All stakeholders consider the share of benefits derived from forests to be satisfactory	7. Economic, social & cultural aspects	
	4.4 According to importance & impact of forest operations, the concessionaire contributes to improving health & education of local populations	7. Economic, social & cultural aspects	

ANNEX 4

ITTO GOVERNMENT C&I SURVEY

ITTO SURVEY ON THE USE/APPLICATION OF
CRITERIA AND INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT
AT FIELD AND OTHER OPERATIONAL LEVELS

SURVEY FOR NATIONAL AND SUBNATIONAL GOVERNMENT AGENCIES

1. YOUR COUNTRY & AGENCY_____ _____

1(a) YOUR NAME, TITLE & EMAIL _____ _____ _____

2. YOUR AGENCY'S LEVEL OF GOVERNMENT (check one):

National☐ State☐ Province☐ Prefecture ☐ Local☐ Other (describe)_____

3. HECTARES OF FOREST DIRECTLY OWNED OR MANAGED BY YOUR AGENCY_____

3(a) Are these forests certified? Yes ☐ No☐. If Yes, under what scheme(s):
FSC ☐ SFI☐ PEFC☐ Other (list) _____

4. HECTARES OF FOREST REGULATED OR CONTROLLED BY YOUR AGENCY NOT INCLUDED IN ITEM 3 _____

5. WHICH C&I PROCESS(ES) ARE YOU FAMILIAR WITH? (check all that apply)

ITTO☐ ATO☐ Tarapoto Process☐ Forest Europe☐ Montreal Process☐

6. WHICH C&I PROCESS(ES) IS YOUR COUNTRY CLOSELY ASSOCIATED WITH?

ITTO☐ ATO☐ Tarapoto Process☐ Forest Europe☐ Montreal Process☐

7. DOES YOUR AGENCY USE/APPLY C&I DRAWN FROM THE C&I PROCESS(ES) CHECKED IN ITEM 6 AS A BASIS OR FRAMEWORK FOR THE FOLLOWING ACTIVITIES:

7(a) Do you use/apply C&I as a basis/framework for forest monitoring and assessment? Yes☐ No☐. If Yes, at what level(s):

National☐ Subnational☐ Local☐ FMU☐. Please describe:_____
_____
_____
_____

7(b) Do you use/apply C&I as basis/framework for reporting on forests? Yes☐ No☐. If Yes, at what level(s):

Global☐ Regional☐ National☐ Subnational☐ Local☐ FMU☐. Please describe:
_____
_____
_____
_____

7(c) Do you use/apply C&I as basis/framework for strategic forest planning? Yes☐ No☐.
If Yes, at what level(s)?
National☐ Subnational☐ Local☐ FMU☐. Please describe_____

_____

_____

_____

7(d) Do you use/apply C&I as basis/framework for regulating forest management? Yes☐ No☐. If Yes, at what level(s)?

National☐ Subnational☐ Local☐ FMU☐. Please describe:

_____

_____

_____

Do these regulations cover (check all that apply): All forests☐ Government forests☐ Private forests☐ Protected forests ☐ Planted/plantation forests☐ Concession forests☐ Timber producing forests☐

7(e) Do you use/apply C&I as basis/framework for developing/establishing best management practices? Yes☐ No☐. If Yes, at what level(s)?

National☐ Subnational☐ Local☐ FMU☐. Please describe: _____

_____

_____

_____

Do these best practices cover (check all that apply): All forests☐ Government forests☐ Private forests☐ Protected forests ☐ Planted/plantation forests☐ Concession forests☐ Timber producing forests☐

7(f) Do you use/apply C&I as basis/framework for developing forest management certification schemes or other performance standards? Yes☐ No☐. If Yes, at what level(s):

Global☐ National☐ Subnational☐ Local☐ FMU☐. Please describe

_____

_____

_____

_____

Do these schemes/standards cover (check all that apply): All forests☐ Government forests☐ Private forests☐ Protected forests☐ Planted/plantation forests☐ Concession forests☐ Timber producing forests☐

7(g) Please describe any other ways your agency is using C&I: _____

_____

_____

_____

_____

8. DO/DID ANY ACTIVITIES CHECKED IN ITEM 7 INVOLVE STAKEHOLDER CONSULTATION?
Yes ☐ No ☐. If yes, please describe_____

9. PLEASE INDICATE SIGNIFICANT CONSTRAINTS OR ISSUES ENCOUNTERED IN UNDERTAKING THE ACTIVITIES IN ITEM 7:

☐ lack of financial resources ☐ lack of technical resources ☐ lack of political will ☐ legal limitations ☐ problems with forest land tenure ☐ multiple forest ownerships (public and/or private) ☐ multiple layers or levels of government (national, subnational, local, etc) ☐ conflict among stakeholders ☐ lack of understanding of concept and purpose of C&I ☐ Other (specify)_____

What were the 2 biggest constraints/issues and why?

10. IS YOUR COUNTRY TAKING INTO ACCOUNT THE C&I RELATED TO THE PROCESS(ES) CHECKED IN ITEM 6 IN ANY OF THE FOLLOWING ACTIVITIES?

10(a) Carbon accounting methodologies: Yes ☐ No ☐ Don't know ☐.
If yes, please describe:_____

10(b) Sustainability criteria for biofuels production: Yes ☐ No ☐ Don't know ☐
If yes, please describe: _____

10(c) Criteria and indicators for sustainable management of other natural resources (e.g. water, rangelands, coral reefs): Yes ☐ No ☐ Don't know ☐. If yes, please describe:_____

11. HAS THE USE OF C&I IMPROVED FOREST MANAGEMENT PRACTICES IN YOUR COUNTRY?
Yes ☐ No ☐. If Yes, to what extent: Greatly ☐ Moderately ☐ Slightly ☐.
Comment:_____

12. IF THERE ARE FURTHER COMMENTS OR INFORMATION YOU WOULD LIKE TO PROVIDE RELATED TO C&I, PLEASE DO SO HERE: _____

ANNEX 5

LETTER FROM ITTO EXECUTIVE DIRECTOR TO ITTO FOCAL POINTS REQUESTING CONTACT INFORMATION FOR GOVERNMENT OFFICIALS TO RECEIVE THE ITTO C&I SURVEY

Note to Readers: Annexes 1 and 2 referred to in this cover letter are not included here as part of Annex 5. The final government C&I survey is contained in Annex 5 of this draft report. The complete list of government survey recipients and respondents is contained in Annex 7.

