ITTO

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 9, No 4 ISSN 1022-5439 1999/4

New Era, New Thinking

Tempering end-of-millennium celebrations in the forestry community is the knowledge that the last century has been a torrid one for forests. They have been slashed, cut down, burnt, eroded and otherwise devastated like never before. People in and on the fringes of the forest have few options other than to rip the forest apart, driven by forces that originate a long way from the forest itself.

At least the world community has woken up to the forests crisis, and that of tropical forests in particular. We know there is a problem, we have studied the reasons, and we have made some attempts to deal with it. There have even been some local successes. But few people would claim that the tide is turning against massive natural forest loss.

New ideas and new approaches are needed if we are to do better in the 21st century than we did in the 20th. In this edition, we search for innovations. The World Commission on Forests and Sustainable Development, for example, has proposed a number of new forest institutions; Ajit Krishnaswamy (pp 7–9) presents some of these, with particular reference to tropical forests.

Several international institutions with roles relevant to tropical forests already exist, including ITTO. The Organization's governing body, the International Tropical Timber Council, convened recently in Yokohama (pp 2–3). Importantly, it appointed a new Executive Director to lead it into the next century. He is Dr Manoel Sobral Filho, a Brazilian national and formerly the Organization's Assistant Director for Forest Industries. Dr Sobral has proven abilities in organisational management and has shown a capacity to think laterally in the search for solutions to the forests crisis. On pages 4–5, he gives some of his views on ITTO's achievements and what it must do now. Two articles on pages 10–12 illustrate some of the Organization's ongoing work, and a brief stocktake is presented on page 6.

These women and children live in a village near the Southern Bakundu Forest Reserve in Cameroon. An ITTO project has been helping them learn sustainable farming and forestry practices. *See story on page 10. Photo: S. Korsgaard*

ITTO is underpinned by the notion that a healthy, responsible timber trade will help promote conservation and sustainable development … but what are the prospects for the trade? Alf Leslie (pp 12–14) argues that they are shaky, unless it can find new and more lucrative markets – particularly in the face of growing competition from softwoods in commodity markets.

And so we enter a new century, a new millennium (both don't actually start until the end of 2000, but let's not quibble). It is certainly a time for reflection and future-gazing. We bring our problems with us, but we also bring a wealth of accumulated knowledge. Our challenge as a world community – with regards tropical forests, at least – is to look afresh at the problems in the new century and to be bold and innovative in dealing with them. Now, *that* would be worth celebrating.

Alistair Sarre
Guest Editor

Inside this issue

Council Appoints New Executive Director

Dr Manoel Sobral Filho takes on the task of guiding ITTO into the next millennium

Deciding who would become ITTO's next chief administrative officer preoccupied the International Tropical Timber Council at its 27th Session held in Yokohama, Japan on 1–6 November 1999.

Earlier, a panel had convened in Yokohama to produce a short-list of candidates from the applications received. This short-list contained four names, although one applicant was later ruled ineligible because the official backing of his government was not forthcoming.

At the Council session, which was attended by representatives of 42 member countries and a range of official observers, delegates heard presentations from the three remaining candidates, Don Wijewardana (New Zealand), Mr Claude René Heimo (Switzerland), and Dr Manoel Sobral Filho (Brazil). Some delegations also met informally with the candidates to discuss their views on the future direction of the Organization. After five days of dialogue between the producer and consumer groups, Council decided by consensus to appoint Dr Sobral as Executive Director for a period of four years. This decision was greeted warmly by delegates, who gave him a standing ovation; many delegations intervened on the floor of the Council with messages of congratulation. Dr Sobral is interviewed on page 4 of this edition.

'Council decided by consensus to appoint Dr Sobral as Executive Director for a period of four years. This decision was greeted warmly by delegates, who gave him a standing ovation.'

Year 2000 Objective

But while the appointment necessarily demanded the close attention of Council, a wide range of other issues was discussed and some notable decisions taken. With the year 2000 just around the corner, Council moved to strengthen a decision made at its previous session, which requested the Executive Director to engage two consultants to prepare a report on the progress of members towards achieving the Year 2000 Objective. At this session, Council requested the Executive Director to engage three more consultants to provide analytical reports of progress towards the Objective in each producer region. These reports will assist the two principal consultants in compiling an overview report.

In a related move, Council decided that the ITTO Guidelines for the Sustainable Management of Natural Tropical Forests, a landmark document first published in 1990, needed updating in view of the Year 2000 Objective and the development of other ITTO guidelines. With this in mind, Council decided to engage two consultants to make a proposal for the development of a comprehensive framework for guidelines and practical working manuals. These are to cover all relevant aspects of sustainable tropical forest management, including reduced impact logging, the rehabilitation of degraded forests and forest lands, and the management of secondary forests.

Council also perceived a need to enhance recognition of the Organization's efforts towards achieving the Year 2000 Objective. It requested the Executive Director to convene an Expert Panel to consider and report to Council at its next session on ways to promote public education and awareness of the Year 2000 Objective.

Fellowship Program Strengthened

Council decided to strengthen the Organization's acclaimed Fellowship Program by endorsing a revision of the Program's objective, eligible activities, priority areas, selection criteria and screening process (see page 30). It also established a fund as a sub-account of the Special Account to be financed by voluntary contributions from member countries. This is to be called the Freezailah Fellowship Fund, in honour of ITTO's founding Executive Director.

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Regular Features

Projects Continue

Council continued ITTO's project program by approving and funding 18 projects, 8 pre-projects and six activities. In total, US$10.6 million was made available at this session for the implementation of projects, pre-projects and activities approved at this or earlier sessions. Money was pledged by Japan, the United States, Switzerland, Australia and Korea, and other previously unearmarked funds were made available through the Bali Partnership Fund and the Special Account.

Bali Partnership Fund

At this session, Council established a sub-committee under the Committee on Finance and Administration for the allocation of funds from Sub-account B of the Bali Partnership Fund. Sub-account B was established in a decision taken by Council at its previous session and is designed to help fund the implementation of non country-specific actions undertaken within the scope of the 1998 ITTO Libreville Action Plan. The sub-committee will also be responsible for monitoring the implementation of such actions funded from the Sub-account.

Informal Trade Group

Trade issues were on the agenda during the session. The Informal Trade Group, which is made up of trade delegates from ITTO producer and consumer member countries, met during the session to discuss a range of topics. It announced, for example, that the provisional theme for the Annual Market Discussion to be held in Peru next May will be 'What does it take to be both responsible and successful in the international tropical timber market?' The broad nature of the theme is intended to enable speakers from a representative selection of countries and interests, and the ensuing discussions, to focus sharply on current issues of importance. The Informal Trade Group also urged the ITTO Secretariat to set in train arrangements to formalise an acceptable status for it by setting aside a period of time for a brief meeting early on at each Council session to allow the trade to update delegates on important developments in the marketplace.

