



TROPICAL FOREST U · P · D · A · T · E

A Newsletter from the International Tropical Timber Organization to Promote
Conservation and Sustainable Development of Tropical Forests

Volume 10, No 3

ISSN 1022-5439

2000/3

Taking the Policies to the Forest

According to the report by Poore and Thang on progress towards ITTO's Year 2000 Objective (TFU 10/2), most ITTO producer countries now have the legislation and policies in place to achieve sustainable forest management. The next step is to put them into practice.

This is not easy. Many countries have limited resources with which to enforce even the best forest policies. Illegal and unethical practices by sections of the forest industry are perpetrated both in the forest and along the trading chain,

the latter often involving importers based in consumer countries; such practices actively hinder the introduction of sustainable forest management. Worse still is the widespread poverty in many tropical countries, which remains the single biggest obstacle to the security and integrity of the forest estate.

Well-intentioned foresters at the field level face another barrier caused, paradoxically enough, by the sprouting of guidelines and criteria and indicators at the national, regional and global scales. ITTO has contributed its fair share of these: it was, in fact, a pioneer in the development of many. They have played a major role in bettering forest policies and laws, but are they adequate for field implementation?

A study by Cassells and Hall, reported in this edition (pp 2-4), has found widespread support among forest practitioners for ITTO's guidelines but a desire for them to be simultaneously synthesised and made more specific to local circumstances. The authors present a possible framework within which appropriate field-level training and information can be provided that is both relevant to local circumstances and consistent with international standards. At its 29th meeting

(30 October-4 November 2000), the International Tropical Timber Council will discuss how to start putting the report's recommendations into practice.

ITTO is already bringing its criteria and indicators to the field level by providing training in their application (report next issue). And it continues to fund a wide range of projects aiming to implement and demonstrate sustainable forest management (pp 10-11).

Forest management auditing – certification – is one way of evaluating efforts to achieve sustainable forest management. A report by Nsenyiere and Simula (pp 5-7) recommends the development of guidelines to assist countries in setting up their own forest management auditing systems. Simula and Baharuddin have subsequently been engaged to develop guidelines “for a framework of auditing systems for sustainable forest management”. An expert panel to be convened this October will consider the draft guidelines and present its findings to the Council.

Also on the agenda for the coming Council session is the Poore & Thang report. The outcome of the debate on this could have a large influence on the future work of the Organization; it seems clear that the private sector – which, after all, does most of the work in the forest – must be engaged more completely if significant progress is to be made on the ground. Council delegates themselves will certainly need to cover plenty of territory this coming October.

Alastair Sarre
Editor



An Amerindian ranger uses a global positioning system during a strategic inventory of the Iwokrama Forest, Guyana, work partly funded by ITTO project PD 10/97 Rev.1 (F). Such inventories are an essential part of a wider framework for the introduction of sustainable forest management (see page 2). Photo: © FotoNatura

Inside this issue

- ◆ Framework for implementing SFM
- ◆ Auditing systems
- ◆ Kyoto Protocol implications

A Structure for Sustainability

The time is right for the development of a comprehensive framework and practical working manuals for sustainable forest management

by David S. Cassells and Clayton A. Hall

Iwokrama International Centre for Rain Forest Conservation and Development, 67 Bel Air – Georgetown, Guyana

In the light of these discussions, the International Tropical Timber Council (ITTC) authorised a study to “make a proposal for the development of a comprehensive framework for guidelines and practical working manuals covering all relevant aspects of sustainable tropical forest management, including reduced impact logging, rehabilitation of degraded forests and forest lands and the management of secondary forests taking into account other existing ITTO guidelines” (Decision 6 (XXVII)).

We conducted this study; the consequent report was presented to the ITTC’s 28th session last May and will be further considered at its 29th session in November. To encourage wide input into these discussions, this paper summarises the report’s key findings and recommendations.

‘... the majority [of practitioners] felt that the existing ITTO guidelines, though imperfect, were adequate. The highest priority, they said, should be on implementation, monitoring and evaluation so that forest managers could learn by doing.’

Current Views

The study involved a desktop review of ITTO documents and those of other agencies and organisations. This was supplemented by discussions with experienced tropical forest management specialists and a series of one-day workshops in selected centres in which experiences with the implementation – or lack of it – of sustainable forest management were shared.

Experiences with ITTO guidelines

ITTO’s various guidelines have raised awareness about sustainable forest management at the policy level and have influenced forest policy and law reform in a number of countries. To date, however, there has been only limited application of both the guidelines and the criteria and indicators and, hence, only limited impact on field practice.

A common dilemma expressed to us by practitioners was a wish for the guidelines to be more clear and concise while at the same time providing more detailed and practical information for forest managers. A significant

problem was the confusion caused by the plethora of guidelines and related instruments from the various international agencies and national and international forestry processes.

Experiences with reduced impact logging

Practitioners in all the countries visited placed great importance on the development and implementation of reduced impact logging techniques. Many private-sector participants suggested that the question of appropriate harvesting techniques related more to institutional and incentive structures than to technical field application. They also felt that the cost of training for RIL was frequently underestimated and that a long-term commitment to on-going training was essential for the widescale adoption of improved practices. In a number of countries, the role of small-scale chainsaw loggers was a significant concern, particularly where resources were held communally or where tenure rights were poorly defined.

Issues related to degraded and secondary forests

It is clear that all producer regions contain large and expanding areas of degraded or secondary forests. These frequently have considerable value for both human use and

ITTO’s various guidelines¹ and criteria and indicators² were ground-breaking initiatives that stimulated a host of regional and international efforts to promote sustainable forest management in different forest types. They also contributed to the development of the principles and criteria underlying many existing forest certification systems. However, over the last few years, a number of discussions in ITTO-related forums have focussed on the need to update aspects of this important technical series.

1 *ITTO Guidelines for the Sustainable Management of Natural Tropical Forests* (1990)

ITTO Guidelines on the Conservation of Biological Diversity in Tropical Production Forests (1993)

ITTO Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests (1993)

ITTO Guidelines on Fire Management in Tropical Forests (1997)

2 *ITTO Criteria for the Measurement of Sustainable Tropical Forest Management* (1992); *ITTO Criteria and Indicators for Sustainable Management of Natural Tropical Forests* (1998)

Contents

A Structure for Sustainability	2
Developing Auditing Systems for SFM	5
The Kyoto Protocol	8
Briefing on ITTO’s Project Work	10
Sustaining Non-Timber Extraction	12
Trade Pages	14–18
Market Trends	14
The Price of Prediction	16
Success and Responsibility	18

Regular Features

Country Profile – Denmark	20
Institutional Profile	21
Fellowship Report	22
On the Conference Circuit	24
Topical and Tropical	27
Current Literature	28
Letters to the Editor	29
Noticeboard	30
Course Calendar	31
Forthcoming Meetings	32

nature conservation because, unlike many of the residual forest frontiers, they are often strategically located in relation to markets, human settlements and transport infrastructure. Emerging issues include:

- identifying and understanding the underlying socio-political causes of forest land degradation and secondary forest formation and their likely impacts on efforts to manage or rehabilitate these ecosystems;
- understanding the relationships between people and secondary forest ecosystems in terms of usage patterns, people's welfare, local economies, and the functional ecological and environmental roles of these ecosystems at various levels;
- developing an understanding of the ecological and silvicultural requirements of tropical secondary forest management; and
- building on the substantial body of knowledge about tropical secondary forest use and management held by indigenous peoples and farmers.

Experiences with community participation

The failure of forest planners and managers to meaningfully involve local communities has resulted in a lack of transparency that has contributed to both deforestation and the development of corrupt practices in the forestry sector. However, most practitioners felt that progress in addressing this problem has been constrained by the diverse, often conflicting perspectives of the wide range of forest sector stakeholders, including indigenous people living in or near forest areas. They therefore highlighted the importance of conflict management procedures as part of a comprehensive approach to participation.

Some practitioners felt that practical guidelines to encourage effective participation would be useful. Others felt that a wide range of information on participatory processes was already available from a number of agencies and that ITTO should focus on incorporating guidance on participation in all of its guidelines. Many saw a particular need for the establishment of demonstration forests that show viable community-based operations involving small-scale industrial wood processors.

Perceptions of key obstacles

Obstacles to the practice of sustainable forest management identified in many countries

include continued deforestation, illegal harvesting, poorly defined land ownership, a lack of technical and human capacity for law enforcement, and mixed signals from the market. The latter were particularly important to the industry.

Priorities for Accelerating Progress

Some of the practitioners met during the study felt that the ITTO guidelines series should be updated to reflect the broader experience and the deeper conceptual understanding of sustainable forest management that has developed over the last decade. However, the majority felt that the existing ITTO guidelines, though imperfect, were adequate. The highest priority, they said, should be on implementation, monitoring and evaluation so that forest managers could learn by doing. Key priorities include:

- ensuring that any revisions or new guidelines are simple and practical and focus on applicability at the forest management unit level;
- developing guidelines on the economic aspects of sustainable forest management,

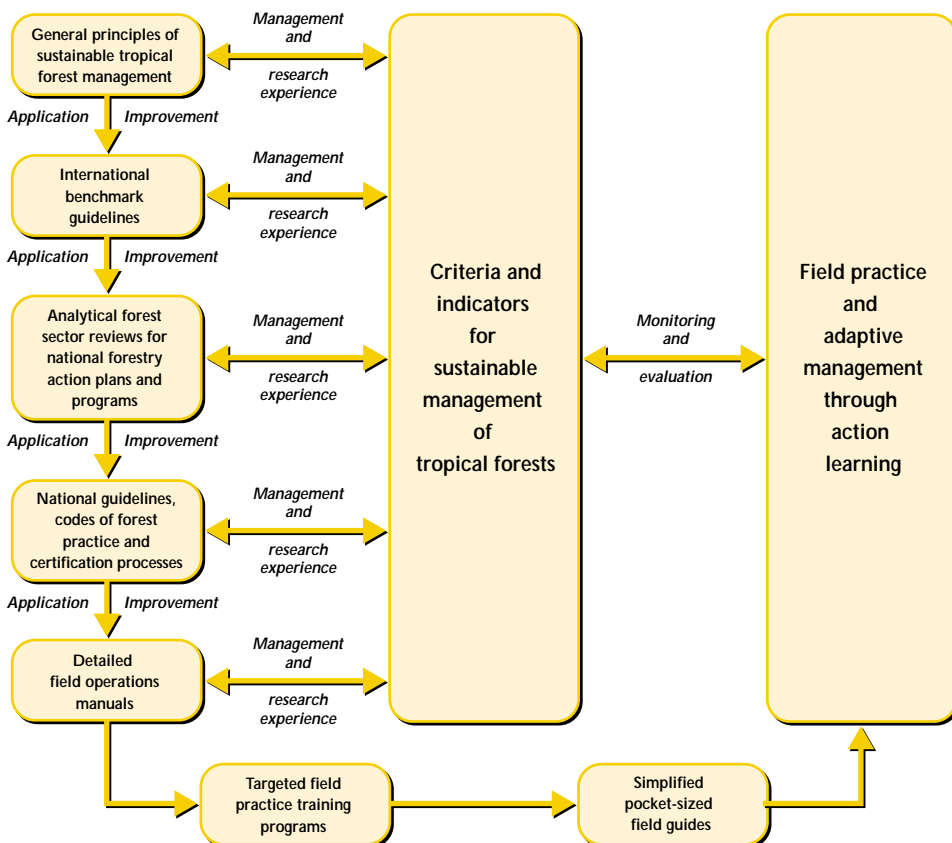
highlighting effective incentive structures for the private sector that will ensure more sustainable management and utilisation of forest resources;

- developing regional demonstration forests where the cost and benefits of sustainable forest management could be rigorously monitored and accelerated, while well-targeted training in key aspects of sustainable forest management such as reduced impact logging could be provided;
- developing new guidelines or other less formal best-practice statements on the management of secondary forests, reduced impact logging, community participation in forest management and the production of value-added NTFPs; and
- fostering the joint development of guidelines and related instruments with other international agencies and forest policy processes to reduce confusion and foster ownership at the national level.

The Suggested Framework

The proposed framework covering all relevant aspects of sustainable forest management is summarised in Figure 1.

Figure 1: A suggested framework structure for sustainable tropical forest management



The overall objective of the framework is to focus on the implementation of sustainable forest management in field practice – this was clearly the major priority stressed by practitioners in every country visited. Another key objective of the framework was to illustrate the linkages between all the various elements of the framework in a manner that recognised the practice of sustainable forest management as an adaptive management process of learning by doing. The key elements of the framework are:

- *general high-level sustainable forest management principles*: this element is designed to provide a concise statement of the general principles of sustainable forest management that will apply to planning and development in all tropical forest management situations;
- *international benchmark guidelines*: this element covers ITTO's existing series of guidelines and is designed to provide more specific interpretations of what the general principles mean in particular forest management situations (eg natural forest management and fire management);
- *analytical forest sector reviews for national forestry action plans and programs*: this element is designed to assist member countries identify key gaps in policy, practice or information needed to effectively implement sustainable forest management principles and/or the most relevant international benchmark guidelines. Analytical sector reviews provide a basis for prioritising sector reform and international assistance;
- *national guidelines, codes of practice and certification processes*: this element will assist member countries to translate relevant elements of international benchmark principles and guidelines into more detailed specifications to guide the continual development of sustainable forest management strategies, programs and practices;
- *Detailed field operations manuals*: this element is designed to provide detailed operational instructions on the application of national guidelines, codes of practice and certification procedures in the various forest types and forest management situations within particular producer countries;

- *simplified field guides*: this element would provide concise, easy-to-use field checklists of the specific forest management tasks that particular field operators (eg tree-markers, tractor drivers) must perform; and
- *criteria and indicators*: the ITTO criteria and indicators are a central element of the framework. They provide tools for assessing changes and trends in forest conditions and management systems in relation to key elements of sustainable forest management. The information generated from the application of criteria and indicators should be used to evaluate progress in achieving sustainable forest management and identifying priorities for research or improvements in forest management planning and practice.

'The framework was developed as a tool for accelerating progress towards sustainable forest management, not as a new set of rules to unnecessarily complicate forest practice.'

Conclusions and Recommendations

Our report outlines proposals for the development of a comprehensive framework and practical working manuals on all relevant aspects of sustainable tropical forest management. Its major recommendation is that, after review, the Council should adopt the suggested framework and take steps to encourage its early application to accelerate progress with the wider practice of sustainable forest management in accord with the Year 2000 Objective. The framework was developed as a tool for accelerating progress towards sustainable forest management, not as a new set of rules to unnecessarily complicate forest practice.

The primary focus of the framework is on field implementation, with policy development initiatives strategically implemented to proactively encourage adoption of sustainable forest management principles in field practice. Key suggestions in the strategy include:

- refining the suggested set of general sustainable forest management principles;

- developing a set of guidelines or another less formal best-practice statement on economic aspects of sustainable forest management;
- developing a set of guidelines on the conservation, management and sustainable development of secondary forest ecosystems using the general sustainable forest management principles as an organising framework;
- developing manuals on key considerations for reduced impact logging and key considerations for the management of small-scale forest production systems;
- working with the Food and Agriculture Organization of the United Nations, the Center for International Forestry Research, the World Conservation Union – IUCN and other relevant agencies to develop a strategy for promoting more effective community participation in all aspects of sustainable forest management;
- providing earmarked allocations in the Bali Partnership Fund to allow producer countries to undertake analytical forest sector reviews to identify key gaps in policy, practice or information needed to implement sustainable forest management;
- providing earmarked allocations from the Bali Partnership Fund to allow producer countries to develop or upgrade national guidelines, codes of practice and certification processes to accelerate progress in the wider application of sustainable forest management in accord with the Year 2000 Objective; and
- establishing an ITTO reduced impact logging training facility in each of the ITTO producer regions. ■

Developing Auditing Systems for SFM

A recent ITTO review recommends national and international action to improve the auditing of sustainable forest management

by E.O. Nsenkyiwe and Markku Simula¹

1. Indufor Oy, Toolonkatu 15 E FIN-00100 Helsinki, Finland; Tel 358-(0)9-684 0110; Fax 358-(0)9-684 2552; Email indufor@indufor.fi

The normative framework for sustainable forest management (SFM) is gradually becoming comprehensive and the emphasis is shifting to implementation. Auditing is an essential element of implementation because it is a tool for monitoring and verifying progress made by countries and forestry organisations towards the SFM goal.

In May 1999, the International Tropical Timber Council requested the Executive Director to engage two consultants to conduct a survey of existing auditing systems and/or protocols for demonstrating SFM by drawing on the experiences of the public and private sectors of member countries and building upon existing studies. Underlying this request was a desire to assist ITTO producer member countries in developing their auditing systems for SFM.

Methodology

Due to the pioneering nature of the study we decided to give equal emphasis to auditing procedures in both public forest administration and voluntary certification schemes. As little information was readily available on public sector arrangements, we conducted a mail survey targeting the 26 ITTO producer member countries. A questionnaire was devised and sent to all countries, of which 16 replied. Twelve countries provided information for the study while the other four respondents expressed strong interest in the results to assist in improving their auditing arrangements. We also conducted field visits in five countries (Brazil, Cameroon, Côte d'Ivoire, Ghana and Malaysia) to complement questionnaire data by interviewing national specialists and by collecting additional local data.

SFM as an Object of Auditing

Auditing can be applied as an instrument of policy enforcement, but its role is much broader than that. Increasingly, the role includes: i) the internal monitoring of performance in forest organisations ('internal' auditing); and (ii) the external verification of compliance with specified requirements for the purposes of communication to the market or other interested parties ('external' auditing).

The latter is usually part of what is known as forest certification. The purpose of internal auditing is to assist management in achieving its objectives, while external auditing ensures the credibility of internal auditing work. Internal auditing is complementary to external auditing and, if well organised, reduces the costs of the latter. The purpose of existing regional and national sets of criteria and indicators (C&I) for SFM, such as those of ITTO, is to identify aspects of management that need to be addressed at the national or forest management unit levels for the achievement of SFM. A number of ITTO member countries have developed, or are developing, their own C&I to suit their specific ecological and socio-economic conditions.

Monitoring the implementation of C&I presents a major challenge for auditing. The reasons for this include:

- many 'new' aspects of forest management need to be verified;
- information on the indicators that need to be measured may not be readily available – the assessment may have to be more qualitative than quantitative; and
- broader than technical forestry skills are needed in the assessment of environmental and social criteria.

Ideally, although C&I will vary between countries the definitions related to the principles, criteria, indicators, verifiers and means of verification used should be consistent. However, such consistency between ITTO members has not yet been achieved. A particular cause for concern is the common lack of a hierarchical framework (see box) within which the different concepts can be logically related to each other.

Existing Auditing Systems

The forest management auditing systems currently employed by forest administrations in ITTO producer member countries tend to cover

only some of the elements of SFM. In those countries where forest legislation has not been updated recently, the relevance of auditing criteria is sometimes questionable. This can lead to the ineffective use of scarce human and financial resources allocated for supervision and control. In some cases, strict adherence to bureaucratic requirements and cumbersome procedures could easily lead more to corruption than to effective law enforcement.

We draw several conclusions from our review of the public sector audit systems in the countries participating in the survey:

- 1) current auditing systems are generally inadequate for the effective monitoring of forestry legislation enforcement in general and of SFM in particular;
- 2) however, considerable progress is being made to broaden the scope of public sector forest management auditing. The underlying normative manuals, handbooks and other similar guidance documents play an important role in this;
- 3) audit criteria do not yet cover all the necessary elements for assessing SFM. So far only (Peninsular) Malaysia has made a comprehensive systematic effort to this end; and
- 4) there is a growing tendency in public forestry for outsourcing, which can be expected to include auditing services as well. However, external auditing for other than certification purposes has been rare to date.

Problems Related to Auditing Systems

Countries face serious problems in implementing their public sector auditing systems for forest management, even if they have an adequate regulatory framework and appropriate procedures to audit its implementation.