2 February 2011
Ref. No. L.11-XXX

Dear ITTO focal points,

I am writing to seek your assistance with an important new ITTO global study on the ***Use and Effectiveness of Criteria and Indicators for Sustainable Forest Management in Improving Forest Management at the Forest Management Unit (FMU) and Other Operational Levels***. You will recall that at the Forty-sixth Session of the International Tropical Timber Council (ITTC) held in December 2010, you received a preliminary report on this important study from Ms. Stephanie Caswell who is assisting us with this study.

It is widely agreed that C&I are effective tools for monitoring, assessment and reporting on forest trends and progress toward SFM at the national level, including for national reporting to international organisations. However, less is commonly understood about the extent to which C&I have had and are having a positive impact on forest management practices and SFM on the ground.

Assessing these impacts is particularly timely considering the current international context. This includes, *inter alia,* ongoing climate talks on REDD+ and related carbon accounting; the Convention on Biological Diversity's new Strategic Plan (and related targets & indicators) to halt loss of biodiversity by 2020, including forest biodiversity; discussions in various fora on the development of C&I for biofuels; the new World Bank-FAO initiative to develop indicators for forest governance; recent developments in various C&I processes; and the International Year of Forests 2011 which will shine a spotlight on forests worldwide.

As your know, ITTO has been a pioneer and leader on C&I since the early 1990's, investing over US$ 30 million to help train and assist member countries in implementing C&I at both the national and FMU levels. With this study, the Organisation continues its leadership role by examining the relevance and contribution of C&I as tools for promoting SFM in the field.

As noted at Forty-sixth Session of the ITTC, the study will focus on the following five processes which have taken significant steps to operationalise C&I and which involve producer and consumer members of ITTO:

- ITTO
- African Timber Organisation (ATO)/ITTO Principles, criteria and indicators
- Tarapoto Process (Amazon)
- Forest Europe (formerly MCPFE)
- Montreal Process (countries outside Europe with temperate & boreal forests)

REQUEST TO ITTO MEMBERS

In order to gather the necessary information, we will be widely circulating two questionnaires to, respectively: (1) government agencies at national and subnational levels with forest management responsibilities, and (2) private companies and operators and other significant non-government forest managers, such as local communities.

The government agency questionnaire has been finalized and is attached for your information in Annex 1. Annex 2 contains a partial list of agency contact information for individuals within your country who may be appropriate recipients for the government survey.

You are kindly requested to confirm, update or expand as needed the list of contacts for your country in Annex 2, including email addresses, and provide your corrections and additions to Dr. Steve Johnson (johnson@itto.int) of the ITTO Secretariat by **15 February 2011**.

We rely on your timely response to this request so that we may circulate the survey to appropriate agencies in ITTO member countries as soon as possible.

I thank you in advance for your input and assistance with this important and ambitious project and look forward to reporting results to you at the Forty-seventh Session of the ITTC in Guatemala in November 2011.

Sincerely yours,

Emmanuel Ze Meka
Executive Director

ANNEX 6

LIST OF GOVERNMENT SURVEY RECIPIENTS AND RESPONDENTS

COUNTRY	NAME & AGENCY	REPLY
Argentina	Mirta Larrieu, Ministry of Agriculture	
	Tomas Schlichter, Instituto Nacional de Tecnologia Agropecuariari (INTA)	O
Australia	Andrew Wilson, Department of Agriculture, Fisheries and Forestry	
	Queensland Department of Primary Industries	
	Kris Gounder, Forests New South Wales	
	Stuart West, Forestry South Australia	
	Nathan Trushell, VicForests	
	Forest Products Commission of Western Australia	
Austria	Peter Mayer, Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW), Federal Office for Forests	O
	Ingwald Gschwandtl, Federal Ministry of Agriculture, Forestry, Environment and Water Management	
Belgium	No contact provided by ITTO focal point	
Bolivia	No contact provided by ITTO focal point	
Brazil	Joberto Freitas, Brazilian Forest Service	O
Cambodia	No contact provided by ITTO focal point	
Cameroon	No contact provided by ITTO focal point	
Canada	Jennifer Hollington, Natural Resources Canada, Canadian Forest Service	O
	Daryl Price, Forestry Division, Sustainable Resource Development, Alberta	O
	Patrick Martin, Forest Analysis and Inventory Branch, Ministry of Forests, Mines and Lands, British Colombia	O
	Julie Ringash, Manitoba	
	Tom Ng, New Brunswick	
	Wayne Kelly, Newfoundland	
	Bill Mawdsley, Northwest Territory	
	Jorg Beyeler, Nova Scotia	
	Bill Dalton, Ministry of Natural Resources, Ontario	O
	Brian Brown, Prince Edward Island	
	Luc Laberge for Anne Stein, Ministère des Ressources Naturelles et de la Faune du Québec	O
	Dwayne Dye, Saskatchewan	
	Robin Sharples, Forest Management Branch, Yukon	O
Central African Republic	No contact provided by ITTO focal point	
Chile	Angelo Sartori, Corporacion Nacional Forestal (CONAF), Ministerio del Agricultura	O
China	Huang Qinglin, Institute of Forest Resource Information Techniques, Chinese Academy of Forestry	O
	Zhang Min, Department of Forest Resources, State Forestry Administration	O
Colombia	Xiomara Sanclemente Manrique, Luz Stella Pulido Pérez and Rubén Darío Guerrero Useda, Ministerio de Ambiente, Vivienda y Desarrollo Territorial	O
	Luis Alfonso Escobar Trujillo and Germán León Ríos Arias, Corporación Autónoma Regional del Centro de Antioquia (CORANTIOQUIA)	O
	Jeimy Cecilia Rodríguez Martínez and Luis Alfonso Guzmán Lopez,Corporación Autónoma Regional del Valle del Cauca (CVC)	O
Côte d'Ivoire	Ben Salah Boubacar, SPIB	
	Yao Benoît Brou, Ministère de l'Environnement, des Eaux et Forêts	
	Martial Me Kouamé, Societé de Developpement des Forêts (SODEFOR)	O
Croatia	Ivica Grbac, Ministarstvo Regionalnog Razvoja, Šumarstva i Vodnoga Gospodarstva	
	Srećko Juričić, Ministarstvo Regionalnog Razvoja, Šumarstva i Vodnoga Gospodarstva	
	Goran Gregurovic, Ministarstvo Regionalnog Razvoja, Šumarstva i Vodnoga Gospodarstva	
Democratic Republic of the Congo	No contact provided by ITTO focal point	
Denmark	Christian Jensen, Danish Forest and Nature Agency	
Ecuador	No contact provided by ITTO focal point	
Egypt	No contact provided by ITTO focal point	
European Union	No contact provided by ITTO focal point	
Fiji	No contact provided by ITTO focal point	
Finland	Jari Parviainen, Finnish Forest Research Institute (METLA)	O