The Chairman, Mr Jean-Williams Sollo, the Vice-Chairman, Mr Rae-Kwon Chung, Ministers of several producer member countries, and ITTO Secretariat staff sit before delegates during the opening of the 27th session of the International Tropical Timber Council in Yokohama. *Photo courtesy Yokohama City Liaison Office*

Annual Review and Market Downturn

The draft 1999 Annual Review of the World Timber Situation, which compiles timber production, consumption and international trade data, was presented to Council; the final version of this document will be published in the first half of next year. In addition, the Council received the final report of a consultancy examining the downturn in the international tropical timber market (see *TFU* 9:3 for a detailed look at the preliminary findings of the report). In this context, the Council invited members to submit comments to the ITTO Secretariat by the end of March 2000; these will be compiled and considered by the Committee on Economic Information and Market Intelligence at its next session.

> *'Council … requested the Executive Director to convene an Expert Panel to consider and report to Council at its next session on ways to promote public education and awareness of the Year 2000 Objective.'*

This 27th Council session was attended by a number of ministers: Mr Sylvestre Naah Ondoua, Minister of Environment and Forests (Cameroon); Mr Jean-Claude Kouassi, Minister of Environment and Forestry (Côte d'Ivoire); Dr Christina Amoako-Nuama, Minister of Lands and Forestry (Ghana); and Dato' Seri Dr Lim Keng Yaik, Minister of Primary Industries (Malaysia). Mr José Carlos Carvalho, Executive Secretary for the Brazilian Ministry of Environment and Renewable Resources, and Mr Shotaro Oshima, Director-General of the Economic Affairs Bureau at the Japanese Ministry of Foreign Affairs, also attended.

Through Dr Sobral, the Chairman and other speakers, the Council recorded its sincere thanks to the City of Yokohama and the people and Government of Japan for their generous hospitality. The 28th session of the Council will take place in Lima, Peru, 24–30 May 2000.

Interview with Dr Manoel Sobral Filho

ITTO's new Executive Director has high hopes for the Organization in the years ahead

TFU: *How would you rate the performance of ITTO so far?*

Dr Sobral: ITTO has performed extremely well in achieving the relatively easier part of its mandate. We provide an effective framework and forum for consultation and for the development of policies and we have developed policies for the sustainable management of tropical forests and for a sustainable international trade in tropical timber. We have also succeeded in convincing and assisting members to adopt these policies. We are there now; I have no doubt that all our members are fully aware of the importance of having in place appropriate policies to promote sustainable production of timber and a sustainable international trade in tropical timber.

We have also worked to assist countries to implement these policies, but we have been less successful in this. I believe the will to implement such policies has strengthened in the 90s, but we still do not have the means. ITTO has only limited resources with which to provide direct assistance to member countries to actually implement the policies that they now have in place.

What role do you expect to play as the new Executive Director?

Well, first of all we have to optimise the use of the limited resources available. In the past we have dispersed our resources in many areas, some of which are of lower priority than others. So I think we need to focus on the key issues that are constraining implementation of appropriate sustainable forest management policies in our member countries.

We have a framework for this already. In 1995, the International Tropical Timber Council listed seven priority actions that should be taken by member countries to accelerate progress towards the Year 2000 Objective. For instance, one priority is the application of reduced impact logging and the training of the workforce in reduced impact logging techniques. I believe that ITTO could have an immediate effect in this regard by establishing reduced impact logging training schools in each of the three producing regions. There are many other actions we can take with regard to the priorities identified by Council, and I will be working with the Council to pursue these.

'I believe that ITTO could have an immediate effect … by establishing reduced impact logging training schools in each of the three producing regions'

Of course, to optimise the use of our resources, we have to improve the financial control of the funds that we transfer to our member countries. As you know, we have grown extremely fast: in little more than a decade our active project portfolio has grown from just a handful to around 150. So we do have to put in place better administrative and financial controls of projects to make sure that we are getting value for our money. This is something I intend to implement immediately.

In 1990, ITTO set itself the Year 2000 Objective, which is that the international trade in tropical timber should be supplied from sustainably managed sources by the year 2000. The deadline is now upon us. What is the status of the Objective?

In 1995 we carried out a mid-term review related to progress towards the Year 2000 Objective. This review revealed that progress had been made, particularly, as I have mentioned, with regard to the design and adoption of appropriate policies. It also found that progress was varied from country to country. At around the same time, ITTO reviewed the financial resources needed to assist its producer countries to achieve the Objective; these were of an order of magnitude not really within reach of ITTO. So that has been hampering progress. Nevertheless, I think we have done much more than any other international forest-related organisation to assist producing member countries in moving towards sustainable forest management.

The mid-term review was the last assessment made on progress towards the Objective. As you point out, the deadline is now upon us and we are taking steps for another comprehensive, in-depth assessment through two very recent Council decisions, one in Chiang Mai in June 1999 and one at the November 1999 session here in Yokohama. These have provided for the collection and analysis of information from member countries regarding their progress and also for taking stock of the work of ITTO itself and its contribution to such progress.

In addition to this assessment, Council has approved a project that will give us an almost x-ray view of the status of the tropical timber industries themselves. It will survey the situation in the 500 most important tropical timber producing and exporting companies in producing countries with regards to their timber production regimes and their adherence or otherwise to the ITTO Guidelines for Sustainable Tropical Forest

Management. Through this project, the ten best-performing companies will be the subjects of in-depth case-studies. These will subsequently be presented at an international conference, to help spread the good word to other companies. This project will take two-and-a-half years but it will complement nicely the national reports being produced by members now and will offer a very detailed view of what's going on at the field level.

Without wishing to pre-empt the review process, it seems likely that it will find that not all countries have fully achieved the Objective. After the year 2000, will the Year 2000 Objective just be forgotten, or will it remain relevant?

I think it will remain extremely relevant. My understanding of the Year 2000 Objective is that it is not an objective that can be achieved by a date. It crystallises ITTO's policies and work for the promotion of sustainable forest management. But, you know, sustainable forest management itself is a process. That's what criteria and indicators are for – they are tools to make possible the continuous assessment of the status of and progress towards sustainable forest management.

So we will have to continue working. At the same time it is important that we clarify to the general public and to all those interested in tropical forests that we are engaged in a process, that it will continue, that we have already achieved quite a lot, and that we would achieve much more with more resources.

Is it realistic to expect that the tropical forests crisis will ever be solved?

When we see what is happening in the tropical forests, when we see the amount of dialogue and international aid directed at the problem, and when we are informed that tropical forests continue to be lost at a staggering rate, it is easy to feel powerless to change the situation. We must search for innovative ways of dealing with the problem. In particular, something has to be done to provide those who live in the forest with the means to improve their livelihoods without destroying the forests. This is essential but elusive – the international community offers many solutions but the problem is not yet close to being solved.

I lived in the Amazon region for many years, and I know that the situation is clearly linked to the fact that the natural forest is presently economically uncompetitive compared to other development options that require forest-clearing. Unless this changes, I don't think the forest owners will be able to conserve their forest and manage them in a sustainable way. This is clearly our greatest challenge. If we continue to live in a world that subsidises plantation forests and farmers and makes plantation wood and farming products more competitive than forest products from natural tropical forests, it's clear that forests will continue to be removed. It's sad, but it's reality. But it does open up new lines of thought: dozens of studies, if not hundreds, have been carried out into the subsidies afforded to forest plantations and to farming products. We should find out more about forest and farming subsidies and their implications for the sustainable management and conservation of tropical forests.