The main problem areas are:

- i) the limited financial resources of the forest authority;
- ii) inadequate quality of human resources;
- iii) weak normative frameworks; and
- iv) inadequate systems for the collection and maintenance of information.

Clearly, the key issue is funding: this was identified (either directly or indirectly) as a major constraint by all countries involved in the study.

Hierarchical Framework for the Application of SFM Audit Criteria

- A **goal** is an overall objective of a standard: eg SFM or well-managed forests.
- A **principle** is a fundamental law or rule, serving as a basis for reasoning and action. Principles have the character of an objective or attitude concerning the function of the forest ecosystem or a relevant aspect of the social system that interacts with the ecosystem. Principles are explicit elements of a goal.
- A **criterion** is a state or aspect of the forest ecosystem, or a state of the social system, which should be in place as a result of adherence to a principle. A criterion states the requirement against which conformity assessment is made. The criterion may demand a specific level of performance (performance criterion) or state requirements of the management system (management system criterion).
- An **indicator** is a quantitative or qualitative parameter that can be assessed in relation to a criterion. It describes in an objectively verifiable and unambiguous way features of an ecosystem or the related social system, or it describes elements of prevailing policy and management conditions and human-driven processes indicative of the state of the ecosystem and of the social system.
- A **norm** is the reference value of an indicator and is established for use as a rule or a basis for comparison. Comparing the norm with the actual measured value demonstrates the degree of fulfilment of a criterion and compliance with a principle.
- A **verifier** is the source of information for an indicator or for the reference value of an indicator.

Source: Lammerts van Bueren, E. & Blom, M. 1997: *Hierarchical framework for the formulation of SFM standards*. Tropenbos Foundation, Amsterdam.

Voluntary Certification Schemes

We reviewed the auditing arrangements of nine planned or operational national certification schemes and the two existing international schemes (the Forest Stewardship Council and the Pan European Forest Certification program). We conclude that:

- many schemes have only recently reached an operational status;
- there is considerable commonality between schemes in their certification/auditing procedures;
- the audit criteria are generally derived from, or referenced to, an appropriate international or regional set of C&I for SFM (such as that of ITTO) covering the various aspects of SFM;
- some audit criteria address the management system in a comprehensive way, but others only partially;
- there are important differences between the schemes in, for example, how the performance requirements have been developed and the degree to which sources of data, means of verification and the audit procedures are specified;
- the general provisions for data collection are largely similar, including documentation review, consultations and field observations;
- the definition of the unit to be audited varies depending on country conditions: it can be a forest management unit, a defined forest area, an organisation and its activities in a defined area, or an area covered by a group of forest owners;
- the frequency of baseline audits varies from three years upwards, five years being a typical case;
- almost all schemes rely exclusively on an external third party in audit work;
- schemes have varying definitions of what constitutes a competent auditor;
- with the exception of the Forest Stewardship Council, all schemes draw on or intend to draw on national accreditation bodies either as part of ISO 14001 accreditation or by other means; and
- some schemes include provisions for chain-of-custody verification/certification.

Certification of EMS

Most of the developments in forest certification have focused on market-oriented performance-based schemes, but certifications to the ISO 14001 Environmental Management System (EMS) standard are spreading among forest organisations worldwide. The boundaries, however, are not clear-cut. Performance-based systems tend to include many management system elements, whilst the ISO 14001 requires

that organisations have to define their *own* environmental performance requirements. A certified management system facilitates the verification of many performance requirements.

Requirements for Reliable Auditing Systems

Reliable auditing systems aimed at verifying SFM should be:

- comprehensive in the coverage of auditing criteria;
- objective in assessment;
- repeatable and consistent in results;
- flexible enough to apply in different forest types and under varying physical, social and economic conditions;
- applicable at the forest management unit level or to a regional grouping of such units;
- adapted to local institutional and organisational structures; and
- cost-efficient.

Elements of Reliable Auditing Systems for SFM

Essential elements of reliable auditing systems for SFM include:

- a clear conceptual framework for the principles, criteria, indicators, verifiers and means of verification covering all the necessary aspects of SFM, within the framework of an internationally agreed set such as the ITTO C&I;
- a guide or manual for the implementation and application of audit criteria in practice;
- an appropriate transparent scoring and weighting system with which to summarise the results of assessment on individual criteria and indicators – weights to be assigned can be derived from policy objectives and stakeholder views;
- a comprehensive, structured audit procedure tailored to local institutional and organisational structures. In Figure 1, we propose a reasonably comprehensive, general procedure which could be used as a reference for both internal and external audits. It could be tailored to specific country conditions and streamlined as appropriate; and
- an adequate pool of competent auditors with specified qualifications and provisions to ensure that they are institutionally and economically independent of the auditees.

Options for Further Action at the International Level

ITTO producer member countries will need further assistance in their efforts to achieve the sustainable management of their forests. As regards auditing systems, three areas of possible future action at the international level are proposed: policy development; training; and technology and system development.

Policy development

ITTO could provide two additional policy-level instruments to help countries develop their own C&I, integrate these into their planning, monitoring and evaluation activities, and develop voluntary certification/verification systems for SFM. These are:

- **A guide to the development of national C&I for SFM at national and forest management unit levels:** Malaysia's experience in developing C&I shows that interpreting the ITTO C&I in the national context is a demanding exercise where external guidance could be helpful; and
- **Guidelines (or manual) for the auditing of ITTO C&I:** Such a document is needed to help countries develop their own auditing systems, whether they are implemented by the forestry organisations themselves or by external auditing bodies. The purpose would be to explain the necessary elements of effective auditing systems to ensure consistency of assessment results and the transparency and reliability of the audit/evaluation processes. The need for such an instrument was apparent in many country responses to our survey.

These two instruments would not only be useful for individual countries in developing their monitoring and evaluation procedures but would also improve the comparability between countries of information on the state of forest management.

Training

A lack of trained auditors is one of the key bottlenecks in the implementation of effective auditing systems in the public sector. Two challenges need to be addressed:

- 1) to create in each country a pool of specialists capable of auditing environmental and social aspects of SFM; and
- 2) to reorient the focus of auditing work from documentation review to field checks and interviews with operators and stakeholders.

Meeting these needs will require the implementation of national programs to train staff and specialised auditors. Such efforts would benefit from the preparation of common training materials and regional-level courses to train trainers.

Technology and system development

A wide range of new or improving technologies – such as remote sensing, geographic information systems, global positioning systems, automatic data-recording through hand-held computers, the digitised tracking of timber flows from the forest to the users – holds the promise of improved cost-

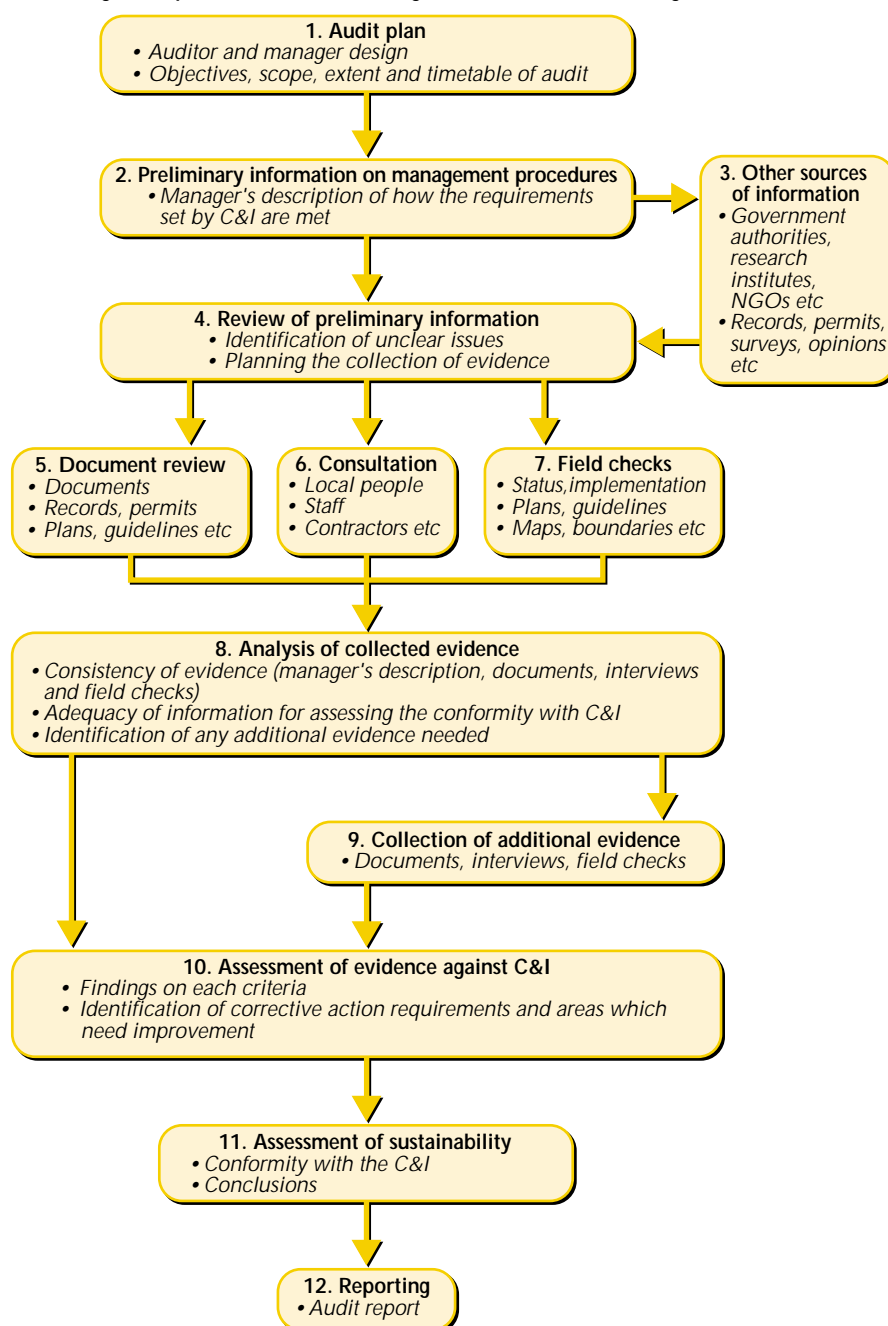
effectiveness in forest sector audit work. Further studies and development work will be needed in this field to: 1) review and exchange experience on the use of these technologies; and 2) take these tools into use as elements of credible auditing systems for SFM.

Options for ITTO Members

We suggest that ITTO producer member countries could take eight actions to improve their auditing systems for SFM. These are:

- 1) the development of national C&I for SFM, based on the ITTO C&I, to serve as a basis for both internal and external auditing;

Figure 1: A general procedure for the auditing of sustainable forest management



The Kyoto Protocol, ITTO and Tropical Forests

The next meeting of the parties to the Framework Convention on Climate Change takes place in November. The outcomes of the meeting could have major implications for tropical forests

By Nigel Asquith

Center for International Forestry Research, PO Box 6596 JKPWB, Jakarta 10065, Indonesia; Tel 62-251-622 622; Fax 62-251-622 100; Email n.asquith@cgiar.org

The global community's response to the threat of climate change was the Kyoto Protocol, signed in 1997 within the Framework Convention on Climate Change. This Protocol commits developed countries to reducing their net greenhouse gas emissions (which primarily means CO₂) to five per cent below 1990 levels by the period 2008–12. While many countries have signed the Protocol, few have ratified it, so it is still far from being international law. It will only become law when 55 countries ratify, with the caveat that these 55 countries must collectively account for at least 55 per cent of the developed world's emissions.

'One reason why there is so much interest in forests is that most observers suggest that carbon sequestered by forestry activities will be far less expensive than carbon sequestered by controlling energy emissions.'

The Protocol incorporates a number of flexible mechanisms by which net reductions in emissions of greenhouse gases may be accomplished. The one that most interests tropical foresters is the Clean Development Mechanism (CDM). This mechanism, covered in Article 12 of the Protocol, will allow developed countries to invest in reducing or preventing greenhouse gas emissions in the developing world. In return for this investment – an investment that under CDM rules should help contribute to sustainable development in the host country – the investors get to keep the carbon credits, and can sell them or count them against their own emissions.

Forests are not explicitly mentioned in the CDM and so their role remains ill-defined. The decision of whether, how, and what types of forest projects may be included in the CDM is due to be taken this November. Many questions thus remain about how the Kyoto Protocol will affect ITTO members.

For a moment, let's assume that tropical forests are somehow included in the Protocol. Forest carbon will thus be a commodity produced locally and sold globally, with a price that varies with the price of energy sector alternatives. One reason why there is so much interest in forests is that most observers suggest that carbon sequestered by forestry activities will be far less expensive than carbon sequestered by controlling energy emissions. A common estimate is that carbon will have a market price of between US\$10 and US\$30 a ton. The cost of producing carbon in forests may be far less than this. A report by the Intergovernmental Panel on Climate Change quotes costs of between US\$0.1 and US\$28 per ton in pilot carbon projects. Any premium that is paid for the carbon storage potential of forests can then help pay for other forest services and products.

There are three ways of producing the forest carbon commodity that may concern ITTO members. First, we can remove CO₂ from the atmosphere and sequester carbon by planting more trees. Second, we can maintain carbon stocks and prolong carbon storage in biomass through activities such as reduced impact logging. Third, and perhaps most cost-effectively of all, we can prevent emissions of CO₂ by conserving or protecting forests. Each and all of these activities may or may not be included in the CDM.

Continued ➔

Our world is getting warmer. The best available science suggests a strong and direct link between the observed gradual increase in average global temperatures and increased levels of greenhouse gases such as methane and carbon dioxide (CO₂) in the atmosphere. While most scientists agree that global warming is real, they are still debating the severity of the problem. It seems likely that warming will increase the frequency of extreme weather and cause major changes in patterns of primary production. Indeed, the predicted weather extremes already appear to be occurring.

Continued from previous page

- 2) the development of guidelines for the interpretation and application of audit criteria;
- 3) the establishment of appropriate auditing procedures;
- 4) the effective organisation of audit function within the forest authority, to:
 - avoid the dependence of the auditors on the auditees
- rotate personnel over districts/regions
- introduce an element of unpredictability in field audits;
- 5) definition of qualifications for auditors of forest management;
- 6) the establishment and maintenance of registers of qualified auditors;
- 7) the organisation of adequate further training for auditors of SFM; and
- 8) the promotion of forest certification systems to complement public sector SFM auditing. ■

Pilot Projects

Since the Kyoto Protocol was signed, a number of pilot projects have attempted to assess the feasibility of using forests to produce the carbon commodity. We can learn some important lessons from the experiences of these projects.

Bolivian conservation

The largest forest carbon project in the world is in Bolivia. The expansion of the Noel Kempff Mercado National Park resulted in the conservation of 7–14 million tons of carbon at a cost of US\$9.5 million – which is more-or-less US\$1 per ton. So, if a carbon market develops under the CDM and the average price is the projected US\$10–30/ton, then the Noel Kempff forest conservation project seems likely to provide a significant economic return for the investors. The project included compensation for the concessionaires who owned the logging rights in what is now the expanded park, and the project has been working with locals to improve the sustainability of forest management just outside the park.

For a completely different type of forest carbon project we can consider the Innoprise reduced impact logging and enrichment-planting project in Sabah, Malaysia (see, for example, *TFUs* 4:3 and 6:3). This project has shown that reduced impact logging can prevent the release of 80 tons of carbon per hectare in the first two years post-harvest and that enrichment planting is expected to offset 100 tons of carbon per hectare per year over a 60-year rotation. If the price of carbon is US\$10 per ton, then enrichment planting could earn an additional US\$1,000 per hectare per year.

As mentioned already, under the provisions of the CDM these types of carbon project would be obliged to contribute to sustainable development in the host country: the CDM will not be a free ride for investors. However, defining what exactly is meant by sustainable development is a difficult question, and rules have not yet been set to suggest how to, or who should, define sustainable development in the CDM.

Kyoto and Tropical Forests

How will Kyoto affect ITTO members? The answer depends on the role of forestry in the CDM. If forests are not included, then Kyoto will have no real impact on tropical timber

producers. If they are included, then the CDM could increase funding opportunities for tropical forest management.

For example, CDM funds could pay for additional forest monitoring, because countries will have to keep track of their carbon stocks. The CDM could provide incremental costs for improved or innovative management that protects carbon – such as reduced impact logging or sustainable forest management. The CDM may allow the moving of some areas from production into protection, it could encourage more plantations, and it could provide greater opportunities for wood energy development.

‘... if a project pays for improved forest management but the concessionaire uses the money saved to cut a new area of forest unsustainably, then the project will not contribute to real emissions reductions. The funding will have ‘leaked’ out of the project and caused emissions elsewhere.’

Additionality and Leakage

Two concepts will be critical if forest carbon is included in the CDM. The first is ‘additionality’. If a forest carbon activity – such as reduced impact logging or conservation – is to gain CDM credits, and hence any funding, reductions in emissions must be “additional to any that would occur in the absence of the project activity”. In other words, there’s no money for nothing. If reduced impact logging is economically feasible in a concession and could be done without carbon funding, the project will not be eligible to receive carbon credits. Similarly, carbon credits will not be awarded for protecting a patch of forest in the middle of a national park that would have been protected anyway. Any activity must be additional to ‘business as usual’. Otherwise, it would not be sequestering ‘new’ carbon and so would not help reduce global warming.

Equally important in the CDM is the idea of leakage. Consider a project that protects a tract of forest from logging. This will not reduce net

carbon emissions if the concessionaire simply moves on to the next tract of forest and cuts that instead. This is ‘leakage’ of project impact. Similarly, if a project pays for improved forest management but the concessionaire uses the money saved to cut a new area of forest unsustainably, then the project will not contribute to real emissions reductions. The funding will have ‘leaked’ out of the project and caused emissions elsewhere. To qualify for the CDM, reductions in emissions must have real, measurable and long-term benefits related to the mitigation of climate change.

The two issues of additionality and leakage are technically measurable and so resolvable, but they are worth highlighting. Again, perhaps the appropriate bottom line to stress is that there will be no CDM money without the sequestration of additional carbon or its measurable protection.

The Current State of Play

The Intergovernmental Panel on Climate Change has just released a major report about the CDM and forestry and land-use change. This report is not policy prescriptive but highlights the main issues and the state of the science. Technical meetings this summer discussed the report’s findings. Major decisions are expected to be made about forestry and land use in the CDM at the next meeting of the Kyoto parties in November.

The CDM is the key to the involvement of tropical timber producers and ITTO members in the Kyoto Protocol. If CDM forestry is allowed, additional forest management activities that sequester carbon, such as reduced impact logging and sustainable forest management, may be funded. But if forests are not included in the CDM, tropical forests will be largely unaffected by the Kyoto Protocol. ■

Based on a presentation made to the 28th Session of the International Tropical Timber Council in Lima, Peru last May.

Briefing on ITTO's Project Work

The projects and pre-projects described below were all financed at the 28th session of the International Tropical Timber Council held in Lima, Peru last May

Implementing agency: National School of Forestry (ENEF)

Funding countries: Japan, USA

The objective of this three-year project is to establish a demonstration area of about 100,000 hectares with an operational forest concessionaire, where activities leading to sustainable forest management can be tested and demonstrated. This demonstration area will also provide training for national staff and generate additional information on sustainable forest management.

Implementation of a management plan by the Chiquiaca and Orozas communities in Tarija, Bolivia (Bolivia; PD 44/99 Rev.2 (F))

Budget: ITTO:	US\$285,589
PROMETA:	US\$62,850
Chiquiaca Community:	US\$58,000
Orozas Community:	US\$58,000
PROBONA:	US\$41,000
Total:	US\$503,789

Implementing agency: Tarija Environmental Protection – PROMETA – in cooperation with Intercooperation/PROBONA

Funding countries: Japan, USA

The Chiquiaca and Orozas communities in Bolivia's Department of Tarija have developed community-based forest management plans. This three-year project will provide technical and financial support to the communities for the legal implementation of their plans, starting with activities in one of each community's micro-watershed areas.