France	Jacques Andrieu, Direction Générale des Politiques Agricole, Agroalimentaire et des Territoires, Ministère de l'Agriculture, de l'Alimentation, de la Pêche, de la Ruralité et de l'Aménagement du Territoire	
Gabon	No contact provided by ITTO focal point	
Germany	Matthias Schwoerer, International Forest Policy Division, Federal Ministry of Food, Agriculture and Consumer Protection	
Ghana	No contact provided by ITTO focal point	
Greece	General Director for Development and Protection of Forests and Natural Environment	
	Director for Development of Forest Resources	
	Head of Section for Planning of Forest Resources	
Guatemala	Adelso Revolorio Quevedo, Coordinador Unidad de Planificación, Instituto Nacional de Bosques (INAB)	
	Luis Pereira Rodas, Gerente, Consejo Nacional de Estándares de Manejo Forestal Sostenible para Guatemala (CONESFORGUA)	
	Mario Rivas, Asociación de Comunidades Forestales de Petén (ACOFOP)	
	William Melgar, Direccion de Operaciones, INAB	O
	Juventino Gálvez, Universidad Rafael Landívar, Instituto de Agricultura, Recursos Naturales y Ambiente (IARNA)	
Guyana	Edward Goberdhan, Finance Division, Guyana Forestry Commission	O
Honduras	José Trinidad Suazo, Instituto Nacional de Conservación y Desarrollo Forestal (ICF)	
	José Antonio Galdames, Instituto Nacional de Conservación y Desarrollo Forestal (ICF)	
	Miguel Conrado Valdez, ESNACIFOR	
	Leila Orellana, Consultor Ambiental	
	Jose Muñoz, Industrias Sansone	
	Fausto Lazo, Cooperación Alemana GIZ	
	Carlos Amaya, Colegio de Ingenieros Forestales de Honduras	
	Manuel Vlichez, Colegio de Profesionales Forestales de Honduras	
	Miguel Mendieta, Instituto Nacional de Conservación y Desarrollo Forestal (ICF)	O
Hungary	Andras Szepesi, Forest Policy Advisor, Ministry of Rural Development, Department of Forestry, Fishing and Hunting	
Iceland	Jón Geir Pétursson, Ministry for the Environment	
	Jon Loftsson, Iceland Forest Service	
India	No contact provided by ITTO focal point	
Indonesia	No contact provided by ITTO focal point	
Ireland	Peter Cafferkey, Department of Agriculture, Fisheries and Food	
Italy	Giorgio Corrado, Ministry of Agriculture, Food and Forestry Policies	
Japan	Takeshi Goto, Forestry Agency, Ministry of Agriculture, Forestry and Fisheries	O
Liberia	No contact provided by ITTO focal point	
Malaysia	Chew Lye Teng, Malaysian Timber Certification Council (MTCC)	O
	Musa Salleh, Sabah Forestry Department	O
	Hamden Mohamad, Sarawak Forest Department	O
Mexico	Jose Armando Alanis de la Rosa, Director de Cooperacion, Comisión Nacional Forestal (CONAFOR)	O
Myanmar	39 contacts provided by ITTO focal point with note that a short list would follow. Short list yet to be received.	
Nepal	No contact provided by ITTO focal point	
Netherlands	No contact provided by ITTO focal point	
New Zealand	Alan Reid, Ministry of Agriculture and Forestry	O
	Warwich Foran, Crown Forestry Unit, Ministry of Agriculture and Forestry	O
	Jeff Flavell, Research & Development Group National Office, Department of Conservation	O
	Harry Maher, Commercial Business Unit, Department of Conservation	O
Nigeria	No contact provided by ITTO focal point	
Norway	Knut Øistad, Department of Forest and Natural Resource Policy, Ministry of Agriculture and Food	O
Panama	No contact provided by ITTO focal point	
Papua New Guinea	No contact provided by ITTO focal point	
Peru	Jorge Ugaz Gomez, Dirección General Forestal y de Fauna Silvestre, Ministerio de Agricultura	O
	Jorge Malleux, Consultor	O
	Carlos Liñares, Consultor	O
	Nelson Kroll, Asesor forestal de MADERACRE SAC	
	Milo Bozovich, Decano de la Facultad de Ciencias Forestales de la Universidad Nacional Agraria La Molina	
Philippines	No contact provided by ITTO focal point	

Poland	Edward Lenart, Ministry of the Environment	
Portugal	Conceicao Ferreira, Ministry of Agriculture	
Republic of Congo	No contact provided by ITTO focal point	
Republic of Korea	Seung Hak Lee, Korea Forest Service	O
	Chong Se-Kyung, Korea Forest Research Institute	
Russian Federation	Maria Palenova, Federal Forestry Agency	O
Slovenia	Aleksander Golob, Ministry for Agriculture, Forestry and Food	O
Spain	José María Solano López, Jefe del Área de Planificación y Ordenación Forestal, Ministerio de Medio Ambiente y Medio Rural y Marino	
Suriname	No contact provided by ITTO focal point	
Sweden	Björn Merkell, Swedish Forest Agency	O
Switzerland	Christian Kuechli, International Affairs Division, Federal Office for the Environment, Federal Department of the Environment, Transport, Energy and Communications	
Thailand	No contact provided by ITTO focal point	
Trinidad & Tobago	No contact provided by ITTO focal point	
Togo	Hèmou Assi, Office de Developpement et d'Exploitation des Forets (ODEF)	O
	Kouami Kokou, Faculte des Sciences, Laboratoire de Botanique/Ecologie, Université de Lomé	O
	Oyetoundé Djiwa, DP/MERF	O
Turkey	Ismail Belen, Deputy Director General for Forestry, Ministry of Environment and Forestry	
	Serdar Yegül, Ministry of Environment and Forestry	
United Kingdom	Mike Dudley, UK Forestry Commission	O
United States of America	Guy Robertson, United States Forest Service	O
	Connie Carpenter, International Institute of Tropical Forestry, United States Forest Service	
	David Mormon, Oregon Department of Forestry	O
	Donald Outen, Department of Environmental Protection and Sustainability, Baltimore County, Maryland	O
	Michael Buck, National Association of State Foresters	O
Uruguay	Daniel San Roman, Dirección General Forestal, Ministerio de Ganaderia, Agricultura y Pesca	
Vanuatu	No contact provided by ITTO focal point	
Venezuela	No contact provided by ITTO focal point	