'… we can realistically expect within four years that at least some of the ITTO member producer countries will have achieved a sufficient level of sustainable forest management to remove any objection to the trade of their timber products, even in the greenest markets.'

A sustainable, remunerative tropical timber trade will be part of a solution to the forests crisis – it has the potential to generate considerable revenues for forest owners and employment for both rural and urban communities. But in many cases it will not be the only solution. The forests offer many goods and services that are valuable at the local, national and global levels – such goods and services must be paid for at each level.

Your term in office, in the first instance at least, will be four years. What do you hope to have achieved by the end of it?

My task is to serve the International Tropical Timber Council well, seeing that its decisions and policies are implemented appropriately. Within this task, I have many goals, but perhaps I can highlight just a couple here. I think we can realistically expect within four years that at least some of the ITTO member producer countries will have achieved a sufficient level of sustainable forest management to remove any objection to the trade of their timber products, even in the greenest markets. This could be even more significant than it sounds, because don't forget that almost 90 per cent of the international trade in tropical timber is accounted for by only six producing member countries. Among these six, I'm sure a few of them are already quite advanced in sustainable forest management. We just need that additional push to really be in a pretty good position within four years.

I also hope that ITTO will continue to expand its role in the establishment and management of trans-boundary conservation areas. Totally protected trans-boundary areas are an essential part of sustainable forest management for more than simple conservation reasons. They are also very important in helping to prevent and monitor illegal trade, which is within the mandate of ITTO. So right now we are working with the Government of Thailand to assist with the management of a conservation area on the border between Thailand and Cambodia, and with Ecuador and Peru to establish a transboundary conservation area on the border between those two countries. This later project will have the additional benefit of contributing to peace, because the area to be conserved is in the formerly disputed region between the two countries. Personally, I hope that within four years the area of conservation reserves developed with assistance from ITTO will have grown from its current 1.5 million hectares to around five million hectares. That would be quite rewarding. ■

An ITTO Stocktake

Some data on the Organization on the threshold of a new millennium

Table 1: Projects, pre-projects and other approved activities funded by ITTO, 1987–98 (US$million)

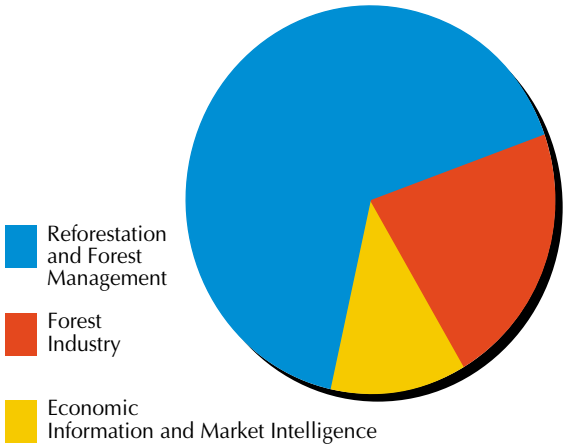
Work	Status	Number	Total budget	ITTO funding
Projects	Completed	146	82.3	60.4
	Operational	104	110.3	83.0
	Pending contract	14	7.7	7.3
	Sub-total	264	202.3	150.7
Pre-projects	Completed	86	9.5	8.9
	Operational	16	1.4	1.2
	Pending contract	9	0.8	0.7
	Sub-total	111	11.7	10.8
Approved activities	Completed	63	10.9	10.9
	Operational	11	1.3	1.3
	Pending contract	-	-	-
	Sub-total	74	12.2	12.2
TOTAL		**449**	**226.2**	**173.7**

Source: ITTO Annual Report, 1998

The International Tropical Timber Organization currently has 53 member countries (including the European Union), composed of 29 producer members and 24 consumer members. Together, these account for over 80 per cent of the world's closed moist tropical forest and more than 90 per cent of the international trade in tropical timber.

Table 1 shows the amount expended by ITTO on projects, pre-projects and activities (a pre-project may be thought of as a scoping study) since it came into existence in 1986. It is important to note that the funds are provided as grants rather than loans and that projects are country-driven. This recognises the autonomy and competence of producer countries and fosters within-country project management skills. The difference between the total budget and the amount provided by ITTO is invariably contributed by the country implementing the project, pre-project or activity.

Figure 1: The distribution of funds between divisions



ITTO has three technical divisions: Reforestation and Forest Management, Economic Information and Market Intelligence, and Forest Industry. Figure 1 shows how ITTO funds have been distributed between these divisions. ■

The ITTO Secretariat, which is based in Yokohama, Japan, currently has a staff of 30, with 14 nationalities represented. **Back row** (from left): Mr Tadayuki Saito, Dr Efransjah, Dr Douglas Pattie, Dr Svend Korsgaard, Mr Edmond Collins Ahadome, Dr Michael Adams, Dr Steven Johnson. **Middle row**: Mr Amha Buang, Mr Charas Mayura, Mrs Hideko Hattori, Mr Jairo Castaño Galvez, Mr Emmanuel Ze Meka, Dr Hwan Ok Ma, Dr Chisato Aoki, Mr Nobuaki Fukui, Ms Akiko Yoshida, Mr Michiaki Fujimoto, Ms Naho Tamura, Ms Masako Ochiai, Mr Akira Kagaya. **Front row**: Ms Masaki Miyaki, Mrs Manami Araki, Ms Manako Hanawa, Dr Manoel Sobral Filho, Mr Takeichi Ishikawa, Ms Akemi Yamane, Ms Hitomi Watanabe. **Absent**: Mr John Leigh, Mrs Kanako Sakaguchi, Mr Daiki Tanaka.

A Global Vision for Forests in the 21st Century

The World Commission on Forests and Sustainable Development says that radical changes are needed if forests worldwide are to survive the next century

by Ajit Krishnaswamy

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Due to political differences at the 1992 Rio Earth Summit, a group of some 30 former heads of government and state known as the InterAction Council felt that solutions to forest degradation are likely to be more political than technical. Accordingly, they decided to establish an independent commission on forests consisting of seasoned politicians and eminent scientists from all parts of the world.

Thus, the World Commission on Forests and Sustainable Development (WCFSD) was launched in 1995 to provide "a global vision of forests in the 21st century", with former Indonesian Minister for Population and Environment, Dr Emil Salim, and former Prime Minister of Sweden, Ola Ullsten, as co-chairs. A group of 26 respected individuals with backgrounds in politics, policy, science and forestry from 24 countries in both the North and South were selected as commissioners.

The WCFSD held public hearings in 1996 and 1997 in five geographical regions (Asia, Latin America and the Caribbean, North America, Africa and Russia). A wide range of forest stakeholders, environmentalists and scientists participated in the hearings. After nearly four years of work, the Commission's final report, *Our Forests … Our Future*, which contains the Commission's findings and recommendations, was published last April, along with a 37-page summary report.