Support to grassroots forestry promotion initiatives in the Yoto area (Togo; PD 51/99 Rev.2 (F))

Budget: ITTO:	US\$243,547
Alternatives (an NGO):	US\$72,000
Beneficiaries:	US\$64,920
Total:	US\$380,467

Implementing agency: Office de Développement et d'Exploitation des Forêts (ODEF)

Funding country: Japan

The Yoto prefecture was in the past a timber-producing area. However, due to demographic pressure (98 people/km²) and intense deforestation for cotton farming coupled with frequent forest fires, the environment has been seriously degraded. This situation has led to climatic disturbances, shortages of timber, a reduction in agriculture yields, and an overall decline in the living standards of the local communities. The aim of this three-year project is to reverse these dramatic trends through a collaborative strategy involving the local communities.

Bi-national conservation and peace in the Condor Range region, Ecuador-Peru: Phase I (Ecuadorian component; PD 2/00 Rev.2 (F))

Budget: ITTO:	US\$701,701
NATURA Foundation:	US\$144,459
Ministry for the Environment:	US\$20,000
Conservation International – Peru:	US\$60,000
Total:	US\$926,160

Implementing agency: Ecuadorian Ministry for the Environment in cooperation with the NATURA Foundation and Conservation International – Peru and with the participation of local organisations

Funding countries: Japan, USA

The peace treaty signed between Ecuador and Peru in 1999 led to the establishment of an ecological conservation area in the Condor Mountain Range region. This is designed as a mechanism to both settle the conflict and promote the development and integration of the peoples of these two neighbouring countries. This three-phase, five-year project will generate a participatory environmental management model for the region.

Bi-national conservation and peace in the Condor Range region, Ecuador-Peru: Phase I (Peruvian component; PD 3/00 Rev.2 (F))

Budget: ITTO:	US\$701,502
INRENA:	US\$20,000
CI Peru:	US\$130,831
Total:	US\$852,333

Implementing agency: INRENA in cooperation with Conservation International – Peru and with the participation of local organisations

Funding countries: Japan, Switzerland, USA, Korea

The first phase of this five-year project will develop a participatory quantitative and qualitative information model for the Santiago-Comaina Reserved Zone and surrounding areas on the border between Ecuador and Peru through the use of land-use maps, biological inventories and monitoring programs.

Biodiversity management and conservation in a forest concession adjacent to a totally protected area (Nouabale-Ndoki National Park), northern Congo (Congo; PD 4/00 Rev.1 (F))

Budget: ITTO:	US\$1,022,084
Gov't of Congo:	US\$222,000
World Conservation Society:	US\$634,400
CIB:	US\$410,900
Total:	US\$2,289,384

Implementing agency: World Conservation Society

Funding countries: Switzerland, Japan, France, USA

The objective of this three-year project is to plan and implement participatory management of the buffer zone (1,385,800 hectares) adjacent to the Nouabale-Ndoki National Park (390,000 hectares) for sustainable timber production and biodiversity conservation.

Management of the Phatam Protected Forests Complex to promote cooperation for trans-boundary biodiversity conservation between Thailand, Cambodia and Laos (Phase I) (Thailand; PD 15/00 Rev.2 (F))

Budget: ITTO:	US\$629,624
Gov't of Thailand:	US\$281,430
Total:	US\$911,054

Implementing agency: Royal Forest Department

Funding countries: Japan, Switzerland, USA, France

Establishment and management of production-protection community forests in lower and middle Atrato, Department of Choco, Colombia (Colombia; PD 20/99 Rev.2 (F))

Budget: ITTO:	US\$559,493
Convenio Maderas del Darien – Communities – Codechoco:	US\$256,740
Total:	US\$816,233

Implementing agency: Colombian Reforestation Association (ACOFORE)

Funding countries: Japan, USA

This three-year project is aimed at the establishment and management of 2,000 hectares of protection-production plantations on lands granted by the Colombian government to communities in the Domingodó-Truandó area.

Development of a demonstration area in the sustainable management of Gabonese forests (Gabon; PD 8/98 Rev.4 (F))

Budget: ITTO:	US\$458,695
Gov't of Gabon:	US\$377,930
Total:	US\$836,625

This two-year project will develop a strategy for transboundary biodiversity conservation and prepare a management planning system for the Phatam Protected Forests Complex in northeastern Thailand.

Non-timber production and sustainable development in the Amazon (Brazil; PD 31/99 Rev.3 (I))

Budget: ITTO: US\$387,185
 UnB: US\$120,000 (in kind)
 IBGE: US\$104,000 (in kind)
 ABC/UAP: US\$30,000 (in kind)
 Brazilian Service for Small-size and Medium Enterprises: US\$14,000 (in kind)
Total: US\$655,185

Implementing agency: University of Brasilia
Funding country: Japan, Switzerland

This 24-month project will continue research and extension work on promotion of non-timber production in the Amazon initiated under ITTO project PD 143/91 Rev.2 (I) 'Non-wood tropical forest products: processing, collection and trade'. It will collect and make available comprehensive socioeconomic and technological information on non-timber production in the Amazon. It will also add to a Portuguese-language database of Amazonian non-wood forest products.

Processing and utilisation of almaciga (*Agathis philippinensis* Warb.) resin as a source of industrial chemicals (Philippines; PD 36/99 Rev.4 (I))

Budget: ITTO: US\$342,743
 Gov't of Philippines: US\$381,000
Total: US\$723,743

Implementing agency: Forest Products Research and Development Institute
Funding countries: Japan, Switzerland

The specific objectives of the project are to study the technical and economic aspects of refining crude almaciga resin at a pilot scale and to develop industrial chemicals from refined resin. The project will involve the promotion and transfer of improved tapping techniques for almaciga resin and development work for increased and further processing of the resin into higher value products in order to promote development opportunities and income in almaciga-producing forest communities.

Development and extension of preservation technology of tropical plantation timber (China; PD 52/99 Rev.2 (I))

Budget: ITTO: US\$166,690
 GDFRI: US\$142,500
Total: US\$309,190

Implementing agency: Guangdong Forest Research Institute (GDFRI)
Funding countries: Japan, USA

This 30-month project will study and disseminate timber processing and utilisation technologies for plantation timber to improve the efficiency of the wood processing industry. Research work will focus on the development of appropriate preservation standards and drying procedures for plantation timber such as *Eucalyptus urophylla* and *Acacia mangium*.

Sustainable management and utilization of sympodial bamboos in south China (China; PD 10/00 Rev.2 (F,I))

Budget: ITTO: US\$482,452
 Gov't of China: US\$231,600
Total: US\$696,052

Implementing agency: The Research Institute of Subtropical Forestry, Chinese Academy of Forestry
Funding countries: Japan, Australia, Republic of Korea

This 36-month project will develop and disseminate knowledge and technologies to promote the sustainable management and efficient utilisation of sympodial bamboo. This kind of bamboo is distributed widely in southern China. The project will establish a conservation garden of sympodial bamboo genetic diversity based on an analysis of the genetic resource and identify two 1,000-hectare experimental and demonstration areas for the implementation of high-yield and sustainable management models.

Training workshop on further processing of tropical timber in the Asia-Pacific region (Republic of Korea; PD 20/00 Rev.1 (I))

Budget: ITTO: US\$192,432
 KFRI: US\$34,600
Total: US\$227,032

Implementing agency: Korean Forestry Research Institute (KFRI)
Funding countries: Japan, USA, Australia

This 18-month project will organise and conduct a regional training workshop on further processing of tropical timber in the Asia-Pacific region in Seoul, Korea, with a view to promoting value-added manufacturing opportunities for tropical timber.

Improvement of sustainable management and utilization of tropical non-timber forest products (NTFPs) in Cambodia (Cambodia; PPD 1/00 Rev.1 (I))

Budget: ITTO: US\$77,648
 Gov't of Cambodia: US\$13,000
Total: US\$90,648

Implementing agency: Department of Forestry and Wildlife
Funding countries: Japan, USA, France

This six-month pre-project will assess the current situation of production, utilisation and trade of tropical non-timber forest products (NTFPs) in Cambodia, with a view to formulating a project proposal for improving the sustainable management and utilisation of NTFPs for consideration by the International Tropical Timber Council.

Formulation of a project proposal to support the sustainable development of small forest industries (Peru; PPD 6/00 Rev.1 (I))

Budget: ITTO: US\$57,323
 Gov't of Peru: US\$16,300
Total: US\$73,623

Implementing agency: National Institute for Natural Resources (INRENA)
Funding countries: USA, Switzerland

This pre-project will compile supplementary information regarding portable sawmills. This will include information on the institutional planning of forest areas allocated as long-term concessions and for small-scale timber extraction, associated land tenure issues for both categories of areas, the experience gained through the operation of portable sawmills, and the technical characteristics of portable sawmills and timber resources.

Continued →

Ex-post evaluations to increase

The International Tropical Timber Council decided in May to increase the ex-post evaluation of projects. This is the process of examining a project after its completion for the purposes of assessing its impact, effectiveness and efficiency and drawing conclusions for similar actions in the future. To date, six projects have been subject to ex-post evaluation (Table 1). Under the latest Council decision, a separate pool of funds to finance ex-post evaluation has been created and should allow the number of such evaluations to increase significantly.

Table 1: Ex-post evaluations of ITTO projects

Project number	Project title	Completion year	Ex-post evaluation year
PD 37/88 Rev.3 (I) (Peru)	Industrial use of forest species in Peru (phases I & II)	1993	1998
PD 47/88 Rev.3 (I) (Philippines)	Utilization of lesser-used species in Peru (phases I & II)	1998	2000
PD 5/94 Rev.3 (M) (Ghana)	Development of a computerized information system for the Forestry Commission of Ghana	1999	1999
PD 29/96 Rev.1 (M) (Gabon)	Reinforcement of the national system for the collection and processing of forest statistics and support for the training of field units	1998	1999
PD 167/91 Rev.1 (M) (Brazil)	Diagnosis and evaluation of the Brazilian forestry sector	1998	2000
PD 63/89 Rev.3 (I) (Philippines)	Low-cost houses from small diameter trees, plantation thinnings and tree tops and branches	1994	1998

Sustaining Non-Timber Extraction

Predictions that forest extractivists are doomed to economic extinction may be premature

by Vag-Lan Borges

Researcher and consultant on the non-timber economy of the Brazilian Amazon rainforest; Email vaglan@tba.com.br



Better marketing of non-timber forest products such as this Amazonian soap will help extraction-based activities compete with mass production. The improved (and more marketable) product on the left was manufactured using a simple technique developed under ITTO project PD 143/91 Rev. 2 (I). Photo: A. Sarre

Tappers, collectors and many other forest-dwelling extractivists throughout the world continue to work in the forest in defiance of economic theories. On the one hand, economists say that forest extractors will be put out of business by mass production. On the other, such extractors continue, apparently, to earn a living from their activities. Is forest extraction really doomed? Or is there a new way?

This article has two purposes. First, it aims to show that emerging markets offer a high-

value niche for non-timber forest products. Second, it addresses the institutional reforms that need to take place to ensure that non-timber forest products are able to flourish in today's global economy.

The Failure of Neo-classical Economics

Neo-classical models hold that non-timber forest products will be substituted by mass-produced alternatives based on the relative productivity of capital and labour (Homma

Continued from previous page

Capacity building in training in planning and management of forest industries in ITTO producer member countries (PD 13/95 Rev.3 (I) Phase II)

Budget: ITTO: US\$442,261
Total: US\$442,261

Implementing agency: FTP International Ltd
Funding countries: Japan, Finland

This project builds on an earlier project and an earlier phase of the current project. Its objectives are: to develop the curricula of selected training institutes for ongoing training activities; to improve the capacity of resources persons in ITTO producer member countries in the planning and management of appropriate forest industries and in the planning and management of training courses on the same subject; and to produce material necessary for self-studying and training courses.

Establishment and operation of a forest strategic information centre (CIEF) (PD 27/95 Rev.3 (M) Phase II, Stage II; Peru)

Budget: ITTO: US\$462,062
INRENA: US\$301,216
Total: US\$763,278

Implementing agency: INRENA
Funding country: Japan

This is the final stage of a five-year project to establish a forestry statistical information system in Peru. It will extend the system to all regional nodes throughout Peru (currently, three nodes are operational) and link all regional forestry offices electronically with INRENA's headquarters in Lima. Several training workshops for users and operators of the system are also planned.

Establishing a data collection and dissemination system on a sustainable basis for timber marketing statistics in Cameroon (Cameroon; PD 47/98 Rev.2 (M))

Budget: ITTO: US\$271,198
Gov't of Cameroon: US\$54,400
Total: US\$325,598

Implementing agency: Office National de Developpement des Forêts (ONADEF)
Funding country: Japan

This 20-month project aims to establish a permanent structure for statistics research and collection on timber marketing in Cameroon. At its completion, a well-established and long-lasting structure will centralise the country's statistical data on timber marketing. ■

1992). Mass-produced alternatives will almost always be cheaper and available more readily and will therefore be chosen by firms and individuals above the natural product extracted from natural forest. Certainly, demand for many non-timber forest products, such as latex, has been observed to fall dramatically in the face of cheap substitutes.

However, such demand rarely declines to zero: local demand, for example, continues to provide a market for most extractivist products (Pérez 1995). In addition, traditional economic models assume that substitutes are identical to the original extractivist product. Such an assumption is flawed.

The New Markets

A non-timber forest product that today rots in the forest may again be traded. Such trading may no longer be stimulated by a spontaneous gross demand from an emerging industrial sector but by market niches which seek such products for their organic and ecological qualities (see Borges 2000). But to bring such non-timber products into the global economy, the management culture must change: new markets have new demands and require new technologies and new organisational structures.

The green and organic markets, like any market segments, will pay according to the quality of the product or service provided to them. Customers in these markets are interested in the exclusive and intrinsic qualities of a non-timber forest product. For organic markets, these qualities include genetic variability, the absence of toxic substances in cultivation, and the fact that such products are native to the area in which they are grown. Green markets value the contribution such products and services make towards the conservation of biodiversity and the protection of the rainforest. It is not philanthropy but a new kind of economic demand. For these markets, non-timber forest products have a real and unique comparative advantage above their so-called substitutes.

In this context, the future of non-timber forest products is not determined by the classical formula of 'cost of production plus intermediary costs and profit rate', but by the willingness to pay for these special qualities above and beyond the price of substitutes. The greater the quantity

and quality of information about the product and its associated services, the more these market segments are willing to pay. So, marketing must be based on information, transparency of the chain of custody, and the credibility of the firm or cooperative responsible for the enterprise. These are the principal tools to be successful in the new markets.

New Policies for NTFP

Such tools can be provided – or at least their introduction can be facilitated – by an improved policy environment. The first step is to regard non-timber forest extraction as a forestry rather than agricultural concern. The second is to put non-timber forest extraction onto the political agenda and within the institutional context of the state. Non-timber forest products must become integrated into mainstream forest policy, to which the state responds with facilities, regulations and the co-ordination of decision-making and policy implementation. An organisational framework resulting from this institutionalisation must respond to four important factors that constrain the performance of this economic sector. It must act to:

- i) improve the flow of information;
- ii) facilitate the spread of technology and rural credit;
- iii) coordinate the design of regulations; and
- iv) assure property rights, land concessions and tenures.

Poor access to information is an important bottleneck in the development of the trade in non-timber forest products. It constrains the capacity of extractors to obtain optimal prices for their products. Often, rural credit is expensive and, frequently, technology does not develop at the necessary pace. While improving information flow, governmental initiatives to organise this sector need to promote the creation and implementation of new technologies to improve market acceptability.

New regulations are also necessary to ensure that each non-timber forest product attains acceptable standards of quality and that the management of the resource is sustainable. Finally, government must provide certainty in the area of property rights, concessions and tenures over natural resource allocations.

Concluding Comment

The non-timber forest product economy can be seen as an affirmative action engaged in by economic, cultural and social minorities throughout the world. The political demands of such people have evolved from land reform into the need for greater ecological responsibility and the creation of economic opportunities.

The question of promoting extractivism is not simply one of economics and politics. Above all, the decision to manage for non-timber forest products is a cultural one. Any democratic society (local, national, international) must take this into account: as Freeman and Carbyn (1988) suggest, assisting non-timber forest product extraction is one way that development projects can foster co-management, fairness and peaceful relations in local communities.

References

- Freeman, M. & Carbyn, L. 1988. *Traditional Knowledge and Renewable Resources Management in Northern Regions*. IUCN, Berne.
- Borges, V-L. 2000. Non-timber economy and markets system. *Non-Wood News Bulletin* No. 7, FAO, Rome.
- Homma, A. 1994. Plant extractivism in the Amazon: limitations and possibilities. In Clüsener-Godt, M. & Sachs, I. (eds). *Extractivism in the Brazilian Amazon: Perspectives on Regional Development*. Man & Biosphere, UNESCO, Paris.
- Pérez, M.R. 1995. *A Conceptual Framework for CIFOR's Research on Non-wood Forest Products*. Working Paper No.6, CIFOR, Bogor. ■

Is restructuring the tropical plywood sector necessary in the face of declining prices?

by Michael Adams

ITTO Secretariat

The lack of any sustained recovery in tropical plywood prices is cause for serious concern. Poor prices have already forced the closure of many tropical hardwood plywood mills and most others are having to sell at close to production cost.

Figure 1 shows that prices for plywood plummeted in 1997, particularly for Southeast Asian supplies. Prices had steadied by mid 1998 and by early 1999 there were hints of a recovery. But this year such hints have evaporated, with Southeast Asian and Brazilian plywood moving slowly but inexorably down. Today, prices are still some 40 per cent below 1997 levels.

Why the Weak Recovery?

Tropical log and sawnwood prices have generally recovered to January 1997 levels (or above) and the trade is reasonably optimistic about these two commodities. So why is plywood the poor relation? There is no single answer to

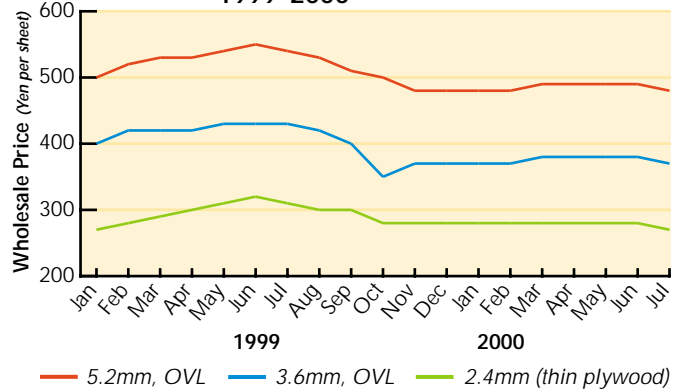
this question; rather, a number of factors are combining to thwart a sustained recovery for the product. These include:

- weak demand in Japan, Korea and Southeast Asian consumer countries in the face of a continuing flat construction sector in these markets;
- the recent change of import tariff structures in China, which favours log imports over plywood;
- fears, particularly in Europe, of uncertain supply, especially in relation to log shortages in Indonesia;
- a move towards manufacturing from softwood logs in some consumer countries; and
- strong competition from other wood-based panels and an apparent global oversupply.

Almost all plywood prices – not just tropical – have weakened. In Japan, strong competition and lower demand saw import volumes fall quite heavily in the April/May period; they remain well below levels achieved early last year.

The proportion of softwood plywood made in Japan continues to increase and, in the region generally, the use of softwood plywood is

Figure 2: Tropical plywood prices in Japan, 1999–2000



growing strongly. Japanese plywood manufacturers are still in the position of too much product chasing a stagnant market, with official forecasts of housing starts suggesting another flat year.

Trends in wholesale prices for common panels in the Japanese market are shown in Figure 2. The current price for the benchmark imported 2.4 mm thin ply in Japan is down to ¥280 per sheet, a fall of ¥20 per sheet in the past three months.