**Countries in italics are not members of the ITTO*

ANNEX 7

ITTO PRIVATE/NON-GOVERNMENT C&I SURVEY

ITTO SURVEY ON THE USE/APPLICATION OF
CRITERIA AND INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT
AT FIELD AND OTHER OPERATIONAL LEVELS

FOR CORPORATE, COMMUNITY AND INDIVIDUAL FOREST AND TMBERLAND OWNERS, MANAGERS AND OPERATORS, ASSOCIATIONS AND CERTIFIERS

Note: Criteria and indicators (C&I) for sustainable forest management are tools to monitor, assess and report on forest management trends and progress toward sustainable forest management at national and field/forest management unit (FMU) levels.

1. YOUR NAME, TITLE, EMAIL ADDRESS: _____

_____

2. NAME AND LOCATION (INCLUDE COUNTRY) OF YOUR ORGANIZATION: _____

_____

3. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR ORGANIZATION?

(a) ☐ Timber production company/operator
(b) ☐ Local community
(c) ☐ Timber investment management organization (TIMO) or Real Estate Investment Trust (REIT)
(d) ☐ Association of timber producing companies
(e) ☐ Association of individual and corporate forest land owners
(f) ☐ Association of family and small-scale forest owners
(g) ☐ Forest certification program or scheme
(h) ☐ Other. Please describe: _____

_____

4. TOTAL HECTARES (1 hectare=2.47 acres) OF FOREST LAND YOUR ORGANIZATION ---

(a) ☐ Owns
(b) ☐ Manages under lease/concession. From whom (e.g. name of government agency): _____

_____
(c) ☐ Co-manages. With whom: _____
(d) ☐ Manage under other arrangements. Please explain: _____

_____

_____
(e) ☐ None/not applicable. PLEASE SKIP TO ITEM 9.

5. DOES YOUR ORGANIZATION OWN OR MANAGE TIMBER PRODUCING FORESTS IN MULTIPLE JURISDICTIONS OR COUNTRIES? Yes ☐ No ☐. If yes, please explain: _____

_____

_____

6. DO NATIONAL OR SUBNATIONAL LAWS OR REGULATIONS OR THE CONDITIONS OF YOUR LEASE OR CONCESSION REQUIRE ANY OF THE FOLLOWING (check all that apply):

(a) ☐ Your forest area(s) must be sustainably managed
(b) ☐ Your timber harvest operations must be carried out in accordance with a set of best management practices
(c) ☐ Your timber harvest operations must be planned and carried under an approved forest management plan
(d) ☐ Other requirements. Please specify: _____

_____
_____

7. ARE YOUR FOREST MANAGEMENT AND TIMBER HARVESTING OPERATIONS CERTIFIED? Yes ☐ No ☐.
If Yes, under which certification scheme (check all that apply):

(a) ☐ FSC (Forest Stewardship Council)
(b) ☐ SFI (Sustainable Forestry Initiative Program)
(c) ☐ PEFC (Programme for the endorsement of Forest Certification Schemes)
(d) ☐ National certification scheme/standard. Please specify: _____
_____
(e) ☐ Other certification schemes. Please specify: _____
_____

8. ARE YOUR FOREST MANAGEMENT AND TIMBER HARVESTING OPERATIONS SUBJECT TO OTHER STANDARDS OR PERFORMANCE MEASURES? Yes ☐ No ☐. If Yes, please describe: _____
_____
_____

9. ARE YOU FAMILIAR WITH THE CONCEPT OF CRITERIA AND INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT? Yes ☐ No ☐. If yes, which C&I process(es) are you aware of (check all that apply):

(a) ☐ International Tropical Timber Organization (ITTO) criteria and indicators for the sustainable management of tropical forests (national and FMU levels) www.itto.int
(b) ☐ ITTO/African Timber Organization (ATO) principles, criteria and indicators for the sustainable management of African natural tropical forests (national and FMU levels) www.itto.int
(c) ☐ Tarapoto Process on criteria and indicators for sustainability of Amazonian forests (global, national and FMU levels) www.otca.info/portal/
(d) ☐ Forest Europe criteria and indicators (national level) www.foresteurope.org
(e) ☐ Montreal Process on criteria and indicators for the conservation and sustainable management of temperate and boreal forests (national level) www.mpci.org

10. <u>FOR PRIVATE AND COMMUNITY FOREST MANAGERS/OPERATORS</u>. DOES YOUR ORGANIZATION USE OR APPLY (OR HAS IT USED/APPLIED) ANY OF THE C&I LISTED IN ITEM 8 IN ORDER TO (check all that apply):

(a) ☐ Monitor and assess the state of forest management in your forest area/concession/FMU. Which C&I: _____
_____
(b) ☐ Report on the state of forest management in your forest area/concession/FMU. Which C&I: _____
_____
List of assessment reports prepared to date: _____
_____
(c) ☐ Other uses. Please explain: _____
_____
_____

(d) If you checked (a) (b) or (c), does your organization consider that the C&I framework used/applied remains a valuable and useful tool to assess, monitor and report on forest management at the field/FMU level? Yes ☐ No ☐ If No, please explain: _____
_____
_____

(e) If your organization is not using C&I as an assessment framework, please explain how you monitor, assess and report on the state of forest management in your forest area/concession/unit: _____
_____
_____