Global Recommendations

Our Forests … Our Future calls for fundamental and far-reaching changes that go far beyond just technical adjustments. The Commission demands a conscious effort by societies to take bold political decisions and to develop new civil society institutions so as to improve governance and accountability regarding forest use. Innovation is desperately needed if the world is to prevent a deepening of the forests crisis, and the Commission has tried to be creative in its search for solutions.

The Commission proposes three innovative mechanisms to improve governance and accountability. These are known as:

- ForesTrust – a set of arrangements that provides a structure for partnerships between civil society, governments and industry in managing forests (Box 1);
- the Forest Security Council – encouraging a small group of forest-dependent countries to take on a leadership role towards global forest issues (Box 2); and
- the Forest Capital Index – a numerical indicator assigning value to a country's forest capital, particularly its non-timber values (Box 3).

The Commission believes that its recommendations will play an increasingly important role in international and national forest policy in the 21st century. It is now engaged in a follow-up phase to develop and publicise the three mechanisms described in boxes 1–3.

There is already interest in these mechanisms amongst many institutions and individuals. The International Institute for Sustainable Development in Winnipeg, Canada will be the host organisation for the ForesTrust concept and a workshop on it is planned in 2000. The Woods Hole Research Center in Massachusetts, USA and the M.S. Swaminathan Research Foundation in Chennai, India have jointly agreed to lead the Forest Capital Index project and a workshop on it is being organised in Chennai, India in mid-February 2000. The Forest Security Council concept will continue to be advocated amongst political leaders.

Issues and Recommendations for Tropical Forests

The poverty of forest-dependent peoples, their lack of voice in forest decision-making, and the rapid rate of deforestation were recurrent themes during the Commission's hearings in tropical forest regions.

Rural poverty remains a major challenge in tropical countries. The paradox is that many tropical countries with a significant number of rural poor have a large proportion of their land under forests. However, the decline of forests has threatened the livelihood of millions of people in these countries. Rural poverty and forest loss are closely linked in tropical countries, since a large number of people depend on forest resources, mainly fuelwood, for their sustenance. Forest loss increases poverty because forest products become harder or costlier to obtain.

The Commission explored ways in which the vicious cycle of forest decline and increasing rural poverty in tropical countries could be broken. It suggests mechanisms to give the

Box 1: ForesTrust

The WCFSD's ForesTrust recommendation focuses on mechanisms that will ensure greater civil society involvement in forest management. The Commission sees a need for a set of arrangements that will enable citizens to exercise their right to oversee forest management. It suggests that this concept be called ForesTrust International at a global level, with further applications at the national and local levels.

ForesTrust would have four key components: (i) Forest Watch – to get the public involved in monitoring its forests; (ii) a Forest Award – to recognise good performance in conservation and sustainable forest management; (iii) a Forest Ombudsman – to pass authoritative judgments on the mismanagement and abuse of forest; and (iv) a Forest Management Council – to set standards of sustainable forest management.

public more access to the management of forests through institutions such as ForesTrust and Forest Watch (see Box 1). The poorest of the poor stand to benefit the most from such access.

Achieving sustainable rural livelihoods and alleviating poverty is more likely through the localised management of forest resources: it results in a more equitable sharing of benefits compared to centralised or corporate management. Localised management manifested through community forests, village woodlots and tree plantations on farms reduce poverty by: providing fuelwood, fodder, and non-timber products; increasing food security; preventing land degradation; and providing rural employment.

What does the future hold for these children, and millions more like them? *Photo: Virginia Boyd, courtesy the Canadian International Development Agency*

Participation a key

In its report, the Commission argues for governance mechanisms to be put in place that would open up the decision-making process and involve civil society, especially groups directly affected by forestland use decisions. Public participation is one of the foundations for sustainable development and is in turn a prerequisite for more community involvement in forest management.

There is a history of community forest management in many tropical forests. It is true that community control has been displaced through state acquisition and control of forestlands, through the operations of large timber corporations, and through insecure land tenure. However, there appears to be a renaissance in community involvement in forest management.

The Commission views the removal of obstacles that hinder community forest management as critical to the sustainability of tropical forests. To this end, the Commission suggests: involving communities in land allocation and management decisions; introducing subsidies to support community forestry as a percentage of revenue from timber extraction; incorporating in policy other subsidies that favor communities; creating and expanding markets for non-timber forest products; and supporting village-level institutions.

'The Commission views the removal of obstacles that hinder community forest management as critical to the sustainability of tropical forests.'

Combined with the empowerment of communities, the Commission believes it imperative to review how land ownership and tenure in any country affects the conservation of forests. In many tropical countries, economically marginalised and displaced communities often invade public forests due to the lack of other livelihood alternatives. They have little incentive to care for the land or sustain forests without ownership or secure tenure.

Clearly defined, secure and enforceable property rights are thus a fundamental requirement for encouraging the sustainable use of tropical forests. Unsustainable forest use due to a lack of ownership and tenure could also be reduced by policies that confer some measure of reward or security to forest-dependent communities. A well-structured land tenure system combined with government regulations that reward forest protection is central to sustainable forest use.

The role of agroforestry

The conversion of forest lands to agriculture and pasture has been a major reason for forest loss and degradation in tropical countries. Demand for food will continue to increase as population and incomes increase. The Commission believes that agroforestry is an important solution to this problem. As common property resources disappear or are degraded,

Box 2: The Forest Security Council

The Commission is challenging a small group of countries that own, consume or trade in most of the world's forest resources to provide international leadership on global forest issues by constituting themselves as a Forest Security Council (FSC). The smaller size of the proposed FSC (15–25 countries) and its expected informal workings would ideally complement the work of the larger and more formal intergovernmental forums in the search for quicker, effective and agreed solutions to global forest issues. The FSC is intended to encompass the interests not only of governments but also the concerns of the scientific, civil and corporate sectors of nations.

Box 3: The Forest Capital Index

The Forest Capital Index (FCI) initiative seeks to address a critical need for valuation measures that reflect the varied and intrinsic functions of forests in maintaining global ecological processes. It responds to the call by various intergovernmental processes (including the United Nations Conference on Environment and Development and the Intergovernmental Forum on Forests) for more advanced indicators of sustainable development. As a tool for international forest policy, the FCI will permit evaluation of the progress made by each of the world's nations in renewing and sustaining its stock of forest resources – its forest capital. It will serve as a benchmark for assessing whether that capital is increasing, static or declining over time. It will facilitate a global framework for the valuation of multiple forest services (especially non-timber) and create a possibility for market mechanisms to compensate for those services.

A suite of indicators might be used for the FCI. These could include: surface area; standing biomass; net primary productivity; species richness; and species diversity. Examining the changes in these over time will treat international comparisons of forest decline more equitably than would absolute measures of deforestation. It is important to unify existing forest monitoring programs into a coherent measure that can easily be used to provided a more realistic and valuable measure of a nation's progress in forest conservation.

farmers will have to shift the production of outputs of value into their own land by planting trees alongside their agricultural crops. Agroforestry holds considerable potential as a land management practice for maintaining soil fertility and productivity in the tropics.