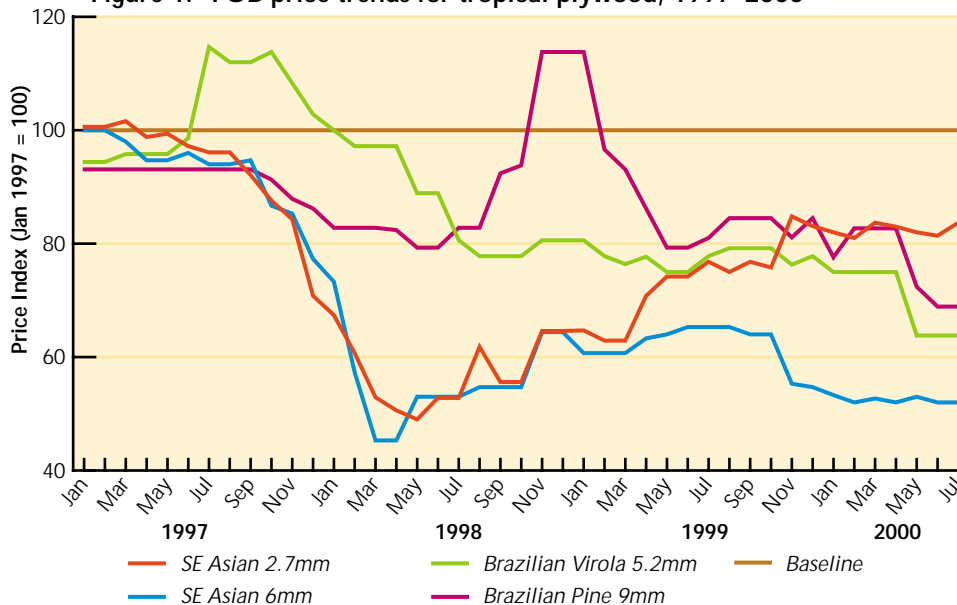
Efforts by the ASEAN Panel Products Federation (APPF) to stabilise prices by harmonising Indonesian and Malaysian price lists have not been successful, with traders still quoting on Indo '96 rather than the new APPF 'Index 2000'. Many Indonesian producers are facing difficulties and the market prospects are distinctly uncertain.

China's Change of Strategy

In 1995, China imported a massive 2.06 million m³ of tropical plywood, making it the second largest importer after Japan. Import levels fell marginally in 1996 and again in 1997, only to rise above the 2 million m³ mark again in 1998.

Continued ➔

Figure 1: FOB price trends for tropical plywood, 1997–2000



Tropical Timber Market Information Service

The ITTO Secretariat issues a two-weekly bulletin by email on tropical timber market trends and trade news from around the world. It contains prices for over 400 tropical timber and added value products and a range of other relevant information. To subscribe, write to Mike Adams at itto-mis@itto.or.jp or see the bulletin on the web at www.itto.or.jp

Predicting tropical timber prices is an inherently difficult task

By Jairo Castaño

ITTO Secretariat, Yokohama, Japan

ITTO is often asked to undertake outlook analyses as part of its general analysis of trends in the tropical timber trade. Such analyses are essential for providing intelligence on international tropical timber markets, thereby allowing traders and decision-makers to distinguish changes in consumer demand and trade patterns.

Continued from previous page

At that time, given the growth forecasts for the country and its policy of reducing domestic felling for environmental reasons, there was every reason to believe imports of plywood would continue to grow. But it was not to be. In 1999 the government introduced sweeping changes to its import tariff structures which gave an immediate advantage to log imports over plywood imports. This precipitated a dramatic shift away from imported tropical panels, the volume falling to only 1.15 million m³ last year.

China is thought to consume upwards of nine million m³ of plywood a year, of which about 25 per cent (tropical and temperate combined) is now imported. A growing proportion of the balance is produced domestically, much of it from softwoods given a hardwood surface veneer.

Brazilian Pine Prices Collapse

The virtual collapse of Brazilian softwood ply in May (see Figure 1) has had a domino effect on plywood and other panel price structures in the European Union, where most buyers have become extremely cautious. The effect has been to drive Indonesian panel prices to around Indo '96 -20 to -22, while prices for US hardwood plywood and oriented strandboard (OSB) have also been affected.

But price outlook analysis is an inherently difficult task: if markets were easy to predict, more of us would be millionaires by now. The ITTO Secretariat undertook a preliminary price outlook analysis for ITTO benchmark products covering the last quarter of 1999 and all 2000, the results of which were published in the *Annual Review and Assessment of the World Timber Situation, 1999*. This article evaluates the accuracy of some of the predictions contained in that analysis, carries out a new price outlook analysis with recent data, and discusses the value of such outlooks in the tropical timber marketplace.

Evaluation of the 1999 Price Outlook

The analysis forecast prices for two benchmark log species, three benchmark sawnwood species and two benchmark plywood products. The forecasts were based on real prices obtained from the nominal price series reported

biweekly by the ITTO *Tropical Timber Market Information Service*.

The analysis was carried out independently for each species by means of an auto-regressive integrated moving-average (ARIMA) model (Box and Jenkins 1976; see also Appendix 5 in ITTO 2000). This model assumes that price series are the result of a linear combination of previous behaviour (auto-regressive component) and past prediction errors (moving-average component). Prior to the analysis, real price series were differenced¹, if required, to correct for trends and seasonality.

For the purpose of evaluating the accuracy of the forecasts, the discussion here will be limited to two benchmark tropical timber products. While the results differed between products and between species within a product, the conclusions are similar in all cases.

Continued ➔

Prices for Brazilian pine plywood have dropped from US\$260 and above at the start of the year to below US\$220 fob for 18mm CC repaired material, with some contacts even putting the level below US\$200/m³. The trade laments that the Brazilians are producing at a price almost on a par with the minimum OSB price and buyers are worried about just how long they can hold prices at these low levels.

Future Prospects

Recently published forecasts of the potential for economic growth in the major tropical timber consumer countries tend to support an optimistic view for an increase in tropical timber consumption. Growth in Europe is forecast at above three per cent for the next two years. Renewed growth in Southeast Asian importer countries and strong growth in Korea should produce a surge in construction activity, although this has been slow in coming in Korea. And, of course, all eyes are on Japan, where there are signs of recovery but where consumer confidence still needs to be strengthened to awaken domestic consumption and lift the housing market.

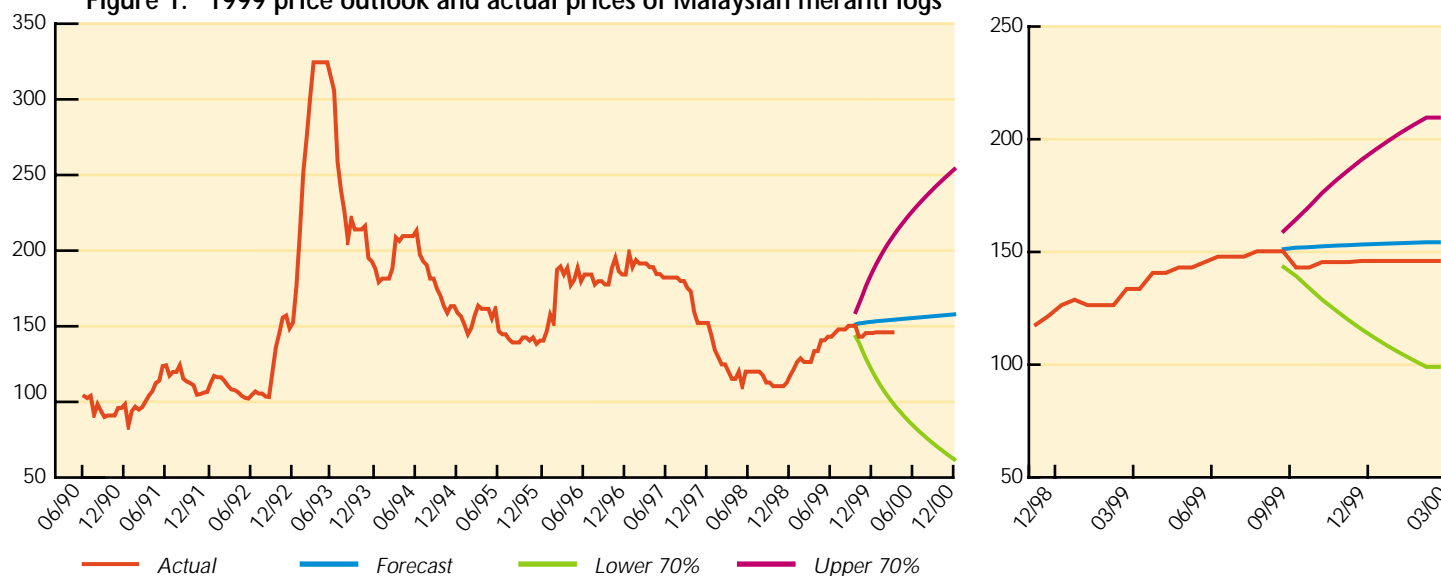
Nevertheless, despite such positive signs, the prospects for tropical plywood remain uncertain: economic factors may boost demand in the short to medium term but there does seem to be a global over-capacity for wood-based

panels which keeps driving prices down for commodity plywood. If these negative market conditions for plywood continue for much longer, commercial considerations will inevitably force a restructuring of the sector. ■

Late Filings

- ◆ **New teak growers' association:** a Swiss enterprise has reportedly agreed to support the development of a TEAK 2000 association in Central America. It will operate from a base in Panama from October.
- ◆ **Brazilian market strong:** domestic demand in Brazil for wood products is generally strong, with an active construction sector and lively demand from value added industries.
- ◆ **Shipping rates surge:** shipping rates have hit a 30-year high, the result of expanding world trade and safety fears that are pushing sub-standard vessels out of commission.
- ◆ **Japan imports Chinese-made thin ply:** Japan Kenzai, the largest building material wholesaler in Tokyo, has started to import tropical hardwood thin ply manufactured in China.
- ◆ **Log imports top 6 million:** the latest Chinese customs statistics reveal that first-half imports in 2000 were 6.35 million m³, up over twelve per cent on the same period in 1999.

Figure 1: 1999 price outlook and actual prices of Malaysian meranti logs



Continued from previous page

Figure 1 shows actual prices² in constant 1990 US dollars per m³, forecast prices for October 1999 to December 2000 and 70 per cent confidence limits for Malaysian meranti logs. Prices are FOB (free on board). The confidence limits demarcate the interval within which the forecast price is likely to fall with a probability of 70 per cent, the confidence level used in other commodity outlook analyses such as those of the World Bank. Figure 2 shows FOB actual and predicted prices and 70 per cent confidence limits for Brazilian mahogany sawnwood.

Figures 1–2 show that in the period October 1999–March 2000, predicted prices for Malaysian meranti logs were similar to actual prices, while prices for Brazilian mahogany sawnwood were comparatively more volatile. Meranti log prices observed the predicted slight upward trend forecast for the period under

review, despite the (unpredicted) drop of October 1999.

A 2000 Price Outlook

With the inclusion of new data up to March 2000, a new price outlook analysis was carried out for benchmark log, sawnwood and plywood products. Table 1 presents forecasts in the form of price ranges for these products for June and December 2000. It indicates that the actual direction of change in prices for most products in June corresponded to the predicted direction of change.

Underlying Uncertainty

The price outlook presented in the 1999 *Annual Review* represented pretty well the behaviour of the benchmark product prices for a short period, although the model failed to predict some short-term fluctuations. However,

the wide margins of error depicted in figures 1 and 2 and in Table 1 suggest a large degree of underlying uncertainty. Figure 1, for example, suggests there is a 30 per cent chance that the price of meranti logs in December 2000 will fall outside the range US\$60–250. Using more recent data, the price range for the same product in December 2000 is still broad (US\$84–231; Table 1). Moreover, because they are based on historical data, the predictions presented here do not – indeed cannot – consider future changes in the markets such as changes in tariffs, market bans, economic booms or financial crises.

Other modelling approaches are possible: subjective forecasting based on experience is undoubtedly the most common approach in the tropical timber trade. Causal models can integrate improved information on economic,

Continued →

Table 1: Price outlook for ITTO benchmark products (nominal US\$/m³)

Product	Grade	Country	March 2000	Forecast for 2000*		Predicted direction of change	Actual direction of change (June)
				June	December		
Logs							
Sapelli/sapele	Loyal et Marchand/FAQ	Cameroon	295	264–312	248–324	↓	↓
Meranti	Standard	Malaysia	155	122–190	84–231	↑	↑
Sawnwood							
Mahogany/acajou	Loyal et Marchand/FAQ	Ghana	615	568–636	552–652	↓	↓
Dark red meranti	Selects & better, kiln-dried	Malaysia	425	377–473	343–507	→	↓
Mahogany	Firsts and seconds	Brazil	1,100	1,070–1,144	1,057–1,188	↑	↑
Plywood							
White virola (5.2mm)	OV2 MR	Brazil	265	231–283	199–288	↓	↓
Concrete form panel (12mm)	B/BB MR	C&F Japan from Indonesia	325	283–359	241–412	→	↓

*Price ranges demarcate the interval within which the forecasted price is likely to be with a probability of 70 per cent

Success and Responsibility in the Tropical Timber Market



Exporters should focus on value-added markets, ensure that timber is legally sourced and improve trade data

by Steven Johnson

ITTO Secretariat, Yokohama

At the 28th Session of the International Tropical Timber Council (ITTC) in May 2000, the Annual Market Discussion addressed the question of what it takes to be both successful and responsible in the tropical timber market. Some insight into what it takes to be successful can be gained by looking at trends in the tropical timber trade. On the responsibility side, a minimal requirement is that timber be obtained from legal sources. A starting point for ascertaining this is good trade data – but many exporting and importing countries are still some way from achieving this.

Primary Trade Declining

Figure 1 presents something of a gloomy picture for the trade of primary tropical timber products. It shows that the combined import value of logs, sawnwood, veneer and plywood by ITTO consumer countries dropped almost 40 per cent in the decade to 1998. Preliminary data suggest that imports recovered to about US\$9 billion in 1999 and stabilised in 2000. However,

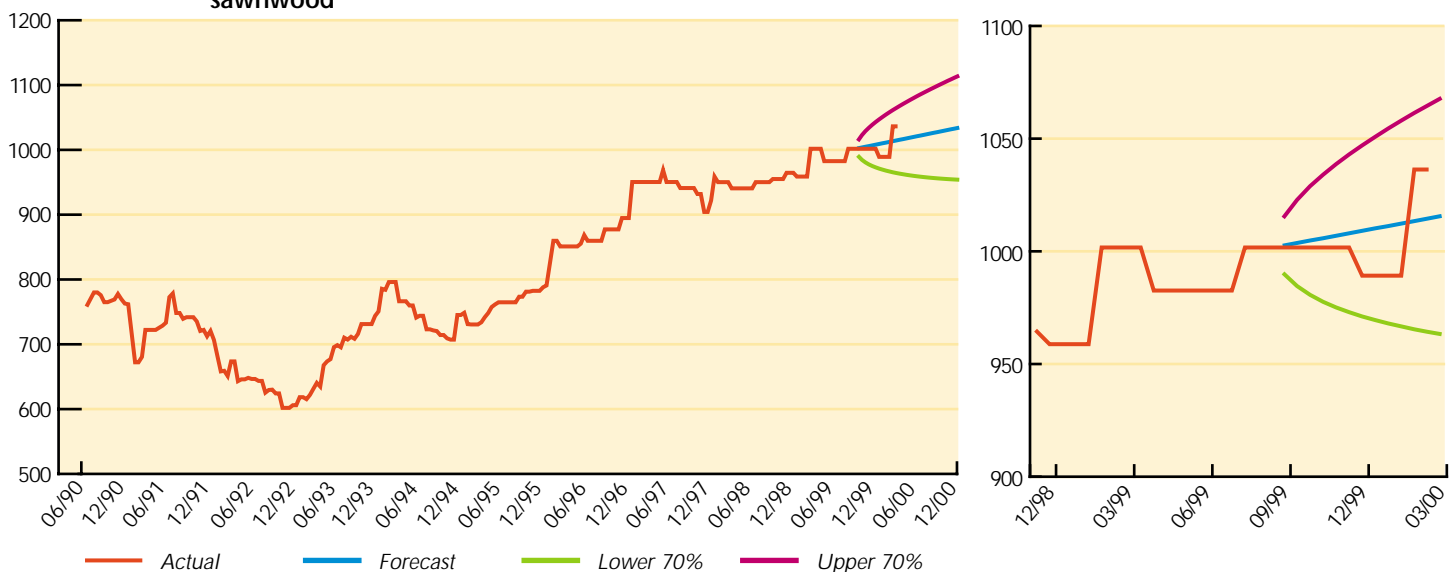
with the exception of China, the major markets are unlikely to recover to the levels seen in the mid-90s due to substitution and environmental concern in importing countries and export restrictions on logs/sawnwood in many tropical countries.

Markets for Primary Products

Given the declining trade, focussing on primary products is unlikely to bring long-term success. Nevertheless, several ITTO member countries remain dependent on this trade for export earnings and to help fund a transition to secondary products. Which markets hold most promise? Figure 2 shows the percentage change in roundwood equivalent (rwe) import volumes from 1995 for selected countries with growing or stable imports. The European Union market is more-or-less stable, although within the EU the main markets are shifting from northern to

Continued ➔

Figure 2: 1999 price outlook and actual prices of Brazilian mahogany sawnwood



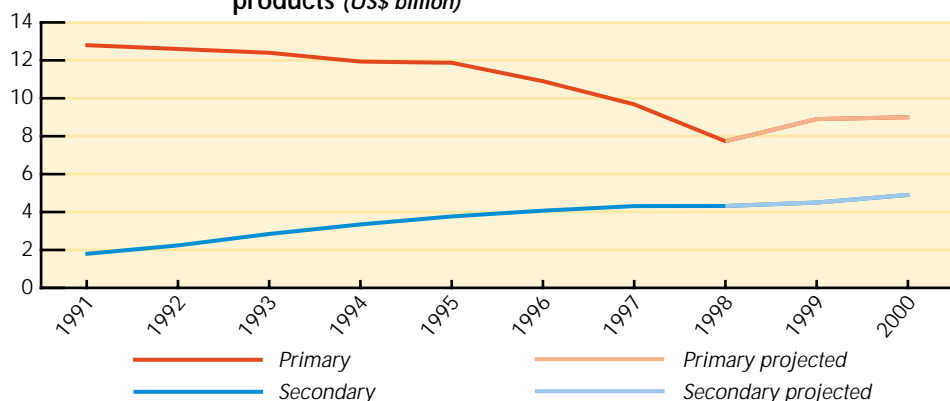
political and social factors in both importing and exporting countries with an understanding of how these affect tropical timber prices. A combination of all three approaches might produce the best results. But tropical timber prices will continue to be subject to the mood-swings of the many and varied markets where tropical timber is produced or in demand; such swings will undoubtedly keep traders guessing for some time yet.

References

- ITTO 2000. *Annual Review and Assessment of the World Tropical Timber Situation, 1999*. ITTO, Yokohama.
- ITTO 1999–2000. *Tropical Timber Market Information Service*, various issues. ITTO, Yokohama.
- Box, G.E.P. and G.M. Jenkins. 1976. *Time Series Analysis: Forecasting and Control*. Revised edition. San Francisco, Holden-Day.
- SAS/ETS Users Guide 1993. Version 6, Second edition.
- Castaño, J. 1997. *Econometria*. First edition. ■

- 1 Differencing is the technique of taking the difference of the price series in one period from that of the next in order to eliminate time trends, seasonality or some other nonstationary pattern before the ARIMA modelling process can proceed. For example, if a price series P_t is differenced once to attain stationarity, the new series is known as ΔP_t , where $\Delta P_t = P_t - P_{t-1}$.
- 2 Prices are deflated by the G-5 MUV (manufactures unit value) Index used by the World Bank for deriving real commodity prices.

Figure 1: ITTO consumer imports of primary and secondary tropical products (US\$ billion)



southern Europe (especially Spain and Portugal). The US market – particularly for plywood – is increasing steadily, led by a buoyant economy, but it is China that holds the most potential for primary products. China is now ITTO's largest tropical log importer: imports jumped to five million m³ in 1999 to offset a decrease in plywood imports (tariffs on tropical log imports are zero, compared to 15 per cent on tropical plywood) and log shortages created by a domestic logging ban. India has also experienced a recent surge in log imports, due to reduced domestic supplies.