11. FOR CERTIFIERS. ARE YOUR CERTIFICATION PRINCIPLES OR STANDARDS BASED ON OR RELATED TO ANY OF THE C&I PROCESSES LISTED IN ITEM 8? Yes ☐ No ☐. If Yes, please explain: _____

_____

_____

(a) How many hectares of forest has your company certified? _____. What countries and/or regions? _____

_____

12. FOR ASSOCIATIONS: DO YOU REQUIRE YOUR MEMBERS TO MEET CERTAIN STANDARDS OR PERFORMANCE MEASURES IN THEIR FOREST MANAGEMENT AND TIMBER HARVESTING PRACTICES? Yes ☐ No ☐. If Yes, please explain and note if/ how the standards relate to C&I:_____

_____

_____

(a) How many and what type(s) of members do you have? _____

_____

(b) How many hectares of forest do your members together own or manage?_____

13. HAS YOUR ORGANIZATION RECEIVED TRAINING OR OTHER ASSISTANCE TO INCREASE ITS INTEREST AND CAPABILITY TO USE/APPLY C&I AT THE FIELD/FMU LEVEL TO MONITOR/ ASSESS AND REPORT ON FOREST MANAGEMENT PRACTICES? Yes☐ No ☐. (a) If Yes, please describe, including source of assistance_____

_____

_____

(b) If No, is your organization interested in receiving training or other assistance? Yes ☐ No ☐.

14. PLEASE USE THE FOLLOWING SPACE TO PROVIDE ANY FURTHER RESPONSES TO THE ABOVE OTEMS OR FURTHER COMMENTS/INFORMATION REGARDING YOUR ORGANIZATION'S EXPERIENCE USING C&I:

_____

_____

_____

_____

_____

ANNEX 8

LIST OF PRIVATE/NON-GOVERNMENT SURVEY RECIPIENTS AND RESPONDENTS

1. Producers – Africa

COUNTRY	NAME & INSTITUTION	REPLY
1.A: Forest Sector Companies		
Cameroon	Jérôme Laporte, Pallisco & CIFM	O
	Mark Diepstraten, Koninklijke Houthandel G. Wijma & Zonen B.V.	
	Sandra Razanamandranto, Wijma Cameroon S.A.	O
	Alberto Saviolo, ALPICAM	
	Antoine Darazi, Cameroon United Forests (CUF)	
	Salvatoreantonio Aulizio and Franco Scarabello, Ecam Placages S.A.	
	Bertin Tchikangwa, TRC	O
	Giorgio Coates, SEBAC S.A.	
	Freddy Decolvenaere, Société Forestière et Industrielle de la Lokoundjé S.A.	
Congo	Christian Schwarz, Congolaise Industrielle du Bois (CIB)	
	IFO (Danzer Group subsidiary in Cameroon)	
Gabon	Cora Wood Gabon (CWG)	
	Eric Chezeaux, Rougier Gabon/CIFHO	
	Jacqueline Van de Pol, Campagnie des Bois du Gabon (CBG)	
	Plysorol, Leroy Gabon	
Ghana	Ayum Forest Products (Naja David Group)	
	Ernest Apraku, Asua Bomosadu Timbers & Sawmills Ltd	
	Samuel Tseganu, John Bitar & Company Limited	O
	Justice Eshun, Samartex Timber and Plywood Company Limited	
	Mark Stordeur, Stordco International	
1.B: Associations & Other Organisations		
Cameroon	Mimbimi Esono Parfait, Cameroon Forest Certification Initiative (CFCI)	O
	Groupement de la Filiere Bois de CAMEROUN (GFBC)	
Gabon	Union des Forestiers Industriels et Amenagistes du GABON (UFIGA)	
Ghana	Ghana Timber Millers Organisation (GTMO)	
1.C: Regional Associations and Other Organisations		
France	Hervé Bourguignon, Interafrican Forest Industries Association (IFIA)	
Kenya	Godwin Kowero, Africa Forest Forum (AFF)	
	Maarten Wijma, Wijma Group	
	Abdon Awono, Center for International Forestry Research (CIFOR)	
	Joe R. Cobbinah, PROTA (Plant Resources of Tropical Africa) Foundation	

2. Producers – Asia-Pacific

COUNTRY	NAME & INSTITUTION	REPLY
2.A: Forest Sector Companies		
Indonesia	Chris Jeon, Hyundai Merchant Marine Co., Ltd	
	Kusmanto Wirianata, PT. Tanjung Selatan	
	Buniadi Makmur, PT. Kayu Lapis	
	I.Y. Choi, STX Pan Ocean Co. Ltd.	
Malaysia	Kai Min Lin and Karen Lin Kai Wen, Cymao Plywood Sdn. Bhd.	
	Jonas Israel, McCorry & Co Limited	
	Chen Yung Pin, Zenova (M) Sdn, Bhd.	
	Hii Sii Yew, Jaya Tiasa Timber Products	O
	Marianne Cheng, Ta Ann Holdings Bhd (Sarawak)	
	Pauline Wong, Ta Ann Holdings Bhd (Sarawak)	
	Marco Poot, Lionex (m) Sdn. Bhd	
	Stephen Lau Lee Kiong, KTS Holdings SDN BHD.	
	Ling Wang Sing, Segereka Sdn Bhd	
	Nik Nasrul Hakimi, Gold Class Oudh Sdn Bhd	
	Neil Wong Hou Liang, WTK Realty Sdh Bhd	
	Rimbunan Hijau Sdh Bhd	
	Michael Mu Chung Jung, Shin Yang Sdh Bhd	
Philippines	Aristeo G Puyat, Surigao Development Corporation	
	Leo Rodil, CSCD Casilayan Softwood Development Corp.	
Thailand	2BNS Wood Industry Co. Ltd.	