Recognising the economic benefits of forests

The Commission stresses the importance of assigning economic value to the role that forests play in reducing poverty in tropical countries. Forests contribute directly to the livelihoods and economic independence of millions, many of whom are marginal participants in national or regional economic systems. Many of the multiple benefits of forests are not reflected in financial transactions at all. Forests provide a wide range of other wood and non-wood products which do not figure in national income but which remain critical to large numbers of poor people.

Conclusion – Managing Forests Sustainably into the 21st Century

Managing forests sustainably involves more than technical solutions. It must get to the human issues – betterment of the human condition, social equity, poverty reduction, power relations, gender roles – which lie at the heart of forest resource problems and conflicts. Embracing these human issues requires the participation of a broad cross-section of people in planning for and making decisions about forest management.

Throughout its report, the Commission gives strong support for greater participation in decision-making and management by communities who closely depend on forest resources, and also by other elements of civil society. This approach reduces centralised bureaucratic determination and control. It is also consistent with the themes of community management and empowerment of local people.

A participatory approach is an essential mechanism for the protection of the public interest. Key issues in the participatory approach are: defining the participants (or stakeholders) and their interests; willingness and ability to have a dialogue; presenting scientific information in a form which can be easily understood; reconciling local, national and global interests; and the political will to respect and enforce tough decisions.

The Commission realises that simply opening up the decision-making process will not by itself reverse the decline of forests. Most of the causes of forest decline are due to policies and actions that originate outside the forestry sector. However, the Commission advocates the participatory approach as a necessary means of achieving greater social equity, which is essential for sustaining human societies. New forms of governance and institutions to permit wider and more equitable participation therefore have to be high on the political and social agendas of the 21st century.

Forests must and will be used to feed, clothe, house and otherwise satisfy basic human needs. The concern is about the extent to which forests are used in relation to their capacity for renewal; the challenge is to manage forests so that they continue to satisfy human needs and at the same time are able to sustain the planet through their ecological functions. Based on existing evidence, humans can no longer use forests in the way they have in the past. We have to make radical adjustments in order to sustain them in the 21st century and beyond.

Further information about the WCFSD and its follow-up activities can be obtained from its Secretariat at the International Institute for Sustainable Development, 161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba, Canada R3B 0Y4; Tel 1–204–958 7700; Fax 1–204–958 7710; Email wcfsd@iisd.ca; web http://iisd.ca/wcfsd ■

Promoting Agroforestry in Regional Peru

An ITTO project has helped foster agroforestry in the Peruvian Amazon through the establishment of plantations of* Bertholletia excelsa *(Brazil nut) and other species

by Hernán Gutiérrez Merino[1] and John Leigh[2]

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The tree that bears the Brazil nut, *Bertholletia excelsa*, is a common species in the forests of the Department of Madre de Dios in the Peruvian Amazon. Known locally as *castaña*, it stands out from the rest of the vegetation because of its majestic appearance and wide crown, reaching heights of up to 50 metres. The nut is in high demand worldwide: in 1995, total production of the Brazil nut stood at 14,700 metric tonnes, of which Brazil produced 54 per cent, Bolivia 34 per cent and Peru 12 per cent. Some plantations have been established in Madre de Dios – the only department in Peru in which the species grows naturally – but there remains a lack of technical information on their management.

A project worker removes Brazil nut shells as part of the marketing process. *Photo: H. Gutiérrez*

Bertholletia excelsa is a significant economic species in Madre de Dios and its harvesting is very much a family activity. Family members carry out tasks such as the clearing of tracks for the transport of nuts, the collection and opening of shells, the filling of sacks or *barricas*, their transport, and the soaking, drying, peeling and selection of nuts. Contracts for Brazil nut production are renewed and passed on from one generation to the next.

In order to avoid the depletion of this resource, Ministerial Resolution No. 00729-81-AG-DGFF was issued in 1981, banning the felling of Brazil nut trees in the natural forests of Madre de Dios. Nevertheless, forest destruction continues in the region, jeopardising the industry and hence the livelihoods of many people.

In 1995, the International Tropical Timber Council approved a project in the Department of Madre de Dios to address deforestation and rural poverty there. Project PD 9/95 Rev. 2 (F) 'Reforestation using high-value tropical species in agroforestry systems of the Province of Tambopata' commenced in 1996 with funding from the governments of Peru, Japan, the United States and Norway through ITTO. Its aim was to contribute to the increased profitability of forest and agricultural activities in the department by incorporating agroforestry activities in the rural economy. The key tree species for promotion were *B. excelsa*, cedar (*Cedrela odorata*), mahogany (*Swietenia macrophylla*) and tornillo (*Cedrelinga catenaeformis*).

Table 1: Diameter, height and mean annual increment (MAI) of *B. excelsa* in plantations of different ages, as measured in November 1997

Plantation	Age in years	Number of trees measured	Diameter at breast height *(cm)*				Height *(m)*			
			Max	*Min*	*Average*	*MAI*	*Max*	*Min*	*Average*	*MAI*
1	3	63	7.0	1.0	3.3	1.10	5.8	2.00	3.5	1.17
2	8	116	29.0	8.0	17.8	2.23	16.5	4.75	10.5	1.31
3	8	41	24.0	7.0	13.9	1.74	24.0	7.00	11.1	1.38
4	10	48	34.0	9.0	20.2	2.02	22.0	7.00	13.8	1.38
5	11	32	45.0	16.0	26.5	2.41	28.5	16.25	22.9	2.08
6	25	13	74.0	36.0	56.0	2.24	30.0	22.00	27.5	1.10

Project Achievements

The project was completed in April 1999 with a considerable list of achievements. This includes:

- the identification, marking and maintenance of several dozen seed trees, many of which are in the neighbourhood of the Puerto Arturo Indigenous Community. The phenology of the trees was studied and locals were trained in seed collection, thus providing the Puerto Arturo Indigenous Community with an additional source of income;
- the training of nearly 600 farmers in the establishment and maintenance of agroforestry systems;
- the establishment of four permanent tree nurseries, with a total seedling production capacity of around 250,000 per year;
- the provision of field technical assistance to community members, especially in regard to agroforestry plantation establishment and tending;
- the adoption of a participatory methodology to promote the active participation of community members, particularly women;
- the designation of 55 one-hectare agroforestry plots as model plots. These served as the basis for the project's extension efforts and were monitored to obtain growth and yield data;
- a study on the growth and seedling production of *B. excelsa*, which provided data used to improve plantation establishment standards for this species. Table 1 shows diameter and height measurements obtained from already-established plantations; and
- various communication activities, both within the region and outside.