In contrast, Figure 3 shows several markets that don't offer great prospects for growth. Imports by both the Philippines and Japan shrank to around 65 per cent of 1995 levels in 1998, before rebounding back to (almost) 1995 levels last year. Korea fell further and has recovered even more slowly, while Thailand's imports have been devastated, dropping last year to about a fifth of 1995 levels.

It appears unlikely that either Japan or Korea will recover to the import levels seen in the early 90s: their timber sectors have undergone fundamental changes in recent years to focus

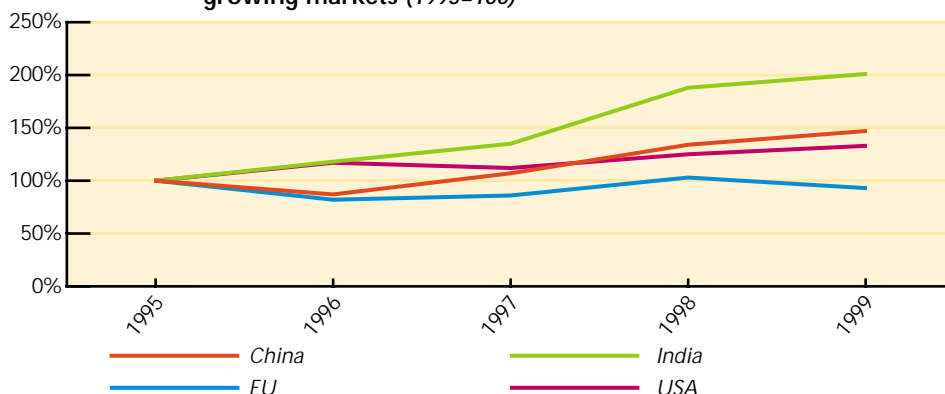
more on softwoods from Russia, North America, Scandinavia and New Zealand. The apparently dire situation in Thailand may improve with its economy, but many furniture mills have closed or have switched to alternative raw materials (such as MDF) and the signs are not promising.

furniture, joinery, windows/doors, packaging and ornaments. The trade in such products has grown steadily over the past decade and is now worth over US\$4 billion/year to ITTO producers; in 2000 it will probably come close to \$5 billion after a pause in growth during the global economic turmoil of 1997–98 (Figure 1). Nevertheless, escalating tariffs combined with a lack of technology, capital and trained personnel still hinder growth of the SPWP industry in tropical countries. Although tariffs have dropped as a result of the Uruguay Round and other initiatives, they remain higher on SPWP than on unprocessed products in many importing countries.

Pulp and paper/reconstituted panels also rising rapidly

Figure 4 shows that pulp and paper exports from tropical countries have grown rapidly in

Figure 2: Percentage change in tropical import volumes (rwe) for four growing markets (1995=100)



Secondary Processing Positive

Many tropical countries are replacing primary product exports with secondary processed solid wood products (SPWP) such as

the last decade. For example, these products are now the major source of forest export revenue in Indonesia and Brazil. Although much of the fibre for this trade is derived from fast-growing plantations, some countries (eg Indonesia) are using significant quantities from natural forests.

Figure 3: Percentage change in tropical import volumes (rwe) for four declining markets (1995=100)

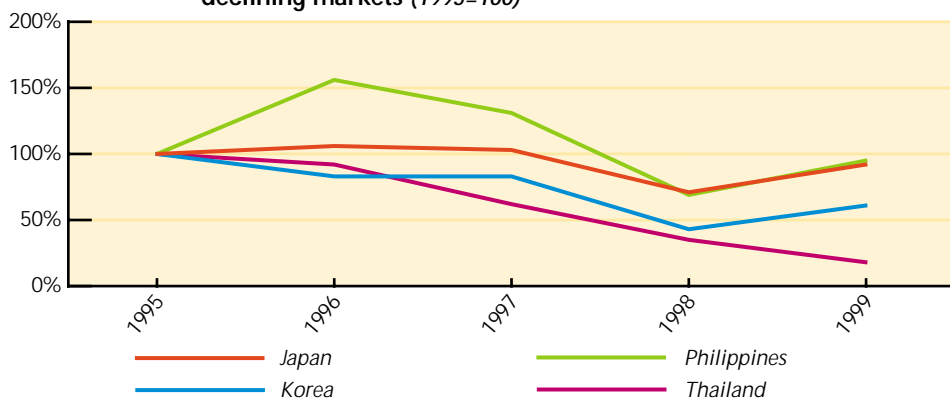


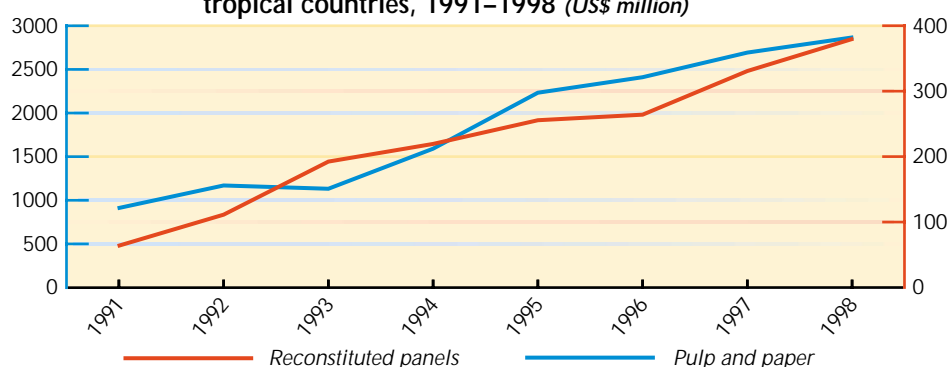
Figure 4 also shows the rapid growth of trade in reconstituted panels such as particleboard, medium-density fibreboard and, recently, oriented strandboard; the value of such exports increased from around US\$64 million in 1991 to US\$380 million in 1998. Reconstituted panel mills are now common throughout the Latin American and Asian tropics and new capacity is steadily being established, often via joint ventures with companies from traditional importing countries. In Asia, rubberwood is an important source of fibre for many of these mills.

A focus on primary products (on which ITTO has traditionally concentrated) therefore only tells about half the tropical timber trade story. While there are still opportunities in primary products markets, these are diminishing and are rapidly being outpaced by growth in value-added products of solid and reconstituted wood. Successful tropical forest sectors will therefore devote considerable resources to penetrating these newer growth markets.

figures are a first line of attack in trying to assess the magnitude of illegal trade, especially when differences persist over several years. A determination to root out illegal trade is a core feature of any responsible player in the tropical timber sector; evidence of a growing determination in this regard amongst ITTO members can be seen in the fact that the issue is now being raised by both producer and consumer members within the ITTC.

virtually non-existent. The problems are even more pronounced for data on SPWP, including pulp, paper and reconstituted panels. Thus, while the data presented by ITTO are the best available, they must still be regarded as indicative only due to flaws in their collection and reporting. With the fundamental shifts under way in many markets, some of which have been highlighted here, the need for reliable forest sector planning and analysis has never been greater. If ITTO members want to be successful and responsible in the timber trade, they need to devote more resources to capturing and reporting better data, all the way from the forest to the international marketplace.

Figure 4: Exports of reconstituted panels and pulp and paper for tropical countries, 1991–1998 (US\$ million)



Illegal Trade?

Table 1 is extracted from a trade flow table included in ITTO's *Annual Review of the World Timber Situation, 1999*. Highlighted in red are discrepancies greater than 100,000 m³ or where one partner's report is more than double the other's if at least one partner reported trade over 50,000 m³. The table shows statistics for tropical logs, presumably the commodity that passes through the least number of hands and measurement systems between exporter and importer. Similar discrepancies in trade statistics can be found for all other primary products and for SPWP.

While legitimate reasons for such discrepancies can exist (such as different measurement systems and/or periods), such

A role may exist for ITTO in assisting member countries to investigate the reasons behind consistent under- or over-reporting of trade figures with respect to trading partners, whether these are legitimate or otherwise. This is a problem that demands attention from all parties – buyers, sellers, producers and consumers – if they are to be considered responsible.

Conclusion

When Mr. David Sandalow (Assistant Secretary of State, USA) addressed the ITTC in May, his first priority was for ITTO to have the world's best data on tropical timber. ITTO already has the best available data on primary products but they are often far from adequate, and for several important countries they are still

Data Sources

ITTO 2000. *Annual Review and Assessment of the World Tropical Timber Situation, 1999*. International Tropical Timber Organization, Yokohama.

Available at: <http://www.itto.or.jp>

FAO. 2000. *FAOSTAT database*. Food and Agriculture Organization of the United Nations, Rome.

Available at: <http://apps.fao.org>

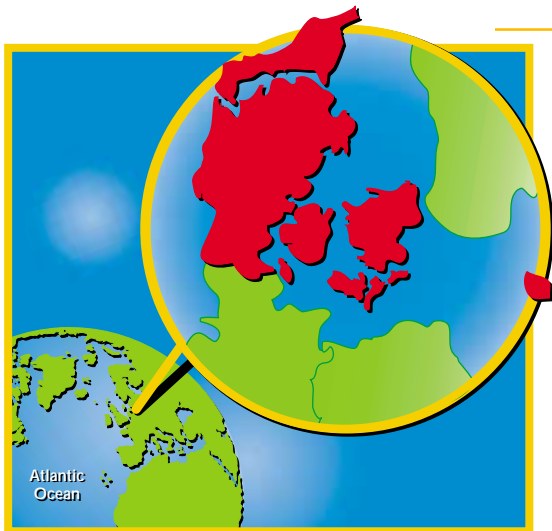
UNSD/ICC. 2000. *Comtrade database*. United Nations Statistical Division/International Computing Center. New York/Geneva. (Available by subscription only.)

Table 1: Trade of tropical logs, 1998 (m³)

		E X P O R T E R S					
		Malaysia	Gabon	PNG	Cameroon	Congo, Rep.	Myanmar
I M P O R T E R S	Japan	2,224,173	60,381	860,604	32,668	703	2,005
		<i>2,225,000</i>	<i>14,766</i>	<i>893,884</i>	<i>205,405</i>	<i>351</i>	<i>2,337</i>
	China	1,083,223	609,286	189,560	240,346	3,789	185,773
		<i>1,131,000</i>	<i>479,156</i>	<i>97,108</i>	<i>192,190</i>	<i>314</i>	<i>40,469</i>
	Portugal	0	103,277	0	186,192	57,038	0
		<i>0</i>	<i>114,100</i>	<i>0</i>	<i>82,210</i>	<i>91,116</i>	<i>0</i>
	Italy	173	73,750	0	260,786	119,102	0
		<i>0</i>	<i>83,313</i>	<i>0</i>	<i>213,660</i>	<i>37,731</i>	<i>2,196</i>

Numbers in bold are importer reports; those in italics are exporter reports

Based on a presentation to the Annual Market Discussion, held during the 28th Session of the International Tropical Timber Council in Lima, Peru.



Once almost totally covered by forests, Denmark had about 417,000 hectares (9.3 per cent of total land area) of forest in 1995, with no net change in cover in the years 1990–95 (FAO 1999). According to Kerkhof and Shepherd (1998), forest cover had declined to only three per cent by the beginning of the 19th century, although the current aim of forest policy is to restore cover to 25 per cent of land area over the next century. Since the first effective forest law of 1805, all forest-covered areas have been protected from conversion to other land uses except through legislative action for infrastructure development (ie roads, railways etc).

of natural resources and the conservation of nature; the prevention and limitation of air, water and soil pollution; and the sustainable use of energy. In Southeast Asia, the countries benefiting from DANCED assistance are Malaysia and Thailand, both members of ITTO. DANCED-appointed consultants and experts are made available to state, regional and national authorities to support efforts that integrate environmental considerations into the overall planning process. It targets seven environmental issues, of which 'Forest and wood resources' is one. The agency's budget in 1999 was DKK367 million (about US\$46 million; DANCED 2000). Denmark is also a strong supporter (and funder) of the United Nations Environment Programme.

by the ITTO Secretariat

Development Assistance

Denmark is one of the world's most generous donors. In 1998 it spent US\$1.7 billion in overseas development assistance, which was about 0.99 per cent of gross national product, the highest percentage of any OECD country. However, Danish policy requires that 50 per cent of overseas development assistance should be spent on Danish goods and services. Of the top ten recipients of Danish aid in 1997–98, India (US\$42 m), Ghana (US\$37 m) and Egypt (US\$31 m) are members of ITTO (OECD 2000).

The dominant ministry in the delivery of development assistance is the Ministry of Foreign Affairs through the Danish International Development Agency (DANIDA). The Ministry of Environment and Energy is also increasingly involved through its management of the government's Global Environment and Nature Fund. This fund is administered by Danish Cooperation for Environment and Development (DANCED), which was established in 1994. DANCED supports programs and projects in seven countries in southern Africa and Southeast Asia aimed at promoting, through capacity-building, the environmentally sustainable use

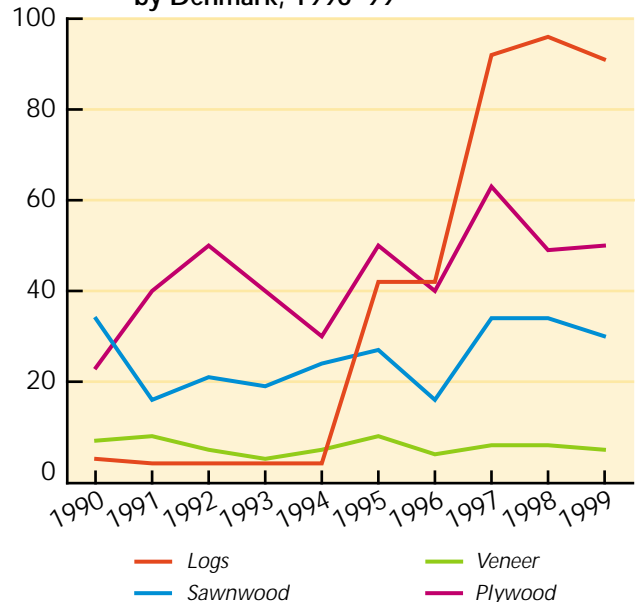
Tropical Forestry

The Danish have a limited history of involvement in tropical forestry compared to some other European countries that had large colonial interests in the tropics. An early interest in tropical botany has meant that a large portion of Danish development assistance in tropical forestry has focussed on tree seed collection and

Denmark consists of a peninsula and a group of islands lying between the Baltic and North seas. It is bordered to the south by Germany, while in the north its neighbours across short stretches of sea are Sweden and Norway. It occupies 4.5 million hectares, and its population of 5.3 million is growing at 1.4 per cent per year. The Faroe Islands in the North Sea and the world's largest island, Greenland, are self-governing territories under the Danish Kingdom.

Denmark's gross domestic product (GDP) in 1998 was US\$139.4 billion (using purchasing power parity – PPP – which corrects for the differences in price levels between countries). In the same year its GDP per capita was US\$25,459 (PPP), well above average for both OECD (Organization for Economic Cooperation and Development) and European Union (EU) countries (OECD 2000).

Figure 1: Imports of tropical logs, sawnwood, plywood and veneer ('000m³) by Denmark, 1990–99



genetic improvement. The DANIDA Tree Seed Centre has made a notable contribution in this field for more than three decades (see *Institutional Profile* – next page).

Continued ➔

Institutional Profile – The DANIDA Forest Seed Centre

The DANIDA Forest Seed Centre (DFSC) works for the conservation of tropical and sub-tropical forest genetic resources, for the improvement of the genetic and physiological quality of forest tree seed, and for the solution of problems of seed procurement. Institutionally it is part of DANIDA, the Danish international development administration. It has been in existence since 1969.

The DFSC provides technical support for the establishment of national tree seed programs and provides information, training and consultancies on aspects of seed procurement, tree improvement and the conservation of forest genetic resources. Assistance is directed primarily towards countries that receive Danish bilateral assistance, but project support may be given to other countries on a cost-recovery basis. According to information on the DFSC website, the institution “fills the gap between research and practical application, concentrating

on developing effective and practical methods and technologies” (DFSC 2000). It does this by developing know-how through research and development, developing methods for practical application, and transferring knowledge through the DFSC’s information service.

Much of the transfer of knowledge and experience gathered by the DFSC takes place via direct support to projects, most of which are DANIDA-supported national tree seed programs. Tree seed programs financed by other organisations and forestry programs financed by DANIDA may also receive technical support. Of ITTO member countries, the DFSC is currently supporting projects in Indonesia, Nepal and Thailand. The immediate objective of all DTSC-supported projects is “upgrading the production, supply, conservation and correct use of physiologically sound and genetically well-adapted and improved planting material for tree-planting activities” in the recipient country or region.

Publications

The DTSC offers its wide range of publications free of charge to all relevant organisations or individuals. The range includes:

- *Technical notes*, which present new or adapted techniques and methodologies and descriptions of equipment. They also include popular editions of research results for

studies conducted by DFSC or other institutions;

- *Lecture notes*, which are primarily compilations intended for training courses – they present detailed information on aspects of seed procurement, tree improvement and gene-resource conservation;
- *Guide to forest seed handling*: this is a seed-handling textbook. A new edition in English is in preparation, but the previous edition is still available in Spanish and French;
- *Research reports* on international provenance trials of *Tectona grandis* (teak) and *Gmelina arborea* are available;
- *Seed leaflets*: aimed at seed technicians, extension workers and farmers, these two-page leaflets contain information on practical seed handling for a number of tree species. All leaflets are available in English, and some are also available in Spanish.

You can order publications of interest by writing to the DFSC at Krogerupvej 21, DK-3050 Humlebaek, Denmark; Tel 45–4919 0500; Fax 45–4916 0258; Email dfsc@dfsc.dk; Web www.dfsc.dk

Compiled by the ITTO Secretariat based on the DFSC website. ■

According to Kerkhof and Shepherd (1998), it is difficult to determine the resources allocated by DANIDA to tropical forests-related projects and programs. However, they present data showing that the number of such projects initiated each year grew from an average of less than one in 1965–79 to more than ten in 1990–95. In the period 1965–95, DANIDA spent DKK1.23 billion (US\$165 million using the average exchange rate over the period) on ‘forestry assistance’ worldwide.

Tropical Timber

Denmark was ranked 17th on the list of ITTO tropical timber importers by value in 1998, and ninth in the EU. Figure 1 depicts the volume of Denmark’s imports of tropical logs,

sawnwood, plywood and veneer for the period 1990–99. It shows a dramatic increase in log imports in 1995: volume increased from about 4,000 m³ to 42,000 m³ in a single year; by 1999 it had more than doubled again. These logs were mostly used for sawnwood production within Denmark. Plywood imports showed a generally increasing trend, but sawnwood and veneer imports declined slightly.

Denmark and ITTO

Denmark has been a member of ITTO since the Organization’s inception in the mid 1980s, both in its own right and as part of the EU. As of July 2000, it had contributed US\$2.2 million towards ITTO projects, pre-projects and activities.

References

- DANCED 2000. Danish Cooperation for Environment and Development website: www.mst.dk/danced
- Kerkhof, P. and Shepherd, G. 1998. ‘Denmark’ in Shepherd, G., Brown, D., Richards, M. and Schreckenberk, K. (eds) *The EU Tropical Forestry Sourcebook*. European Commission/Overseas Development Institute.
- FAO 1999. *State of the World’s Forests 1999*. Food and Agriculture Organization of the United Nations, Rome.
- ITTO 1994–2000. *Annual Review and Assessment of the World Timber Situation*. (Annual editions.) ITTO, Yokohama.
- OECD 2000. Organization for Economic Cooperation and Development website. <http://www.oecd.org/> ■

Fellowship Report

A study of land use history, tree diversity and soil fertility in Sabal Forest Reserve, Sarawak, Malaysia

by Nor Rasidah Hashim

Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia; nor_hashim@hotmail.com

The conversion of primary forest to other land uses often creates a patchwork of habitats that includes logged-over forests, forest fallows and agricultural and forest plantations. The structure and composition of these altered, often degraded, lands may be very different from the original forest due to the removal of vegetation and the disturbance of soils and hydrological processes.