2.B : Associations & Other Organisations		
Indonesia	Indonesian Ecolabeling Institute (LEI)	
	Indonesian Wood Panel Association (APKINDO)	
	Njoto Suharfjojo, Forest Industry Revitalization Body (BRIK)	
	Nanang Roffandi Ahmad, Association of Indonesian Forest Concession Holders	
	Indonesia Sawmill & Wood Working Association (ISWA)	
Malaysia	Annie Ting, Sarawak Timber Association (STA) (Informal response)	O
	Sarudu Hoklai, Sarawak Timber Industry Development Corporation (STIDC)	
	Noraihan Abdul Rahman, Malaysian Timber Council (MTC)	
	Ruzainah Abdul Jalil, Malaysian Timber Industry Board	
	Sabah Timber Industries Association (STIA)	
Papua New Guinea	Yati Bun, Foundation for People and Community Development (FPCD)	O
	Ron Wilson, Papua New Guinea Forest Industries Association Inc	
Philippines	Maila R Vasquez, Philippine Wood Producers Association	
2.C: Regional Associations and Other Organisations		
Japan	Haruyoshi Takeuchi, PEFC Asia Promotions	
Malaysia	Aimi Lee Abdullah, European Forest Institute	
	Chen Hin Keong, Traffic International	
Nepal	Robert Zomer, International Centre for Integrated Mountain Development (ICIMOD)	
Thailand	Toon de Bruyn, RECOFTC - The Center for People and Forests	

3. Producers – Latin America

COUNTRY	NAME & INSTITUTION	REPLY
3.A: Forest Sector Companies		
Bolivia	Guilhermo Roig Justinino, AMBORÓ LUMBER COMPANY	
	Steve Reister, SLV- Southern Lumber and Veneer	
	Alfredo Abuawad A., Aserradero San Martin S.R.L.	
	Oscar Farfán Mealla, Tahuamanu S.A.	
	Janeth Arcani, Sumapacha Industrial S.A.	
	José Ariel Schwartz Urbach, Schwartz Vrena S.R.L	
	Luis Mayser Ardaya, Fobol Ltda. Forest Bolivian	
	Felix Martinez, Martinez Ultra Tech Doors Ltda.	
	Nicolás Altmann Croizer, MADERAS DEL SIGLO XXI	
	Sandro Giordano, Bolital Ltda. Empresa Forestal y Agricola	
	Fernando Antelo Parra, La Chonta Woods Ltda.	O
	Segismundo Jorge Braun Bodonitz, Surimex	
	José Eduardo Paz Ortiz, San Pedro TecnoCarpintería S.R.L.	
	Alejandro Antelo Parra, Sobolma	
	Rocco Colanzi Di Biase, Industria Forestal	
	Mauricio Querejazu C., Exotic Woods	O
	Pablo Antelo, Agroindustrial El Cedro	O
Brazil	Paulo Cavalcanti Neto, Somapar Soc. Mad. Paranaense Ltda	
	Isac Chami Zugman, Compensados e Laminados Lavrasul S.A.	
	Douglas Antônio Granemann de Souza, Triângulo Pisos e Painéis Ltda	
	João Carlos Baldasso, Guavirá Industrial e Agroflorestal Ltda	O
	Luis Fernando Honório Alves Jr, E.Carli. Representações Ltda	
	Silvano D´Agnoluzzo, Rio Concrem Industrial Ltda	
	AGRO INDUSTRIAL DE MADEIRAS VALE FÉRTIL LTDA	
	ALMEIRIM INDUSTRIAL LTDA	
	ARCA INDÚSTRIA E AGROPECUÁRIA LTDA	
	CIKEL BRASIL VERDE S/A	
	EBATA – PRODUTOS FLORESTAIS LTDA	
	GLOBAL IND. COM. E NAVEGAÇÃO LTDA	
	JURUÁ FLORESTAL LTDA	
	ORSA FLORESTAL S/A	
	RONDOBEL MADEIRAS LTDA	
	SEMASA – INDUSTRIA COMERCIO E EXPORTAÇÃO DE MADEIRAS LTDA	
	Daniel Berneck, BERNECK S/A PAINÉIS E SERRADOS	
	Rafael Andrade Festugatto and Maria E. A. Festugatto, BRASPLAC INDUSTRIAL MADEIREIRA LTDA	
	Moacir Alberto Raimam, CENTERPLAC COMPENSADOS LTDA	
	Renato Uliana, COMPENSADOS ULIANA LTDA	
	Adriano D'Agnoluzzo, FLORAPLAC INDUSTRIAL LTDA	
	Hildefonso De Abreu Araújo, HIDIL PLAC INDÚSTRIA E COMÉRCIO LTDA	

	José Arnaldo Bertola Uliana, INDÚSTRIA MADEIREIRA ULIANA LTDA.	
	Luiz Carlos Jardim, LANO DA AMAZÔNIA LTDA	
	Nelson Thomasi, MADEIREIRA THOMASI S.A	
	Fábio A. Marchetti, MANOEL MARCHETTI INDÚSTRIA E COMÉRCIO LTDA	
	Joares Antônio Santin, MASEAL INDÚSTRIA DE COMPENSADOS LTDA	
	Cláudio A. Zini, PORMADE-PORTAS DE MADEIRAS DECORATIVAS LTDA	
	Carlos Bianchi, ARAUCO FOREST BRASIL S/A	
	Aldo Ezidio, RIGESA, CELULOSE, PAPEL E EMBALAGENS LTDA - DIVISÃO FLORESTAL	
	Salo D. Seibel, DURATEX S.A.	
	Carlos Alberto de Oliveira Roxo, FIBRIA	
	Gilberto Schille, Triunfo Amazonia	
	Paula Lague, IPA Wood Flooring	
	John McGlocklin, Nova USA Wood Products LLC.	
Colombia	Alfonso Ocampo, PROPAL- Produtora de Papeles S.A.	
Ecuador	Manoel Durini, Endesa Botrosa	
	Otto Suárez R., Fundación Wong	
	Adriana Izquierdo de Salazar, INMAIA S.A.	
	Felipe Pazmiño, Aglomerados Cotopaxi	O
Guatemala	Roberto Rios, Mega Maderas S.A	
Guyana	Iwokrama International Centre for Rain Forest Conservation and Development	
Honduras	Amnon Ronen, Galiltec S.A.	
Mexico	Kristina Diaz Paterson, Proteak Renewable Forestry	O
Panama	Ingryd Taracena, Holz International	
Peru	Drago Bozobich, Bozovich Group	
	Henry Bolarin, Maderera Vulcano	
	Miguel Ubilluz, Peruvian Amazon Line	
Suriname	Stichting voor Bosbeheer en Bostoezicht (SBB)	
3.B: Associations & Other Organisations		
Bolivia	Jorge Avila, CAMARA FORESTAL DE BOLIVIA (CFB)	O
Brazil	Alvaro Leite, CIPEM	O
	Jeziel A. de Oliveira, ABIMCI	
	Guilherme Carvalho, AIMEX	O
	Maria Teresa R.Rezende, CERFLOR- INMETRO	O
	Cesar A. dos Reis, ABRAF- Associação Brasileira de Produtores de Florestas Plantadas	
	Ariel de Andrade, ANPM- Associação Nacional dos Produtores de Pisos de Madeira	
	Carlos Aragon, GTZ	
Ecuador	Pablo Noboa, ASOTECA- Asociación Ecuatoriana de Productores de Teca y Maderas Tropicales	
	Juan Carlos Palacios Burneo, COMAFORS	
	Asociación Ecuatoriana de Industriales de la Madera (AIMA)	
Guatemala	José Román Carrera, Rainforest Alliance	
Guyana	Khalawan, Forest Products Association of Guyana	
	Derrick Cummings, Forest Products Development and Marketing Council of Guyana	
Honduras	Carlos H. Sandoval, Rainforest Alliance	
Mexico	Antonio Manuel Garcuia Gomzales, La Confederación Nacional de Organizaciones de Silvicultores (CONOSIL)	
	Comunidad Indígena de Nuevo San Juan Parangaricutiro	
Peru	Manuel Portugal Velarde, Asociación de Exportadores (ADEX)	
	Erik Fischer, Confederación Peruana de la Madera	
	Ricardo Campins, Corporación Andina de Fomento (CAF)	
Venezuela	Alfredo Solarte Lindo, Corporación Andina de Fomento (CAF)	
3.C: Regional Associations and Other Organisations		
Ecuador	Hans Thiel, Amazon Cooperation Treaty Organisation (ACTO)	