A nursery established by the project holds seedlings of *B. excelsa* ready for planting out in agroforestry plots. *Photo: H. Gutiérrez*

Uptake

The people targeted by the project were the migrant subsistence farmers inhabiting the Puerto Maldonado highway corridor within the Department of Madre de Dios. From an initial lack of interest in forestry and agroforestry activities, these migrant farmers slowly, through extension efforts, started to participate in the project and increasingly became the promoters of agroforestry activities in the region. Perhaps the best indicator of project success can be seen in uptake: 500 migrant farming families in 34 rural communities located within the project's area-of-influence established agroforestry plots on their farmlands and/or degraded forestlands during the project, covering a total area of approximately 1,500 hectares. The establishment of such plots has led to an immediate increase in the value of their lands and will provide them with additional income in the long term when the planted trees are mature enough to be harvested.

'From an initial lack of interest in forestry and agroforestry activities, these migrant farmers slowly, through extension efforts, started to participate in the project and increasingly became the promoters of agroforestry activities in the region.'

An evaluation of these agroforestry plots confirmed that 70 per cent of families in the project area had apparently settled on their lands, while the remainder continued practising shifting agriculture. The project's executing agency and local governments in the region see this as highly encouraging, because it has two payoffs: 1) the degraded lands on which these families have settled are now being rehabilitated; and 2) the settled families will not clear more forests, thus decreasing the rate of deforestation in the region. With continued encouragement, we might expect a significant growth in the Brazil nut industry – along with other timber and non-timber agroforestry industries – in the region.

Translated from the Spanish by Claudia Adan.

Working with Women in Cameroon

An ITTO project is involving women in efforts to introduce sustainable forest management to a Cameroonian forest reserve

by Agbor Pamela Arrey

Project agro-economist, Southern Bakundu Forest Reserve Project, Kumba, Cameroon

It is now recognised that sustainable forest management cannot succeed without the active involvement of local populations and without meeting their development needs. However, experiments in the closed forests of West Africa in which local people are integrated successfully into sustainable forest development programs are still rare.

In 1993, an ITTO-funded project (PD 52/89) commenced in the national forest of South Bakundu, a forest of some 18,000 hectares located in the Department of Mémé in the Southwest Province of Cameroon. The aim was to prepare and apply a management plan for the forest that integrated the economic activities of populations living in and around the project area and enhanced the sustainability of forest extraction activities.

The Role of Women

Early on in the project the role of women was recognised to be of great importance. In addition to their functions as housewives and mothers, women play a big role in both farming and forestry. For example, they collect, process, transport and market non-wood forest products and they are involved in the management of both planted and naturally regenerating forest. Women have a good knowledge about useful forest trees and their location within the local forest area. On the whole, they appreciate the benefits of the forest:

- as a major source of income;
- as a source of food and medicines;
- as a means of development; and
- as a potential reservoir of farmland in the future.

Nevertheless, our experience suggested a number of constraints to the sustainable use of forests by women that have contributed to the degradation of forest resources and low agricultural productivity. The most important of these were:

- agricultural encroachment on the forest;
- unsustainable management of non-timber forest produce;
- the use of unsustainable traditional farming methods;
- a lack of technical know-how;
- inadequate capital for investment in processing and other facilities;
- the absence of credit facilities; and
- a lack of improved/selected planting materials.

Some Principles

In many cases, women in the project area have proven naïve in their interactions with strangers. Project personnel therefore recognised the need to be tactful when involving them in activities. A number of principles were adopted:

- deal with interest groups (ie by tribe, religion, age, crop grown, and labour) when working with more than two women;
- allow democracy to reign during decision-making;
- ensure that villagers contribute their fair share (material or financial) to activities. What cannot be afforded is contributed by the project when necessary;
- arrange meeting venues at a time and place convenient to the women – take the meeting to the women, not the women to the meeting; and
- give women time to discuss among themselves any controversial issues that may arise during discussions.

Improving Conditions

Participant women were sensitised to the issues related to forestry and forest conservation through a series of meetings and discussion sessions. Farming and forestry are inter-dependent activities in this region of Cameroon. But socio-economic problems such as population growth, mass retrenchment and urban-rural migration have led to the over-use of soil resources. New farming and forestry practices are needed. Women in the project area are becoming familiar with new and more sustainable agricultural and forestry techniques through their involvement in demonstration sites established under the project. A range of other activities aimed at improving living conditions and organising the women are also being pursued.

Cooperatives: For example, production and marketing cooperatives for such forest produce as *Ricinodendron* and agricultural products like cassava, cocoa and yam have been formed by women in the project villages. These give women a stronger bargaining position, helping them obtain better prices for their produce.

Soap-making: Soap is an essential household item. In its efforts to empower women by offering them training and the ability to earn income, the project has trained women to manufacture soap for both consumption and sale using locally available materials.

These are just two of a variety of project activities involving women. Many – though not all – women in the project area are becoming more involved in project activities, realising they can be empowered by learning more skills. Some women, though anxious to learn, have been concerned that new activities should not create time-conflicts with other duties, such as taking care of their families and attending to day-to-day needs.

The attitude of many women in the project villages towards the management of forest resources is changing. It is possible to foresee a time when women will handle most facets of forestry development, particularly in regard to non-timber forest products. Perhaps the two most significant lessons we have learned so far are: the need for confidence-building between the project and women; and the need to identify those women who are most innovative and open to new ideas, because it is through them that change will occur. ■

For Whom the Bell Tolls

What is the future of the tropical timber trade in the face of a probable glut of plantation timber?

by A. J. Leslie

The prospects for timber and forest products over the current and next rotations, a period which takes us well into the coming century, are fundamental elements in devising forest policy. They are especially significant for the tropical forests, which are the primary concern of ITTO. In the first instance, this is because of the extent to which the tropical forests have become a global resource over the last quarter of this century and, with that, the overriding importance of sustainable forest management in their future. But equally important is the role of the global plantation resource, which has expanded tremendously more-or-less concurrently.

'In both the Pacific Rim and, before long, the world, the outlook is for over-supplied markets for commodity timbers and pulpwood.'

Those two developments have a mutually reinforcing impact on the future of the tropical forests and the tropical timber trade. The first, the 'sustainable forest management effect', will inevitably push up the cost of timber harvesting and management. The second, the 'plantation effect', will almost certainly put limits on the extent to which timber prices can be increased to cover higher production costs and, depending on its scale and timing, might even push the price ceiling lower.

In a broad sense, the plantation effect has been analysed in a number of recent studies by or for the Food and Agriculture Organization of the United Nations, the European Forest Institute and the Intergovernmental Forum on Forests. Few, however, have looked at the specific implications for the tropical forests or the tropical timber trade. One study that has is the recently conducted review made for Sarawak under ITTO project PD 14/95 Rev.2 (F): Model Forest Management Area, Phase II. Although it is, naturally enough, focussed on Sarawak, some of its findings have a pan-tropical significance. They are presented here, modified slightly to fit the wider tropical context, as a preview to what is coming in the new century.