This study, conducted with the assistance of an ITTO fellowship, aimed first to provide a broad-level description and analysis of changes in human land use and vegetation cover at Sarawak's Sabal Forest Reserve, based on the interpretation of aerial photographs spanning 26 years (1972–98). It then investigated differences in the structure and composition of the vegetation and in soil properties between two components of the landscape – logged-over forest fragments and tree plantations.

Study Area

Sabal is located in western Sarawak on the island of Borneo and covers an area of 7,800

Figure 1: Percent cover of each land-use/vegetation cover type over a 26-year period based on aerial photo interpretation

Aerial photo coverage is 40% of Sabal

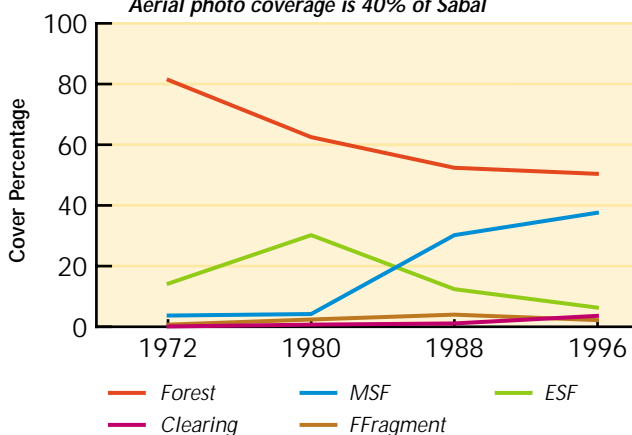
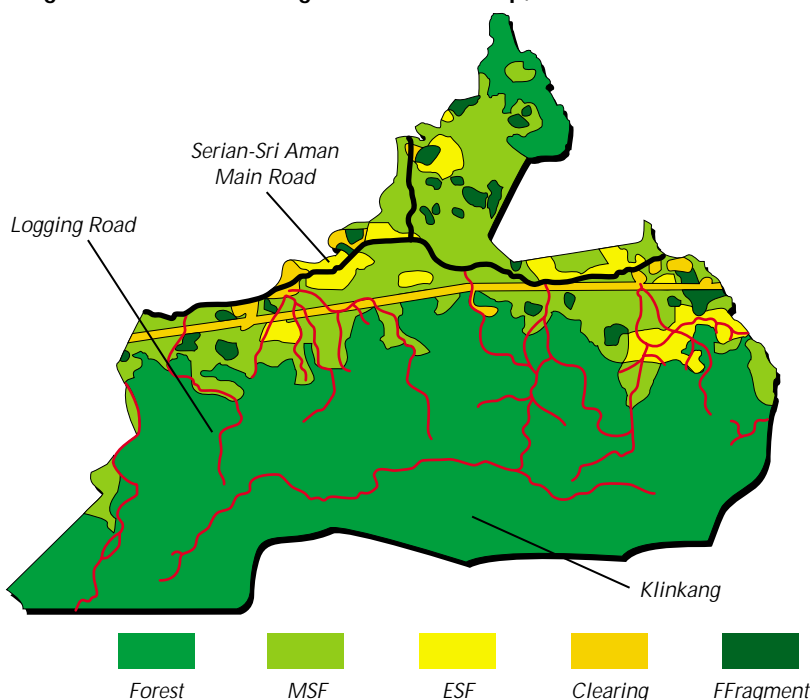


Figure 2: Land use/vegetation cover map, 1998



hectares. The region is populated by Iban villagers, who conducted shifting cultivation, mostly of hill rice, within the forest reserve until 1984. In 1981, former shifting cultivation areas were planted with the exotic timber species *Acacia mangium* by the Sarawak Forestry Department with the objective of rehabilitating the site. In the early 1990s, most of these plantations were inter-planted with *Shorea macrophylla* or *Durio zibethinus*. *D. zibethinus* was planted for its fruits, and *A. mangium* and *S. macrophylla* are fast-growing, multi-purpose, light hardwoods (Butt 1983; Sarawak Forest Department pers. comm.).

To reconstruct the history of land use and vegetation cover, aerial photographs taken in 1972, 1976, 1982 and 1998 at the scale of 1:25,000 were used to create land use/vegetation cover maps for each of those years, which were then analysed in a geographic information system (ESRI 1997; ESRI 1998; ASC 1999). Land-use/vegetation cover was classified into five types based on the approximate percentage of canopy cover (appearance and gray-scale of the aerial photographs) combined with information obtained from ground-truthing. The classes

used were: land clearing (labelled 'Clearing'); early successional forest (ESF); mid-successional forest (MSF); logged-over forest fragment (FFragment) and continuous forest (Forest). Tree plantations showed up mostly as MSF in the 1998 photographs. Extensive on-site study yielded information on vegetation composition and structure and on soil properties.

Results and Discussion

Contiguous forest cover in Sabal declined from about 80 per cent in 1972 to about 50 per cent in 1998, although the rate of decline had diminished to almost zero by 1982. Early successional forest was prominent early but gradually gave way to mid-successional forest, which constituted about 40 per cent of the coverage in 1998 (Figure 1). There was a strong positive correlation between the construction of a major road (the Serian-Sri Aman main road) and shifting cultivation and logging.

Topography also played a role in influencing land use patterns in the area. Figure 2 shows that shifting agriculture was restricted to undulating low-lying areas in the northern part of Sabal, while logging roads were found in the hilly-forested areas towards the Sarawak-Kalimantan border in the Klinkang range. Figure 2 also shows clearing for settlement and a powerline easement.

The Forest Department's policy of preventing shifting cultivation in Sabal

combined with its extensive reforestation project on forest fallows seems to have worked well in increasing forest cover. However, levels of plant diversity in the different components of the vegetated landscapes might not be the same. A comparison of the vegetation structural and compositional characteristics of logged-over forest fragments and those of tree plantations (interplantings of *Acacia mangium* and *Shorea macrophylla*) showed that tree abundance and species diversity differed markedly between the two forest types. Logged-over forest fragments were dominated by small trees (0–1 cm dbh size-class), with Euphorbiaceae the most prominent family (by abundance, number of species and basal area). In contrast, the understorey of the tree plantations was composed of dense ferns and sedges, with very low tree abundance and species richness even after 15 years of reforestation. The presence of certain species adapted to degraded sites – eg *Ilex cissoidea*, *Dillenia suffruticosa* and *Macaranga* species (Coode *et al.* 1998) – in the tree plantations suggests that the area has been degraded by human use.

Logged-over forest fragments displayed good regeneration potential for certain species but not for others. For example, while *Agathis dammara*

is a commonly logged species in Sabal, it was notably absent in the study plots. On the other hand, several species of the Dipterocarpaceae that are also commonly logged in Sabal were found in the seedling or sapling size classes. Further study investigating the responses of different tree species to logging is required.

The analysis of soil properties (pH, conductance, % carbon, % nitrogen, cation exchange capacity, potassium, sodium, magnesium, calcium, and total and available phosphorus) from logged-over forest fragments and tree plantations showed that the concentrations of soil elements (except for sodium) were lower than those found in other studies in Sarawak. Curiously, nitrogen concentrations in the *A. mangium* plantations were relatively low, even though this species has a natural ability to fix nitrogen.

Conclusion

This study describes land use patterns and changes to vegetation cover, vegetation structure, species composition and soil properties in logged-over forest fragments and tree plantations in Sabal. The findings provide baseline data for future studies on forest

structural and compositional characteristics and soil-nutrient status in logged-over forest fragments and tree plantations in Borneo.

References

- ASC 1999. *R2V for Windows 9X & NT: Users's Manual*. Able Software Corp (ASC), Lexington, USA.
- Butt, G. 1983. *Semi Detailed Site Evaluation of Sabal Forest Reserve (Northern Half): A Preliminary Report*. Soil Survey Unit Research Section, Sarawak Forest Department, Kuching, Malaysia.
- Coode, M., Dransfield, J., Forman, L., Kirkup, D. & Said, I. 1996. *A Checklist of the Flowering Plants and Gymnosperms of Brunei Darussalam*. Brunei Forestry Department & Royal Botanic Gardens, Kew, Brunei Darussalam.
- ESRI 1997. *ARC/INFO. Geographic Information Software, Version 3.5.1*. Environmental Systems Research Institute (ESRI), Redlands, USA.
- ESRI 1998. *ArcView GIS. Geographic Information Software, Version 3.1*. Environmental Systems Research Institute (ESRI), Redlands, USA. ■

This project was funded partially by the ITTO Fellowship Program. It was carried out as post-graduate research at the Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, under the J & J Ruinen Masters Fellowship program. Contact the author for further information.

ITTO Fellowships Offered

ITTO offers fellowships through the Freezailah Fellowship Fund to promote human resource development and to strengthen professional expertise in member countries in tropical forestry and related disciplines. The goal is to promote sustainable management of tropical forests, the efficient use and processing of tropical timber, and better economic information about the international trade in tropical timber.

Eligible activities include:

- participation in short-term training courses, training internships, study tours, lecture/demonstration tours and international/regional conferences;
- technical document preparation, publication and dissemination, such as manuals and monographs; and
- post-graduate studies.

Priority areas: eligible activities aim to develop human resources and professional expertise in one or more of the following areas:

- improving the transparency of the tropical timber market;
- improving the marketing and distribution of tropical timber species from sustainably managed sources;

- improving market access for tropical timber exports from sustainably managed sources;
- securing the tropical timber resource base;
- improving the tropical timber resource base, including through the application of criteria and indicators for sustainable forest management;
- enhancing technical, financial and human capacities to manage the tropical timber resource base;
- promoting increased and further processing of tropical timber from sustainably managed sources;
- improving the marketing and standardisation of tropical timber exports; and
- improving the efficiency of tropical timber processing.

In any of the above, the following are relevant:

- enhancing public relations, awareness and education;
- improving statistics;
- research and development; and
- sharing information, knowledge and technology.

Selection criteria: Fellowship applications will be assessed against the following selection criteria (in no priority order):

- consistency of the proposed activity with the Program's objective and priority areas;
- qualifications of the applicant to undertake the proposed fellowship activity;
- the potential of the skills and knowledge acquired or advanced under the fellowship activity to lead to wider applications and benefits nationally and internationally; and
- reasonableness of costs in relation to the proposed fellowship activity.

The maximum amount for a fellowship grant is US\$10,000. Only nationals of ITTO member countries are eligible to apply. The next deadline for applications is **28 March 2001** for activities that will begin no sooner than July 2001. Applications are appraised in May and November each year.

Further details and application forms (in English, French or Spanish) are available from Dr Chisato Aoki, Fellowship Program, ITTO; Fax 81-45-223 1111; Email itto@itto.or.jp (see page 31 for ITTO's mailing address).



ATIBT Expands

Forum of the International Technical Tropical Timber Association

11–12 May 2000

Istanbul, Turkey

This forum was attended by 154 participants from 18 tropical timber producer and consumer countries from the industry and trade and from research, national, international and non-governmental organisations.

As is traditional, the opening day was dedicated to ATIBT Commission technical projects, the Board of Directors and the General Assembly. The Commission established and presented a technical standard for management plans for all forest concessions in Africa, which will be ratified by an international panel of experts in September. This standard is a prerequisite for Panafrican certification, which should be operational some time in 2001.

In the General Assembly, 23 companies were accepted as new members, boosting the total number of direct members to 185 companies and federations from 35 countries. The ATIBT therefore reaches several thousand contacts through member federations.

The second day included surveys of production and international tropical timber markets. ATIBT's Technical and Scientific Committee presented reports on North Asia, and, in particular, on the impressive development of the Chinese market. Other markets presented included those of Malaysia, Europe, Africa, and North and Latin America. Emerging from these statistics-rich presentations was a general mood of optimism towards the market situation, driven by demand in Asia. In the afternoon, participants heard presentations on future technologies, including a new wood treatment technology that dramatically increases durability.

A good turn-out by Turkish manufacturers and the quality of the presentations and debate will help make this Forum a reference point in the promotion of tropical timber. The two-day meeting can be summed up in one observation: tropical timber from sustainably managed forests is a material for today and for the future.

For more information, contact: ATIBT, 6 Av. de Saint Mandé F-75012 Paris, France; Tel 33–1–43 42 4200; Fax 33–1–4342 5522; Email atibt@compuserve.com; Web www.atibt.org

Adapted from press release. ■

The Role of Log Bans

Efficacy of Removing Natural Forests from Timber Production as a Strategy for Conserving Forests

14 May 2000

Report by A. Sarre

Several countries in the Asia-Pacific region have imposed some sort of logging ban in response to the rapid decline of natural forests, usually after a major disaster blamed at least partially on deforestation. Other countries in the region are considering similar bans or logging restrictions. But how effective are they?

This seminar presented the results of a study undertaken by the Food and Agriculture Organization of the United Nations at the request, in 1998, of the Asia-Pacific Forestry Commission. National consultants prepared case-studies from China, New Zealand, the Philippines, Sri Lanka, Thailand and Vietnam, and a coordinator – Thomas Waggener – prepared a regional overview.

According to Dr Waggener, blanket logging bans in the past have been imposed more as a knee-jerk reaction to a calamity than as a considered strategy for forest conservation and protection. As a result, such bans have rarely been supported by adequate resources for their implementation or by policies to offset the negative social and economic impacts they might bring.

Forest loss continues in Thailand

Dr Suree Lakanavichian, a resource sociologist and policy analyst at Chiang Mai University, informed participants that the logging bans there were precipitated by flash floods and landslides in 1988; in January 1989, the government imposed a ban on all commercial logging. But according to FAO statistics at

least, the ban has not stopped deforestation, which was continuing at an annual rate of 329,000 hectares in 1997. Forest quality is also being lost. According to Dr Lakanavichian, a lack of supportive legislation and political will has meant that ban enforcement has been minimal. In the absence of positive policy initiatives, the ban provided no incentive to local people to become involved in reforestation or to support the ban.

The Sri Lankan experience has been more positive. According to H. M. Bandarattillake, Sri Lanka's Conservator of Forests, a ban on logging in state-owned natural forests was imposed a decade ago. It has helped reduce deforestation in the state forests, while timber production has shifted to private lands and plantations. Nevertheless, illegal logging and clearing for development continues in state-owned forest, raising questions about the long-term efficacy of the ban if new economic activities are not encouraged.

Muddied waters in the Philippines

Illegal logging is also an issue in the Philippines, where more than 70 per cent of the country's 77 provinces are now under logging bans or moratoria. The Philippines has suffered some dramatic and tragic effects of poor land management: in 1992, for example, flooding and landslides in the Ormoc region killed more than 7,000 people. In the wake of this and other disasters, the Philippines government has taken a tough approach to logging: by 1998 it had slashed the 400 timber licence agreements in operation in the 1960s to 21. Moreover, the annual allowable cut under such agreements has been reduced: in 1998 it was eleven per cent of the 1991 figure. Logging in old growth forests is now completely banned.

According to Ernesto Guiang, who undertook the Philippines' case-study, the bans have had highly variable results. In effect they created 'open access' forests, stimulating a free-for-all in what was left of the forest estate. An earlier study reported by Mr Guiang found that logging bans caused more damage to the environment than did sanctioned logging because illegal cutters had no long-term interests in maintaining the forest. Log bans have burdened the government with forest protection, which it has been incapable of enforcing. They have also deprived it of revenues, caused the



loss of jobs and bred ‘unholy alliances’ between financiers, illegal loggers, the military and government forestry personnel. Nonetheless, they have sent a strong message to the private sector, local government units and communities that they must increasingly rely on plantation forests and imported wood to meet local needs.

New Zealand’s beech holiday

New Zealand foresters are still coming to terms with a recent ban on logging in South Island beech forests, despite the existence of what they believe was a sustainable forest management regime. At issue, said consultant Alan Reid, is whether sustainable forest management is a concept worth pursuing or if, in the end, the community will accept nothing less than a total ban on logging. This subject was elaborated on by a presentation by Dougal Morrison, who spoke about Australia’s regional forest agreements. These guarantee a secure natural forest resource for the timber industry while aiming (with less than complete success) to fulfil the expectations of conservationists by extending the network of conservation reserves. While this presentation was interesting, in the context of the seminar topic it may also have been instructive to have heard about the Australian experience in that country’s tropical rainforests, most of which were removed from logging by federal government decree a decade or so ago.

China’s slow ban

Yang Yuexian reported that under the Natural Forest Conservation Program, nearly 42 million hectares of forest will be removed from timber production over a ten-year period in the People’s Republic of China. Thirty million hectares of this are in the upper reaches of the Yangtze River and about 11.5 million hectares are distributed between northeastern China, Inner Mongolia, Xinjiang Province and Hainan Island. The implementation of this program will put just over one million people out of work; such people will be resettled or re-employed elsewhere. The central finance department will bear the full costs of forest protection measures and will meet 70 per cent of the costs of resettlement, re-employment and lump-sum payments to employees; the remainder will be paid by local governments and enterprises. The central finance department will also bear 70 per cent of the loss of revenues to local governments caused by the logging bans.

Bans can make things worse

In countries where forest depletion has reached such a magnitude that the consequences are evident on an almost daily basis, it is undoubtedly tempting for governments to respond with drastic measures like logging bans. But implemented without sufficient planning, resource allocation and forethought, such bans are unlikely to do much for conservation. They may even be actively counter-productive, creating the impression that something is being done while obscuring the fact that the problem may be getting worse. They remove what is often the only incentive for the maintenance of forest cover – timber revenues. And, as several speakers pointed out, logging bans in one country or region may simply translocate the problem elsewhere: it is no coincidence that the ban in Thailand has coincided with increased pillage in the forests of neighbouring Cambodia, Laos and Vietnam.

Logging bans are not new at the local or regional scale – in effect, a ban is imposed each time a new forested national park is declared. Properly managed, they are an important part of forest management and conservation. Poorly managed, they can be a recipe for continued forest loss and degradation. ■

Regional Forum Discusses Key Forestry Issues

18th Session of the Asia-Pacific Forestry Commission

15–19 May 2000

Noosaville, Australia

This session of the Asia-Pacific Forestry Commission was attended by delegates from 25 of the 29 member countries and representatives of eight international intergovernmental and non-governmental organisations. The Commission, which is celebrating its 50th anniversary, acts as a regional forum to facilitate communication between members and the Food and Agriculture Organization of the United Nations (FAO).

At this session, delegates presented highlights of recent developments and issues in

their respective countries. They reviewed FAO’s regular and field programs and heard of FAO’s plans to further decentralise the management of field project operations to national FAO offices and regional technical groups over the next two years. The Commission decided to extend the mandate of its ad hoc Working Group on Sustainable Forest Management for two years and recommended that it give priority to:

- supporting implementation of the *Code of Practice for Forest Harvesting in Asia Pacific*;
- supporting the development and implementation of criteria and indicators for sustainable forest management in the region; and
- assisting members to identify opportunities for promoting effective management of protected areas and examining innovative ways of integrating conservation with other land uses.

Implementation of code of practice

At least 14 member countries have developed, or are developing, national codes of practice for forest harvesting, while others are reviewing existing codes. The Commission recommended that member countries and FAO continue to seek political support for implementing the codes, that efforts be made to link implementation to existing initiatives for which political commitment already exists, and that increased efforts be made to involve the private sector in the implementation of the codes. It recommended that a draft training strategy be reviewed by members, completed and distributed widely. It also endorsed a regional strategy for implementing the *Code of Practice for Forest Harvesting in Asia-Pacific* and urged members and cooperating international organisations to facilitate its timely implementation.