4. Consumers

COUNTRY	NAME & INSTITUTION	REPLY
4.A: FOREST SECTOR COMPANIES		
Australia	Simon Cook, GUNNS Limited	
	Vince Erasmus, Elders Forestry Limited	
	Mark McRostie, Timberlands Pacific PTY LTD	
	Dave Barbour, Forestry Plantations Queensland PTY LTD	O
Belgium	Sappi Europe SA	
Canada	Mike Maxfield, AbitibiBowater – Ontario Woodlands	
	Ray LeBlanc, A.T. Limited Partnership	
	Ryan Clark, Capacity Forest Management Ltd	

	Andrew Elliot, Fornebu Lumber Company, Inc. – New Brunswick	
	Interfor	
	Millar Western Forest Products Ltd	
	Andrea Doucette, NewPage Corporation – Port Hawkesbury	
	Dave Watt, Sinclair Group Forest Products	
	Stephen Vinnedge, West Frazier Mills, Ltd	
	Jim Stark, Weyerhaeuser Company - Vancouver	
China	Sonia Chiang, Robinson Lumber Company	
	Martin, Mak Chun Tung, Interwood International Limited	
	Gary Yu, Yenling Door&Window Industries Co. Ltd	
	Dongsheng Tan, China Forest Industry Group	
Finland	Petteri Seppänen, Dasos Capital	
	Ari-Pekka Heikkila, Metsaliitto Group/Metsaliitta Cooperative	
	Stora Enso Wood Supply	
France	Olivier Jancovici, Centre Bois Massif	
	Christian Bedouet, Christian Bedouet Scierie	
	Roland Bedouet, Roland Bedouet Sarl	
	Scierie du Gros Chene	
	Tarteret Philippe Sa	
Germany	Dietmar Tombers and Markus Tombers, Tombers-Hartholz GmbH	
	Michael Decker, Decker Holz GmbH	
	Philipp Bahnmuller, Bavarian State Forest Enterprise (Bayerische Staasforsten)	
	Hessian State Forest Company (Hessen-Forst Landesbetriebsleitung)	
	Joerg Vanderheide, Hessian State Forest Company (Hessen-Forst Landesbetriebsleitung)	
Italy	Enrico Calvo, Ente Regionale per I Servizi all'Agricoltura e alle Foreste (ERSAF)	
New Zealand	Asia Pacific Forest Resources	
Norway	Ingemar Eggen, Glommen Skog BA	
	Erling Bergsaker, Norsk Skogsertifisering AS	
	Torkel Vindegg, SB Skog	
	Bernt Magne, Viken Skog BA	
Netherlands	Mark Diepstraten, Koninklijke Houthandel G. Wijma & Zonen B.V. *(See Cameroon forest companies)*	O
Portugal	Grupo Portucel Soporcel	
Republic of Korea	N.J. Huh, Joo Hae Forest Products Co.	
	Youngju Park, Eagon Industrial Co. Ltd.	
Sweden	Borje Pettersson, Bergvik Skog AB	
	Anders Forsgren, Boliden Mineral AB	
	Hanna Triumf, Holmen Skog AB	
	Bengt Brunberg, Korsnas AB Skog	
	Jonas Eriksson, Norra Skogsagarna	
	Per Sandberg, Skogagarna Mellanskog ek	
	Johan Bjernulf, Stora Enso Stog AB – Sweden	
Switzerland	Dominique Mantese, Berner Waldbesitzer BWB	
	Theo Kern, Gruppe AWV	
United Kingdom	Tanya Patterson, Mondi	
	Northwood Forest Products International Ltd	
	Garry MacInnes, Scottish Woodlands Ltd	
	Douglas Hyslop, Scottish Woodlands Ltd	
	Simon Hart, UPM Tilhill	
United States of America	American Forest Management Group (AFM)	
	Brian Gowin, Crown Pine Parent L.P. c/o The Campbell Group	
	Brian Kernohan, Forest Capital Partners, LLC	
	Tom Trembath, Forest Investment Associates	
	Bruce C. McKnight, Hancock Natural Resource Group	
	Julie, Hancock Natural Resource Group	
	Joseph Lawson, MeadWestvaco (MWV)	
	Randy Taylor, Plum Creek Timber Company, Inc	
	Robert Hagler, RMK Timberland Group	
	Rayonier, Inc.	
	Ben Cazell, Rayonier – Western Forest Resources	
	Gary Boyd, Resource Management Service (RMS), LLC.	
	Mark Pawlicki, Sierra Pacific Industries	
	Gordon Gamble, Wagner Forest Management, Ltd	
	Rob Harder, Weyerhaeuser Company Limited	
	Bryan Hulka, Weyerhaeuser Company and Weyerhaeuser NR Company – Arkansas	