Tidal Wave of Timber

The first thing to recognise about that future is that the tropical timber market after recovery from the East and Southeast Asian economic crisis of 1997–99 is not going to be the same or even similar to what it was before the slump. It might be, if full recovery occurs very quickly, but even then it would only be temporary. This is because the main factor that will change the market is not anything arising from economic

Helicopter logging in Sarawak: will this be the preferred method of extraction from natural forests in the 21st century? *Photo: Chung Kueh Shin, courtesy Sarawak Forestry Department*

restructuring but a massive increase in the potential supply of plantation wood, which will start to enter the Asia-Pacific region and then the world demand-supply balance soon after the year 2000.

Two features of this addition on the supply side are particularly significant. First, it will be very largely in the form of general-purpose, utility timber (commodity timbers) and pulpwood. Then, second, the age class distribution of the plantation resource is such that it will come in more as a tidal wave than as a steadily rising flow.

This tidal wave will add 35–40 x 10^6 m^3 of industrial roundwood to the supply within the Pacific Rim from around 2005. Being no more than 2–$2^1/_2$ per cent of the present world consumption it is unlikely to have much of an impact at the world level. But in the Pacific Rim markets, where the first tidal wave will hit (originating as it does in the maturation of plantations established in the planting boom of the 1970–85 period in New Zealand, Australia and Chile), the addition amounts to 10–15 per cent of the regional demand. An impact of that scale cannot be so easily disregarded or absorbed.

'The chances of tropical timber being successful in such a market environment cannot realistically be rated as in any way high. Even in those countries with the domestic market base to support a predatory, marginal pricing campaign as a marketing ploy will be very hard-pressed.'

The Second Wave

More significantly, a second tidal wave will follow ten or so years later as the 100–150 x 10^6 hectares of industrial plantations already established worldwide come on-stream. This resource has the potential to meet at least 70 per cent of the world's present consumption of industrial wood. And this potential is being added to by at least 100 x 10^6 m^3 annually with the 5–8 x 10^6 hectares of new plantation being established each year.

Thus, in both the Pacific Rim and, before long, the world, the outlook is for over-supplied markets for commodity timbers and pulpwood. This will only be avoided if:

a) supply from natural forests falls or is reduced at a rate of 15–20 per cent annually from the year 2000 or so onwards; or

b) demand for industrial roundwood increases after the year 2000 at a corresponding rate.

A reduction of output from natural forests as a result of reservation for non-timber use and conversion to non-forest use at an annual rate of 15–20 per cent seems unlikely, although it could occur if competition from plantation wood virtually eliminates natural forest operations. Nor does an annual rate of increase in the demand for industrial wood of 15–20 per cent seem any more likely, given that the average annual rate of increase in the past has been less then two per cent. A combination of both might do it but even then the required rates of change – ten per cent per annum decline in output from natural forests and five per cent per annum increase in demand – seems highly improbable.

Tropical Timber: Uncompetitive as a Commodity?

The conclusion is almost inescapable. The post-recovery market for commodity timber and pulpwood based produce will be fiercely competitive from around 2005 onwards in the Asia-Pacific region and from around 2010–15 for the world as a whole. Much of the wood from the tropical forest resource and almost all of it from the existing and prospective plantations is in these categories. So, from around 2010 to 2015, the bulk of the exports of tropical timber will face over-supplied, intensely competitive markets. Two questions consequently arise:

1) can tropical timber take on that competition and beat it?

2) if it cannot, what else can be done?

The chances of tropical timber being successful in such a market environment cannot realistically be rated as in any way high. Even those countries with the domestic market base to support a predatory, marginal pricing campaign as a marketing ploy will be very hard-pressed.

'It is hard, therefore, to see any route open for the tropical timber trade after another few years other than to disengage from its largely commodity timber strategy before it is driven out of it and to develop itself as an exporter of high value, high quality, decorative timbers from sustainably managed natural tropical forests.'

Seeking the High Value Markets

So is there anything else that can be done? The oversupply will be in the commodity-pulpwood grades but not necessarily in the markets for specialty or decorative timbers. Nevertheless, they will be affected to some degree: the mass market for specialty and decorative products can be met through technological developments that eliminate the

Data Sources

This paper makes use of a number of data sources. In 1998, FAO published a summary and review of the global plantation resources as part of a survey of progress with its Global Fibre Supply Study (GFSS). The New Zealand Ministry of Forestry produced its 'National Forest Description' in 1998, with revised forecasts of its plantation output for well into the 21st century. Australia also launched the 'Plan' announced in 1997 for trebling the area of its plantations by 2020. FAO's 'Outlook Study for the Asia-Pacific Forestry Sector' was published in 1999. Drafts of the final report of the GFSS and a complementary 'Thematic Study on Plantations' as part of the FAO Global Forest Products Outlook Study were also reviewed, as was the FAO paper 'The role of industrial plantations …' published in *Unasylva* (193: 37–43;1998).

Further detail on the analysis underlying the figures presented here can be obtained from 'Forest regeneration and plantation development', a paper written by Mr Leslie for ITTO Project PD 14/95 Rev.2 (F). This project is managed by the Sarawak Forestry Department, which can be contacted at: Wisma Sumber Alam, 5th Floor, Jalan Stadium, Petra Jaya, 93660 Kuching, Sarawak, Malaysia; Fax 60–82–445 639.

technical differences between softwoods and hardwoods and reproduce the decorative features through overlays. But beyond the mass market only the genuine article will do. Questions then arise:

- are there such markets for 'genuine' decorative timbers and products?
- if so, where are they and for what exactly and how big are they?
- what are their key characteristics? And then:
- which tropical timbers can match or be matched to those characteristics?

At present, there are little more than generalities to work from. Teak, mahogany, rosewood, cherry and walnut show that there are such markets. Prices considerably higher than those for commodity timbers are reported or rumoured. Other supply characteristics are not known, at least in the public domain. Hence, before any advance down this track can be made, market research to find, measure and assess these markets is a first requirement, followed by market development to capture and hold them. All of that will be very expensive because the key element in the market research – uncovering information which is very much in the nature of trade secrets – cannot be done by conventional market research methods.

Time to Start?

There could hardly be a worse time to start, with cash flows to fund R&D depressed. But the time is never right. When cash flows are good, supplying the buoyant markets takes up all the time and hides the need and urgency for it.

So the tropical timber trade is trapped. It will find it hard to fund the market R&D program which might enable it to avoid being overwhelmed by this plantation effect. It needs a revival of the pre-slump market to get the necessary cash flows going again, but this post-recovery market is unlikely to be like the pre-slump market for very long. And, to complicate matters, certification of sustainable forest management will be a prerequisite for access to many of the export markets affluent enough to want and afford the genuine article at prices which will carry the cost of sustainable forest management.

It is hard, therefore, to see any route open for the tropical timber trade after another few years other than to disengage from its largely commodity timber strategy before it is driven out of it and to develop itself as an exporter of high value, high quality, decorative timbers from sustainably managed natural tropical forests.

Somehow, tropical forestry must, fairly quickly, take a route in which:

- a multi-species Brandis-type of sustainable forest management with near-zero impact (helicopter) logging is the standard practice;
- the market R&D for identification, characterisation and implementation of the high-value strategy is started immediately; and
- the production, distribution, marketing and quality control systems to capture the high-value markets become the industry norm without delay.