Logging bans

A seminar on the role of logging bans based on an APFC-commissioned study was held prior to the Session (see review on page 24). The Commission requested FAO to widely disseminate the results of this study. It also encouraged FAO and the ad hoc Working Group on Sustainable Forest Management to work with other organisations to identify opportunities for collaboration on:

- forest use rights;



- impacts of international trade on natural forest conservation;
- commercial forest plantations and alternative timber supplies;
- improved efficiency in forest management and utilisation as a strategy for conservation; and
- environmental management systems monitoring.

Certification

During a special in-session seminar, the Commission considered issues related to forest certification and forest product labelling. The Commission supported efforts to ensure a greater degree of mutual recognition between different certification schemes. It also encouraged the exchange of information and experiences on certification and recommended that FAO increase its efforts to provide information and facilitate dialogue among members.

Criteria and indicators

The Commission endorsed the Regional Initiative for the Development and Implementation of Criteria and Indicators for the Sustainable Management of Dry Forests in Asia and recommended that FAO convene a follow-up workshop for members in 2001.

Other issues discussed included the follow-up to the Intergovernmental Forum on Forests, the potential role of forestry in the Kyoto Protocol, the International Year of Mountains (2002), and the preliminary findings of the Global Forest Resources Assessment 2000. The next session of the Commission will be held in 2002. ■

to prevent and control forest fire in both private forest lands and national and state-owned parks, reserves and production forests.

Four forest companies and three electrical energy companies presented their programs of fire prevention and control and the experience gained. Representatives of the Ministry of Environment and of the Minas Gerais State Forest Institute reported the actions taken to protect against and to control fire in conservation units.

As a result of the workshop it was agreed that: i) at the level of the federal and Minas Gerais state governments, while some improvement has been observed in their capacity to prevent and control forest fire in conservation units, more effort in terms of personnel, equipment and budget should be considered; ii) there had been significant improvement in prevention and control techniques of forest fire by private forest and electrical energy companies; and iii) emphasis should be given to the implementation of a national education and public awareness campaign through all available vehicles of mass communication on ways to prevent forest fires because of the damage they cause to the environment, property and human life. ■

Ten papers were presented on specific themes and four companies presented their programs on ergonomics and work safety and the experience gained.

Symposium participants agreed that: i) private companies in Brazil have made significant advances in the ergonomics and safety of forestry and agricultural work but there is still much room for improvement; ii) while Brazilian laws and legislation on this subject are considered well formulated, there is a problem of implementation by companies. In this regard, a national education and company awareness campaign on the importance of ergonomics and work safety should be undertaken; and iii) the government should find new ways, perhaps based on tax-related 'carrots and sticks', to make sure that the relevant laws are adhered to. ■

IUFRO World Congress a Success

The 21st Congress of the International Union of Forestry Research Organizations (IUFRO) was held in Kuala Lumpur on 7–12 August this year. Attended by around 2,300 people, it was the largest forestry-related conference ever staged in Malaysia. An ITTO satellite meeting held in conjunction with the Congress attracted a large audience to see presentations on several ITTO-funded projects. A full report of the Congress and the satellite meeting will be included in the next edition of the *TFU*. ■

Making Forests Safe

1st Brazilian Symposium on the Ergonomics and Safety of Forestry and Agricultural Work

Belo Horizonte, Brazil

5–7 July 2000

Report by Mauro S. Reis

This symposium was organised and sponsored by the Forest Investigation Society (SIF), the Federal University of Viçosa and the Federation of Industries of Minas Gerais State and was attended by 114 people. Its main purpose was to discuss the ergonomics and safety of forest and agriculture work in private companies and to make available to the participants the most recent progress in these areas through the presentation of invited papers.

Workshop on Forest Fire

11–12 May 2000

Belo Horizonte, Brazil

Report by Mauro Reis

This meeting was organised and sponsored by the Ministry of Environment, the Minas Gerais State government and private forest companies and was attended by 214 people. Its main purpose was to discuss the most recent actions and initiatives taken by the private and public sectors

Edited by Alastair Sarre

Logging in Laos

The Tropical Rainforest Programme – apparently an environmental non-governmental organisation based in the Netherlands – published a report last April that is highly critical of forest management in the People's Democratic Republic of Laos. The report apportioned much of the blame for what it calls a 'fire sale' of the country's forest resources to the transboundary timber trade between Laos and Thailand. Government sources, on the other hand, cite shifting cultivation as the major cause of forest loss. According to the Tropical Rainforest Programme, the introduction of good forest management is hindered by a lack of transparency in the timber and forestry sectors.

Copies of the report can be obtained from the Programme at: Plantage Middenlaan 2B, Amsterdam, the Netherlands.

Mahogany Exports Decreased

According to the Brazilian bulletin *Infoc da Economia Florestal* (No. 126), the Brazilian Institute of Environment (IBAMA), which is part of the federal Ministry of Environment, has reduced the export quota for mahogany (*Swietenia macrophylla*). In the first semester of 2000 the quota was 25,000 m³ and in the second semester it will be no more than 30,000 m³. This is a reduction of nearly nine per cent over 1999, when the quota was 62,000 m³.

The change comes after IBAMA had reported that it completed a national inventory on mahogany stocks in May. The inventory contains data on existing production areas, production capacity, plans for management, and indications of market prices. It also contains the recommendation that permission for export and within-country trade of mahogany should be granted by IBAMA only when the timber is sourced from sustainably managed forests.

The Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) held in April 2000 in Gigiri, Kenya had earlier agreed to maintain mahogany in its Appendix III. This means that the economic exploitation of the species is possible but the origin of the timber to be sold in the market must be certified. A working group on mahogany was established by CITES at the same meeting to, among other things, review the effectiveness of current Appendix III listings.

Reported by Mauro Reis, Brazil

Brazil Gets New National Forest Program

Brazil's President Cardoso signed a decree creating a National Forest Program on 21 April this year. This program consists of projects to be formulated and implemented in a participatory manner by the federal, state and municipality governments in collaboration with 'organised' civil society. The major objectives are to: a) encourage the sustainable use of natural and planted forests; b) promote reforestation activities, mainly on small rural properties; c) rehabilitate permanent preservation forests, legal forest reserves and degraded areas; d) support social and economic initiatives of communities living in or around the forests; e) repress illegal deforestation and the predatory extraction of forest products and by-products, contain accidental burnings and prevent forest fires; f) promote the sustainable use of production forests, be they national, state, district or municipal; g) support the development of forest-based industries; h) expand the national and international markets for forest products and by-products; i) quantify the values of the environmental, social and economic services and goods generated by public and private forests; and j) promote the protection of forest ecosystems and biological diversity. The program is to be coordinated by the Ministry of Environment.

Reported by Mauro Reis, Brazil

G8 Takes an Interest in Forests

Foreign ministers from the G8 group of nations (Canada, Germany, France, Italy, Japan, Russia, the UK and the USA) met in Miyazaki,

Japan on 13 July 2000. They issued a communiqué in which they welcomed the outcome of the Intergovernmental Forum on Forests (IFF), including the proposal for a new international arrangement on forests, and agreed "to take initiatives to implement the proposals for action by the IFF and the Intergovernmental Panel on Forests". They also looked forward, they said, to "further collaboration among the FAO [Food and Agriculture Organization of the United Nations] and ITTO and other relevant international organizations". The ministers reaffirmed their "commitment to and practice of sustainable forest management, including combating illegal logging". And they noted the important contribution by, among others, "ITTO work underway to protect mangroves".

Cameroon Logging

Another in the series of reports by Global Forest Watch (see *TFU 10/2*) was published recently on logging in Cameroon. The report records that 25 logging companies and individuals hold three-quarters of Cameroon's forest concessions. Three parent groups partly or wholly financed by French interests retain almost a third of the concessions. New forest legislation promises better forest stewardship, but compliance remains problematic. For more information visit www.globalforestwatch.org

Home Depot Clarifies

At the International Wood Products Association's 44th Annual Convention last April, US-based Home Depot, the world's largest do-it-yourself retail chain, clarified its wood purchasing policy first outlined last year. It has committed itself to phasing out wood products from non-certified environmentally sensitive areas over the next three years. Home Depot is currently selling Forest Stewardship Council-accredited certified wood, but has "not ruled out alternative certification schemes".

Meanwhile, a World Resources Institute press release recently announced that the world's second-largest home improvement retailer, Lowe's (also based in the US), has adopted a policy of phasing out wood products from 'endangered forests' and working closely with certification bodies. ■



Nordström, H. and Vaughan, S. 1999. Trade and Environment. Special Studies 4. World Trade Organization, Switzerland. ISBN 92-870-1211-3

Review by Michael Adams

ITTO Secretariat

To say it right away: this is a tough report to read. With almost a third of it consisting of committee minutes and reports (as well as lengthy notes prepared for participants at various World Trade Organization – WTO – meetings), all written in bureaucratic “jinglysh”, the going gets tougher the further into the report the reader gets.

Tough-going is fine if there is a payback and this report offers one for those with stamina. It is well researched and the authors have tried throughout to present a realistic evaluation of where the debate on trade and environment is today. They do this against a backdrop of the potential role of the WTO.

As the authors note: “one of the unfortunate features of the trade and environment debate is that at times it has generated more heat than light”. The complexity of the issues and their interdependence emerges in this report almost like the children’s game of pass-the-parcel ... every time the music stops and a wrapping is removed, a new issue emerges. Perhaps one of the greatest strengths of this offering is that it has successfully managed to avoid the rhetoric and emotion that so often overwhelms attempts at debate over the link between trade and environment. It succeeds in its effort to make a constructive contribution by trying to encapsulate the results of scientific research.

Several key questions are addressed in the study. First, is economic integration through trade and investment a threat to the environment? Second, does trade undermine the regulatory efforts of governments to control pollution and resource degradation? Third, will economic growth, driven by trade, help move us towards sustainable use of the world’s resources?

The main tenet of the report is that globalisation and economic integration have important repercussions; both are perceived to diminish the regulatory powers of individual nations. In the opening chapter on causes of environmental degradation and the interaction with trade, five issues are discussed: chemical intensive agriculture, deforestation, global warming, acid rain and overfishing. Not a complete list of the potential downsides to trade, of course, and there are many overlapping influences. Global warming and acid rain, for example, are difficult to deal with as separate items and one is left to wonder at the usefulness of the examples used by the authors.

With regard to deforestation, the authors believe that the current focus of attention on tropical forests is due to the fact that temperate deforestation was well out of the way before the issue of trade and environment was elevated to the international stage. Since “some 90 per cent of all tropical deforestation is for agricultural purposes”, the authors offer an outline of an opportunity-cost model for deforestation against agriculture. The authors conclude that the root causes of (tropical) deforestation lie partly in the pressure to convert forests into farmland and partly in the absence of markets for the various services provided by forests, such as carbon sequestration and biodiversity. This is probably not news to most people, but it is interesting to see this model – using relatively recent data – reaching similar conclusions to those of many previous attempts. The implication is that a global trade in such new ‘commodities’ could help stem deforestation by adding greater value to forests.

This report offers a significant contribution to anyone seeking a balanced presentation of some of the main issues driving the debate on trade and the environment. As the authors note, countries would not be independent in an ecological sense even if they did not trade, because ecological systems do not begin and end at borders. The authors conclude that “the removal of economic borders and the associated increase in mobility of industries has made [international] co-operation more urgent”. In an era of economic globalisation, the globalisation of the world’s ecosystems is also increasingly hard to avoid. ■

Recent Editions

Hazebroek, H. and Abang Kashim bin Abang Morshidi 2000. National Parks of Sarawak. Natural History Publications (Borneo), Kota Kinabalu. ISBN 983-812-032-4. 501 p.

Available from: *Natural History Publications (Borneo) Sdn. Bhd., PO Box 13908, 88846, Kota Kinabalu, Sabah, Malaysia.*

This book is a particularly fine addition to what is a long line of impressive publications on the natural beauties of Sarawak. The photos are stunning and the text provides potential visitors to the national parks with a great deal of information on the biology, geology and climate of the area in question. It also provides information on the practicalities of visiting the parks.

Prasad, B. (Ed.) 1999. Biotechnology and Biodiversity in Agriculture/Forestry. Science Publishers Inc. Enfield, USA. ISBN 1-886106-99-1. 137 p. US\$55.

Available from: *Enfield Distribution Co., PO Box 699, Enfield NH 03748, USA; Fax 1-603-632 5611; Email enfield@connriver.net*

As the title seems to suggest, this book never quite decides what it is about. It is based on a conference held in 1996; papers relating directly to forestry are concerned mainly with forest management in Nepal.



Advocating ISO

Sir

I read the article 'Issues in certification' (*TFU* 10:1, pp 2–6) with much interest and concurred with most parts of it. However, I feel there is a need to inculcate a single, internationally recognisable system-based (or process-based) approach that incorporates a professionally and internationally or regionally acceptable performance-based approach: ie one that takes on board biological, environmental, economic and social factors.

Towards this end, I strongly feel that the framework of ISO 14001 EMS, given its generic nature, the fact that it is non-sector/non-commodity specific, and its explicitly required environmental policy, should be the standard approach (not even as a benchmark!) to be used by all forest management auditors/certifiers. This will reduce variability in certification, leaving only standards of performance to be argued intelligently and professionally.

(There is no compelling reason to accept a single set of performance standards because it would defeat the idea of auditors being innovative, flexible and anticipatory in carrying out forest management certification. Furthermore, forests are situated in different ecological zones and forest owners have different priorities for their use, based on many factors.)

If one accepts ISO 14001 EMS as the operational standard framework of system-based forest management certification, then the various standards and guidelines – such as ISO 14004, ISO 14010, ISO 14011 and ISO 14012 – become very handy and will further reduce variability in other aspects. For examples, ISO 14011 (Audit procedures), ISO 14012 (Qualification criteria for environmental auditors) and ISO/IEC Guide 62 (Accreditation of certifying body) support and complement ISO 14001 EMS. All these are not so difficult requirements, as many existing certifying bodies already claim that they have accepted the principles of ISO-based auditing, yet still use their own manuals that vary between one certifying body and another. Therefore, one needs only to bridge the gap between ISO 14001 EMS and its applications in the certification of forest management.

Those who wish to explore the potential of ISO 14001 EMS in forest management

certification should refer to a joint publication between Universiti Putra Malaysia (UPM), the United Nations Environment Programme and the Danish Cooperation on Environment and Development entitled 'Environmental Management Standards: ISO 14000 – Towards a Sustainable Future', published in 1999 by UPM Press.

The International Organization for Standardization (ISO) has also published a guide titled 'Publicizing your ISO 9000 or ISO 14000 certification'. This aims to help certificate holders avoid pitfalls such as misleading or confusing claims in advertisements and promotional material and to let the market know they operate a management system which has been independently assessed and certified as conforming to an ISO standard.

The use of ISO system-based certification adds up to greater international credibility and transparency in forest management practices.

Dr. Wan Razali W. M.

Deputy Director-General/Principal Scientist
Forest Research Institute Malaysia (FRIM)
Kuala Lumpur, Malaysia
23 June 2000

This correspondence represents the views of the author alone and does not imply any opinion or stance whatsoever on the part of FRIM or the Institute of Foresters Malaysia.

Re: Extolling Forest Trade

Sir

I wish to make a few comments to support your correspondent ('Extolling forest trade', Letters, *TFU* 10/1). In the early days of Indian independence, farmers were coaxed to undertake tree cultivation in the form of agroforestry, farm forestry, line plantations along boundaries, and in places on their farms threatened with erosion. They listened. But now, when harvesting those plantations, farmers receive little help in marketing and are hard-pressed to sell their timber and non-timber forest products for remunerative prices. Frustrated, they fall easy prey to cunning traders who make more money in the deal.

Now, thousands of hectares of farm land formerly planted to trees lie fallow –

unproductive waste. There are few takers to rehabilitate with trees because of such marketing difficulties.

The Indian government has largely ignored forests in its policies, placing them first within the Ministry of Agriculture and now the Ministry of Environment. Submissions to the government to establish an independent ministry of forests fall on deaf ears.

Forests on off-forest lands have never drawn any policy development. International advice is needed. Marketing issues must be addressed: for example, forest development corporations could purchase timber and non-timber forest products and pay the growers on the spot. Hopefully, organisations such as ITTO will stand by India to help institute organised forest management outside government lands.

S.S. Chitwadgi, I.F.S. (retired)

31 May 2000

Indonesian Ministry Reshuffle

A recent reshuffle of the Indonesian cabinet by President Abdurrahman Wahid has joined the Department of Forestry and Estate Crops with the Department of Agriculture to form the Department of Agriculture and Forestry. The new minister is Professor Dr Bungaran Saragih; the former Minister of Forestry and Estate Crops, Dr Nurmahmudi Ismail, will stay on in the new department as Junior Minister of Forestry.



Useful sites on the internet

ODI Forests

The Forest Policy and Environment Group of the UK's Overseas Development Institute now has its own website. This site provides access to the Rural Development Forestry Network, which disseminates research information on key issues in tropical forestry and "aims to influence policy and decision-making in both governments and international aid agencies". It also provides a route to TROPICS, a database of tropical forestry activities undertaken by the European Commission and European Union member states.

www.odifpeg.org.uk

Language: English, although some information accessed through this site is also available in French, Spanish, Portuguese, Italian and German

Forest Investigation

The website of Brazil's 'Forest Investigation Society' (SIF) provides access to the journal *Árvore*, one of Latin America's primary vehicles for the dissemination of original scientific and technological articles in the fields of forest science and environment. It is published every three months in hard copy; abstracts in English and Portuguese are available at the website. (From Mauro Reis)

www.yfv.br/def/sif

Languages: Portuguese and some English

ITTO on-line

And don't forget ITTO's website. It contains many key ITTO documents, including the *TFU* in English, Spanish and French, ITTO's *Criteria and Indicators for Sustainable Management of Natural Tropical Forests*, and the Organization's manual for the application of criteria and indicators.

www.itto.or.jp

New Email Addresses

ITTO has a new email address. The old, somewhat cumbersome address has been replaced by: itto@itto.or.jp

The *Tropical Forest Update* also has a new address through which you can contact the editor. It is: tfu@itto.or.jp

Ugandan Working Plans Published

The Commonwealth Secretariat announced recently that it has published a series of forestry working plans prepared between 1934 and the 1960s for the gazetted forest areas of Uganda. Even today, these working plans are primary sources for forest managers, researchers and conservationists, as well as providing insights into the vision of an earlier generation of foresters. Many of the working plans were destroyed during Uganda's civil unrest; the Commonwealth Secretariat therefore decided to reprint them in facsimile using copies collected from sources in the United Kingdom. Eight plans have now been printed in a standard size and with a common cover.

For more information contact: Brian Kerr, Agricultural Development Unit, Export and Industrial Development Division, Commonwealth Secretariat, Marlborough House, Pall Mall, London SW1Y 5HX, UK; Tel 44-(0)171-7476373; Fax 44-(0)171-7476307; Email b.kerr@commonwealth.int

Reduced Impact Logging Conference Planned

Next February, the FAO-affiliated Asia-Pacific Forestry Commission and ITTO will jointly host an international conference on the application of reduced impact logging (RIL) to advance sustainable forest management. The conference, to be held in Kuching, Sarawak, aims to bring together diverse stakeholders and international experts to share experiences related to the adoption of RIL. It will examine knowledge gaps, highlight opportunities for bringing about change without major upheaval in affected forest industries, and elaborate recommendations for future activities.

See back page for contact details.

Temperate and Boreal Data Published

The United Nations/Economic Commission on Europe recently published *Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand*. According to the Commission's publicity material, this is "the most comprehensive set of internationally

comparable data on the temperate and boreal forests every issued".

It is available in hard copy for US\$150 from national United Nations agencies or direct from: United Nations Publications, Sales and Marketing Section, Palais des Nations, Room C-113, CH-1211 Geneva 10, Switzerland; Fax 41-22-917 0027; Email unpubli@unog.ch. A CD-ROM version is currently being prepared. You can learn more at: www.unece.org/trade/timber/

Making Contact

I would like to exchange information with specialists in Latin American agroforestry systems.