4.B: ASSOCIATIONS & OTHER ORGANISATIONS		
Australia	Warwik Ragg, Australian Forest Growers	
	Australian Forest Certification Scheme (AFCS)	O
Belgium	Tom Anthonis, SRFB	
Canada	Peter de Marsh, Canadian Federation of Woodlot Owners	
	Canadian Wood Council (CWC)	
	Kevin Fane Bollefer, Revelstoke Community Forest	
China	Xu Fang, AF&PA- American Forest & Paper Association	
	Zhao Wei, China Paper Association	
	Shengfu Wu, China National Forest Products Industry	
Denmark	Tanjan Blindbaek Olsen, Danish Forest Association	O
	Jan Sondergaard, Denmark Forest Association	
Finland	Antti Sahi, MTK -Central Union of Agriculture Producers and Forest Owners	
	Finnish Forest Industries Association	
	Jukka Hujala, Forest Owners Association of Lake-Finland	
	Kai Lintunen, Finnish Forest Association	
France	Henri Plauche-Gillon, Forestiers Prives de France	
Germany	Sabrine Bresemann, AGDW	
Ireland	Donal Whelan, Irish Timber Growers Association	
Japan	Sustainable Green Ecosystem Council	
	Japan Federation of Wood-Industry Associations (JFWIA)	
New Zealand	George Asher, Lake Taupo Forest Trust	
	John Dermer, New Zealand Farm Forestry Association	
	Glen Mackie, New Zealand Forest Owners Association	
	Andrew McEwen, New Zealand Institute of Forestry	
	Lawrie Halkett, New Zealand Pine Manufacturers Association	
	New Zealand Timber Industry Federation	
	Daniel Miles, Wood Processors Association of New Zealand	
Norway	Gudbrand Kvaal, Norges Skogeierforbund	
Poland	Jan Kubiak, The Polish Association of Forest Entrepreneurs and Companies	
Portugal	FORESTIS - Portugal Forest Association	
	Henk Feith, Silvicaima, Sociedade Silvicola Caima	
Spain	Garcia Fernando Molina, COSE	
	Agrela Patricia Gomez, COSE	
Sweden	Marten Larssen, Swedish Forest Industries Association	
	Linda Hedlund, LRF Skogsagarna- Federation of Swedish Farmers	
	Johanna Fintling, LRF Skogsagarna- Federation of Swedish Farmers	
	Lennart Ackzell, Federation of Swedish Forest Owners	
Switzerland	Amstutz Urs, Waldwirtschaft Schweiz (WVS)	
United Kingdom	Fiona Angler, CONFOR- Confederation of Forest Industries	
	Scottish Forest and Timber Technologies (SFTT)	
United States of America	Jeffrey Bradley, AF&PA - American Forest & Paper Association	
	Forest Landowners Association (FLA)	
	Dave Tenny, NAFO-National Alliance of Forest Owners	
	Helen Colosimo, NAFO-National Alliance of Forest Owners	
	Bob Simpson, American Forest Foundation	
	American Wood Council	
	Keith Argow and Darrel Pendris, NWOA- National Woodland Owners Association	
	Steve Andringa, Yakama Nation	
4.C: REGIONAL ASSOCIATIONS AND OTHER ORGANISATIONS		
Europe	Marta Gaworska, Confederation of European Forest Owners (CEPF)	
	Bernard de Galembert, Confederation of European Paper Industries (CEPI)	
	Ulrich Leberle, Confederation of European Paper Industries (CEPI)	
	Noura Younes, Confederation of European Paper Industries (CEPI)	
	CEI-Bois - Confederation of European Woodworking Industries	
	Inazio Martinez de Arano, L'Union des Silviculteurs de Sud de l'Europe (USSE)	
	Christian Pinaudeau , L'Union des Silviculteurs de Sud de l'Europe (USSE)	
	Nella Mikkola, COPA-COGECA (European Farmers and Agri-cooperatives)	
North America	Bob Simpson, American Tree Farm System (ATFS)	
	Allison Welde, Sustainable Forestry Initiative Program (SFI)	O

5. Non-ITTO Countries

COUNTRY	NAME & INSTITUTION	REPLY
5.A: FOREST SECTOR COMPANIES		
Argentina	Jose Urtubey, Celulosa Argentina	
Mozambique	Jacinto Mutemba, Rural Consult Lda.	
	Graeme White, Dalmann Hardwood Furniture	
Russia	George Krapvine, Woodbridge International Ltd.	
5.B: ASSOCIATIONS & OTHER ORGANISATIONS		
Chile	Fernando Raga, CORMA	
Czech Republic	Josef Barton, SVOL	
Estonia	Ants Varblane, Estonian Private Forest Union	
Latvia	Arnis Muiznieks, Latvian Forest Owners Association	
Lithuania	Gaizutiz Algis, Forest Owners Association of Lithuania	
Mozambique	Mozambique Institute of Export Promotion (IPEX)	

6. International Associations and Other Organisations

COUNTRY	NAME & INSTITUTION	REPLY
France	Herve Bourguignon, Association Technique Internationale des Bois Tropicaux (ATIBT)	
Germany	Andre de Freitas, Forest Stewardship Council (FSC)	
Indonesia	Markku Kanninen, Center for International Forestry Research (CIFOR)	
Nepal	Ghan Shyam Pandey, Global Alliance of Community Forestry (GACF)	
Norway	Ivar Legallais-Korsbakken, International Family Forestry Alliance (IFFA)	O
Switzerland	James Griffiths, World Business Council on Sustainable Development (WBCSD)	
Switzerland	ECE Timber Committee	
Switzerland	Caroline Stein, Programme for the Endorsement of Forest Certification Schemes (PEFC)	
USA	International Wood Products Association (IWPA)	
USA	Rainforest Alliance SmartWood Program	
USA	Bob Johnston, Tropical Forest Foundation (TFF)	
USA	Linda Sandler, The Forest Foundation	
USA	Peter A. Neame, International Finance Corporation (IFC)	