Orestes L. González Jiménez, Professor, Faculty of Highland Agriculture, Canalete, San Andrés, Pinar del Rio, Cuba; Email orestes@af.upr.edu.cu

Preferred language: Spanish

Germany Re-unifies

Although this newsletter is usually up-to-date, the previous edition showed a map of Germany that omitted what was formerly East Germany. Of course, East Germany has been part of the Federal Republic of Germany since the fall of the Berlin Wall in 1989. For the record, the corrected map is reproduced below.





◆ Masters Courses Offered

The Centre for Tropical Agricultural Research and Higher Education (CATIE) offers Masters of Science in five majors. Courses are taught in Spanish but the thesis may be written in Spanish or English.

The Program has a duration of 24 months and starts in January each year. For program admission, the applicant must meet CATIE's academic requirements.

• *Masters in Ecological Agriculture*

In this course, students study tropical agricultural systems in which the natural processes are regulated in order to maintain or improve soil fertility, to conserve both water and beneficial micro-organisms, and to manage pests in an integrated way. The course emphasises plant genetic resources and biotechnology.

• *Masters in Environmental Socioeconomics*

This course makes possible an in-depth study of the most important areas of environmental administration and management and environmental economy and sociology.

• *Masters in Tropical Forest and Biodiversity Management and Conservation*

This course focuses on the social, economic, technical and operational aspects of management systems that allow the sustainable use of forests and forest plantations and the conservation of biodiversity.

• *Masters in Tropical Agroforestry Systems*

This course aims to produce professionals capable of identifying problems and designing agroforestry alternatives that improve the productivity of the land, assure the conservation of natural resources and contribute to an increase in the incomes of farmers.

• *Masters in Management of Hydrographic Watersheds*

This course aims to produce professionals capable of the management and conservation of natural resources in hydrographic watersheds by integrating the use of water, soil, climate and biodiversity resources with social, economic, political and environmental aspects.

The academic cost of these courses is US\$16,730. Food and lodging is additional.

For more information contact: Office of Graduate Studies, CATIE, Turrialba, Costa Rica; Tel 506-556 1016; Fax 506-556 0914; Email posgrado@catie.ac.cr; Web www.catie.catie.ac.cr

Disclaimer

By featuring these courses, ITTO does not necessarily endorse them. Potential applicants are advised to obtain as much information as possible about the course of interest and about the institution offering it.

◆ Biodiversity Assessment and Monitoring for Adaptive Management

May–June 2001 (dates not yet finalised)

Virginia, USA

Cost: US\$4,000 (approx.)

This intensive five-week course is offered every year and is designed for resource managers, ecologists, biologists, environmental educators and consultants. It is divided into eight modules:

- **Module 1.** A framework for biodiversity assessment and monitoring. Background information on geographical information systems (GIS) and statistics.
- **Modules 2–7.** A how-to on assessing and monitoring vegetation, aquatic systems, arthropods, amphibians and reptiles, birds and mammals.
- **Module 8.** A how-to on integrating your biodiversity program, including developing site-based multi-taxa monitoring for adaptive management.

For more information, contact: Christopher Ros, SI/MAB Program, Smithsonian Institution, National Museum of Natural History, 10th and Constitution Ave. NW, Washington, DC 20560-0180, USA; Tel 1-202-357 4793; Fax 1-202-633 8918; Email cjr@ic.si.edu

◆ The Smithsonian Environmental Leadership Course

September 2001 (dates not yet finalised)

Virginia, USA

Cost: US\$2,500 (approx.)

Through demonstrations, lectures and personal and group exercises, this two-week course covers topics such as: foundation skills for the environmental leader; negotiation and conflict resolution strategies; creating compelling futures; and impactful environmental communication. After this course participants should return to their work with a clearer sense of their vision and mission.

For more information, contact: Christopher Ros, SI/MAB Program, Smithsonian Institution, National Museum of Natural History, 10th and Constitution Ave. NW, Washington, DC 20560-0180, USA; Tel 1-202-357 4793; Fax 1-202-633 8918; Email cjr@ic.si.edu

◆ Tropical Dendrology

12–24 March 2001 Spanish

25 June–7 July 2001 English

Costa Rica (San José and the field)

Cost: US\$1,800

This course, which has been run annually since 1993, includes visits to four different 'life zones' within Costa Rica. Participants will gain skills in tree and shrub species identification in the American tropics using a technique developed by Dr L. R. Holdridge. They will learn to identify a large proportion of neo-tropical species to family or genus level, and to species level for some of Costa Rica's most important species.

Contact: Humberto Jiménez Saa, CCT, Apdo. 8-3870-1000, San José, Costa Rica; Fax 506-253 4963; Email hjimenez@sol.racsca.co.cr; Web www.geocities.com/RainForest/9148

◆ Community-based Tourism for Conservation and Development

19 February–16 March 2001

Bangkok, Thailand

Cost: US\$4,300

This course is designed to develop skills and awareness for the successful assessment and planning of community-based tourism activities within a market context. It focuses on participatory planning approaches that actively involve local communities in tourism development.

Contact: Dr Somsak Sukwong, Executive Director, Regional Community Forestry Training Center (RECOFTC), Kasetsart University, PO Box 1111, Bangkok 10903, Thailand; Tel 66-2-940 5700; Fax 66-2-561 4880; Email ftcss@nontri.ku.ac.th; Web www.recoftc.org

ITTO Tropical Forest Update

Editor: Alastair Sarre

Layout: Justine Underwood

Publishing, printing and distribution coordinated by Anutech Pty Ltd, Canberra, Australia.

The *Tropical Forest Update* is published quarterly in three languages (English, French and Spanish) by the International Tropical Timber Organization. It is intended as a forum for information exchange on aspects of sustainable forestry.

The contents of this newsletter do not necessarily reflect the views or policies of ITTO. The non-copyrighted contents may be reprinted without charge provided that the *TFU* and the author or photographer concerned are credited as the source. The editor should be sent a copy of the publication.

The *TFU* is distributed **free of charge** to over 7400 individuals and organisations in 125 countries. To receive it, please send your full address to the editor. Please notify us if you change address.

Please send **all correspondence regarding the *TFU*** to: The Editor, *Tropical Forest Update*, International Tropical Timber Organization, International Organizations Center – 5th Floor, Pacifico-Yokohama, 1-1-1 Minato Mirai, Nishi-ku, Yokohama 220-0012, Japan; Tel 81-45-223 1110; Fax 81-45-223 1111; Email tfu@itto.or.jp

Other enquiries to ITTO should be sent to the same postal address above or to the general ITTO email address: itto@itto.or.jp

The **ITTO homepage** can be found at www.itto.or.jp



◆ 2–8 October 2000. **Harvesting of Non-wood Forest Products.** Ismir, Turkey. Contact: Dr R. Heinrich, Forest Harvesting, Trade and Marketing Branch, Forest Products Division FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy; Fax 39–(0)6–5705 5137; Email rudolph.heinrich@fao.org

◆ 8–13 October 2000. **Forest Genetics for the Next Millennium.** Durban, South Africa. IUFRO 2.08.01. Contact: Colin Dyer, IUFRO Conference Organiser, PO Box 11636, Dorpspruit 3206, South Africa; Tel 27–331–425 779; Fax 27–331–944 842; Email iufro@icfr.unp.ac.za

◆ 10–13 October 2000. Syracuse, New York, USA. **3rd Biennial Conference of Short Rotation Woody Crops.** IUFRO 1.09.00. Contact: Tel 1–315–470 6891; Fax 1–315–4706890; Email ce@esf.edu; Web www.esf.edu/willow

◆ 10–14 October 2000. **1st Symposium of Timber and Furniture.** Porto Velho, Brazil. Contact: STCP, Rua São Pedro, 489, CEP 80035-020, Curitiba, PR, Brazil; Fax 55–41–252 5871; Email stcp@stcp.com.br; Web www.stcp.com.br

◆ 10–15 October 2000. **Congreso de la Asociacion Latinoamericana de Estudiantes de Ciencias Forestales.** Mexico. Contact: Rafael Aranda, Facultad de Ciencias Forestales de la Universidad Autonoma de Nuevo Leon, Carretera Nacional Km 145, Apartado Postal No. 41, Linares, Nuevo Leon, Mexico 67700; Tel 52–821–2–4895 and 6142; Fax 52–821–2–4251; Email raranda@ccr.dsi.uanl.mx

◆ 12–13 October 2000. **The Value of Forests: International Conference on Forests and Sustainable Development.** Tokyo, Japan. Contact: Motoyuki Suzuki, United Nations University, 53–70, Jingu-mae 5-chome, Shibuya-ku, Tokyo 150–8925, Japan; Tel 81–3–3499 2811; Fax 81–3–3499 2828; Email suzuki@hq.unu.edu

◆ 16–19 October 2000. **3rd Latin American Conference on Environment.** Belo Horizonte, Brazil. Contact: Fax 55–31–241 5781; Web www.ietec.com.br

◆ 20 October 2000. **The Role of Science in Forest Policy Development: Indonesia and Malaysia.** Edinburgh, UK. Contact: Kerry McKay, Marketing & Administrative Assistant, Edinburgh Centre for Tropical Forests, Pentlands Science Park, Bush Loan, Penicuik, Edinburgh EH26 OPH, UK; Tel 44–131–440 0400; Fax 44–131–440 4141; Email kerry-mckay@ectf-ed.org.uk; Web www.nmw.ac.uk/ectf/

◆ 21–25 October 2000. **3rd Brazilian Congress on Agroforestry Systems.** Manaus, Brazil. Contact: EMBRAPA; Fax 55–92–622 1100; Email mrossi@cpaa.embrapa.br; Web www.cpaa.embrapa.br/congressosat

◆ 23–26 October 2000. **Forest 2000: 6th International Congress and Exhibition on Forests.** Porto Seguro, Brazil. Contact: BIOSFERA, PO Box 591, CEP 20001-970, Rio de Janeiro, RJ, Brazil; Tel 55–21–221 0155; Fax 55–21–262 5946; Email biosfera@biosfera.com.br; Web www.biosfera.com.br

◆ 25–28 October 2000. **Enviro Latin America 2000.** São Paulo, Brazil. Contact: BIOSFERA, PO Box 591, CEP 20001-970, Rio de Janeiro, RJ, Brazil; Tel 55–21–221 0155; Fax 55–21–262 5946; Email biosfera@biosfera.com.br; Web www.biosfera.com.br

◆ 30 October–1 November 2000. **Earth Technologies Forum: Conference on Climate Change and Ozone Protection.** Washington, DC, USA. Contact: Earth Technologies Forum, 2111 Wilson Blvd, 8th Floor, Arlington, VA 22201, USA; Tel 1–703–807 4052; Fax 1–703–528 1734; Email earthforum@alcalde-fay.com; Web www.earthforum.com

◆ 30 October–4 November 2000. **29th Session of the International Tropical Timber Council and Associated Sessions of the Committees.** Yokohama, Japan.

◆ November 2000. **7th Meeting of the Latin American and Caribbean Forest Information Systems Network.** Mérida, Venezuela. Contact: Osvaldo Encinas, Centro de Información y Divulgación, Laboratorio Nacional de Productos Forestales, Universidad de Los Andes, Apartado 220 Mérida 5101-A, Venezuela; Fax 58–74–442606; Email oencinas@bolivar.funmrd.gov.ve

◆ 7–9 November 2000. **International Conference on Timber Plantation Development.** Manila, Philippines. Sponsored by ITTO. Contact: Ms Mayumi Ma Quintos, ICTPD Project Leader, Forest Economics Division, Forest Management Bureau, Visayas Avenue, Diliman, Quezon City, 1100 Philippines; Tel 63–2926 2141; Fax 63–2920 8650; Email fmbdenr@wtouch.net

◆ 13–24 November 2000. **6th Conference of the Parties to the Framework Convention on Climate Change.** Amsterdam, Netherlands. Web www.unfccc.de

◆ 21–24 November 2000. **Venezuelan Forestry Congress: Arboles, los Protagonistas del Nuevo Milenio.** Piedritas Blancas, Venezuela. Contact: León Rosales, Smurfit Cartón de Venezuela, Av. Libertador C.C. Ciudad Cristal, Acarigua – Edo. Portuguesa, Venezuela; Tel 58–55–220430; Fax 58–55–49734; Email Irosales@smurfit.com.ve

◆ 4–8 December 2000. **Integrated Management of Neotropical Rain Forests by Industries and Communities.** Belém, Brazil. IUFRO 1.07.05. Contact: Dr Natalino Silva, Brazilian Agricultural Research Corp, CP 48, CEP 66240 Belem, Para, Brazil; Tel 55–91–2266622; Fax 55–91–2269845; Email natalino@cpatu.embrapa.br

◆ 10–13 December 2000. **5th Pacific Rim Bio-based Composites Symposium.** Canberra, Australia. Contact: Philip Evans, Department of Forestry, Australian National University, Canberra ACT 0200 Australia; Tel 61–2–6249 3628; Fax 61–2–6249 0746; Email Bio.symposium@anu.edu.au; Web online.anu.edu.au/Forestry/wood/bio/bio.html

◆ 14–15 December 2000. **4th Session of the ad hoc Working Group on Biodiversity, Protected Areas and Related Issues.** Austria. Contact: Liaison Unit, Ministerial Conference on the Protection of Forests in Europe, Marxergasse 2, A-1030 Vienna, Austria; Tel 43–1–710 7702; Fax 43–1–710 7702 13; Email liaison.unit@lu-vienna.at; Web www.minconf-forests.net

◆ 26 February–1 March 2001. **Kuching, Malaysia. International Conference on the Application of Reduced Impact Logging to Advance Sustainable Forest Management: Constraints, Challenges and Opportunities.** Co-sponsored by ITTO. Contact: Thomas Enters or Patrick Durst, FAO Regional Office for Asia and the Pacific, Phra Atit Road, Bangkok 10200, Thailand; Tel 66–2–281 7844; Fax 66–2–280 0445; Email thomas.enters@fao.org or patrick.durst@fao.org

◆ 18–21 February 2001. **International Workshop on Seabuckthorn.** New Delhi, India. Contact: Dr Vivendra Singh, Organizing Secretary, Secretariat of IWS 2001, Directorate of Research, HP Agricultural University, Palampur 176062 HP, India; Tel 91–1894–30406; Fax 91–1894–30511; Email iws2001@hpkv.hp.nic.in

◆ 14–16 March 2001. **International Wood Products Association Annual Convention and International Forest Products Exhibition.** Contact: Wendy Baer, IWPA, 4214 King St West, Alexandria, Virginia 22302, USA; Tel 1–703–820 6696; Fax 1–703–820 8550; Email info@iwpawood.org; Web www.iwpawood.org/convention/html

◆ 3–7 April 2001. **International Symposium on Silvopastoral Systems and 2nd Congress on Agroforestry and Livestock Production in Latin America.** San José, Costa Rica. IUFRO 1.15.02 & 1.15.05. Contact: Agroforestry Symposium Secretariat, Attention: Ariadne Jiménez, Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), Apdo. 44, 7170 Turrialba, Costa Rica; Tel 506–556 1789; Fax 506–556 1576; Email ajimenez@catie.ac.cr; www.catie.ac.cr/events/eventos.htm

◆ 18–25 April 2001. **16th Commonwealth Forestry Conference.** Fremantle, Australia. Contact: Libby Jones, UK Forestry Commission, 231 Corstorphine Road, Edinburgh EH 12 7AT, UK; Tel 44–(0)–131–314 6137; Fax 44–(0)–131–334 0442; Email libby.jones@forestry.gov.uk

◆ 30 April–3 May 2001. **Joint Symposium for Tropical Silviculture and Tree Seed Technology.** Los Baños, Philippines. IUFRO 1.07.00 and 2.09.00. Contact: Ike

Tolentino, Institute of Renewable Natural Resources, University of the Philippines Los Baños, College, Laguna 4031, Philippines; Tel 63–49–536 2599; 63–49–536 3206; Email eltj@mudspring.uplb.edu.ph

◆ 28 May–2 June 2001. **30th Session of the International Tropical Timber Council and Associated Sessions of the Committees.** Abidjan, Côte d'Ivoire.

◆ June 2001. **FAO/ECE/ILO Workshop on New Developments of Wood Harvesting with Cable Systems.** Austria. Contact: R. Heinrich, Forest Harvesting, Trade and Marketing Branch, Forest Products Division, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy; Fax 39–06–5705 5137; Email Forest-Harvesting@FAO.org

◆ 11–13 June 2001. **International Conference on ex situ and in situ Conservation of Commercial Tropical Trees.** Yogyakarta, Indonesia. Sponsored by ITTO. Contact: Ms Soetitah S. Soedjojo, ITTO Project PD 16/96 Rev.4 (F), Faculty of Forestry, Gadjah Mada University, Bulaksumur, Yogyakarta 55281, Indonesia; Fax 62–274–902 220; Email itto-gmu@yogya.wasantara.net.id

◆ 11–16 June 2001. **XV Latin American Congress of Soil Science.** Cuba. Contact: Dr R. Villegas Delgado, Ave Van Troi No 17203, Boyeros, Havana CP 19210, Cuba; Tel 53–7–579 076; Fax 53–7–666 036; Email XV@inica.edu.cu

◆ 11–19 July 2001. **Travelling Workshop on Linking the Complexity of Forest Canopies to Ecosystems and Landscape Function.** Portland and Corvallis, USA. IUFRO 2.01.12. Contact: Michael G. Ryan, USDA/FS Rocky Mountain Research Station, 240 West Prospect RD, Fort Collins, CO 80526-2098, USA; Tel 1–970–498 1012; Fax 1–970–498 1027; Email mryan@lamar.colostate.edu

◆ 22–27 July 2001. **Tree Biotechnology: the Next Millennium.** Skamania Lodge, Stevenson, Washington, USA. Contact: Contact: Dr Steven Strauss, Forestry Sciences Lab 020, Department of Forest Science, Oregon State University, Corvallis Oregon 97331-7501; USA; Tel 1–541–737 6558; Fax 1–541–737 1393; Email strauss@fsl.orst.edu; Web www.cof.orst.edu/cof/extended/conferen/treebio/

◆ 12–18 August 2001. **Forest Modelling for Ecosystem Management, Forest Certification and Sustainable Management.** Vancouver, Canada. Contact: Dr. Valerie LeMay, Dept of Forest Resources Management, 2045–2424 Main Mall, University of British Columbia, Vancouver BC V6T 1Z4 Canada; Tel 1–604–822 4770; Fax 1–604–822 9106; Email forestmd@interchange.ubc.ca; Web www.forestry.ubc.ca/forestmodel

◆ 12–14 September 2001. **Dynamics of Forest Insect Populations.** Aberdeen, Scotland. IUFRO 7.03.07. Contact: Dr Andrew Liebhold, USDA Forest Service, Northeastern Forest Experiment Station, Forestry Sciences Laboratory, 180 Canfield St, Morgantown West Virginia 26505, USA; Tel 1–304–285 1609; Fax 1–304–285 1505; Email sandy@gypsy.fsl.wvnet.edu; Web iufro.boku.ac.at/iufro/iufronet/d7/wu70307/aberdenn_firstannounce.htm

◆ 9–14 September 2001. **5th International Flora Malesiana Symposium.** Sydney, Australia. Contact: Dr Barry Conn, Royal Botanic Gardens Sydney, Mrs Macquaries Road, Sydney NSW 2000, Australia; fmv@rbgsyd.gov.au; Web plantnet.rbgsyd.gov.au/fm/fm.html

◆ October 2001. **Valdivia, Chile. Improvement and Culture of Eucalypts.** IUFRO 2.08.03. Contact: Dr Roberto Ipinza, Universidad Austral de Chile, PO Box 1241, Valdivia, Chile; Tel 56–63–216 186; Fax 56–63–224 677; Email rpinza@valdivia.uca.uach.cl

◆ October 2001. **The Future of Perennial Crops: Investment & Sustainability in the Humid Tropics.** Côte d'Ivoire. Contact: Dominique Nicolas, CIRAD, Boulevard de la Lironde, 34398 Montpellier Cedex 5, France; Tel 33–4–6761 6569; Fax 33–4–67 56 59; Email nathalie.mercier@cirad.fr