Failing that, the future for tropical forestry is highly likely to be one in which timber production is in rapid decline and a low-output, low-return, weak and fragile competitor in a cut-throat commodity timber export market. The main purpose of tropical forests will increasingly be in their conservation, environmental and ecotourism values; since sustainable forest management will be essential for this and the tropical timber industry in no shape to bear the cost, the industry will virtually disappear.

Author's Postscript

The outlook summarised here is only one of many possible views of the way that regional and global wood supply-demand balances are evolving. Lower estimates of the effective area of the established plantation resource, lower estimates of the rate of additional planting, and lower mean annual increment estimates, combined with higher forecasts of future demand levels, would reduce the impact of the plantation effect, even to the point of eliminating it.

There is no objective reason for choosing any one outlook over the others. The whole procedure of forecasting the future wood supply-demand balance is so full of conjecture, contradictions, pre-conceptions, guesses and wishful thinking on both sides that almost anybody's guess goes. Some, though, on admittedly subjective – as they must be – probability grounds, have rather more credibility.

The outlook presented here is one of these. ■

Code of Practice for Forest Harvesting

The Food and Agriculture Organization of the United Nations has just published its *Code of Practice for Forest Harvesting in Asia-Pacific*. The code, which was developed by the member countries of the Asia-Pacific Forestry Commission (APFC) through an extensive participatory process, provides practical guidance towards sustainable forest management, with particular emphasis on timber harvesting in natural forests. The code is fully consistent with the sustainable forest management approaches recommended by the Intergovernmental Panel on Forests and the ITTO Guidelines for the Sustainable Management of Natural Tropical Forests. In fact, the code represents an attempt to complement these recommendations and guidelines by providing additional guidance for field-level application.

The APFC ad hoc working group on sustainable forest management is actively seeking partners at all levels to support pilot and operational efforts consistent with the code. For more information, or to learn how you might support this initiative, please contact: Patrick B. Durst, FAO Regional Forestry Officer, FAO Regional Office for Asia and the Pacific, 39 Phra Atit Road, Bangkok 10200 Thailand; Tel 66–2–281 7844; Fax 66–2–280 0445; Email Patrick.Durst@fao.org ■

The market is picking up, but what are the longer-term prospects?

by Michael Adams

ITTO Secretariat
Yokohama, Japan

Well I guess that confirms it, the Asian financial crisis is over! In meetings towards the end of the year, economics ministers from the European Union (EU) and ten Asian nations hailed the end of Asia's financial crisis, but said that affected countries must push on with banking and financial reforms.

This view was echoed at the World Economic Forum's East Asia conference, where leading economists and government leaders gave a resounding vote of confidence in the ability of crisis-hit East Asian economies to sustain their tentative recoveries.

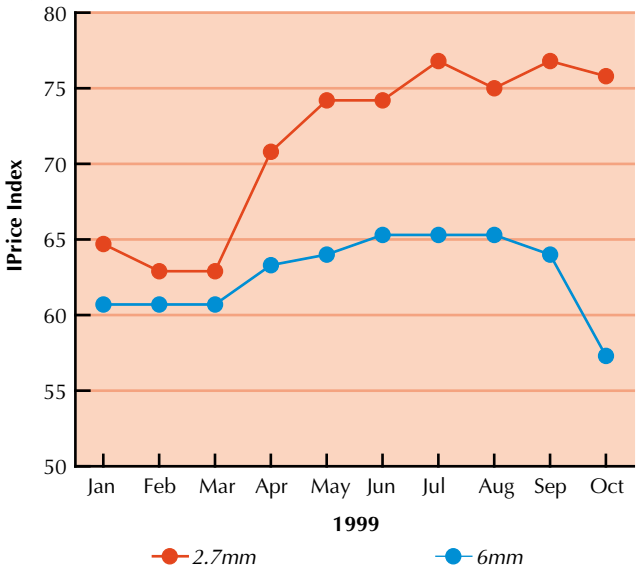
In Latin America, problems persist but the risk of a 'crisis' has been averted. Devalued currencies have been a boon to exporters who, with US consumption at record levels and showing no signs of slowing, have done well. However, the economies of Peru, Bolivia, Venezuela and Brazil have been battered.

The strength of demand in the United States and sustained growth in European consumption of wood products have helped badly-affected countries to export their way to recovery. This, along with firmer prices for tropical wood products in the first three-quarters of the year in Japan, Korea and China, has enabled the industry to begin the recovery process.

Plywood

Prices for Southeast Asian plywood started the year at around 65–70 per cent of 1997 levels. For the first three months of the year, prices hovered at the same level but, from a low of between US$285–290 per m^3 FOB in January–March, things started to improve. In the second quarter, prices moved up by around 18 per cent and further advances of just below two per cent were seen in the third quarter (Figure 1). The log supply problems in Indonesia, which had been worrying the market in mid year, appear to have abated, thereby providing little ammunition for further price increases.

Figure 1: Southeast Asian plywood FOB price trends, 1999



Brazillian ply

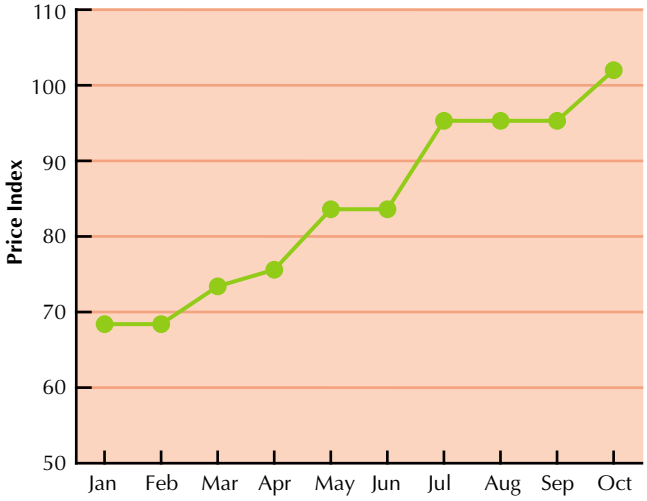
In contrast to the situation with Asian ply, US dollar prices for Brazilian ply fell in the first quarter. This reflected the impact of the Brazilian currency crisis, which saw the reais fall from an exchange rate of 1.2 to the dollar in December 1998 to a low of 1.9 in February 1999.

During the final quarter of 1999, few Brazilian mills were offering hardwood plywood to the EU. However, *Pinus elliottii* plywood continues to be a significant player, with a price level of around US$270–280 cif for 18mm CC repaired material, better than for comparable Korean panels. The price of Korean combiply increased mid year because of higher prices for New Zealand radiata pine logs.

Sawnwood

European imports of tropical sawnwood have been in decline sine 1997. In Germany, imports of tropical sawnwood from Malaysia – notably meranti – have fallen while, in contrast, imports from Ghana have been increasing. Window and door manufacturers are the main end-users of sawnwood in Germany; however, the share of this market held by tropical wood is down to about twelve per cent from a high of 25 per cent earlier in the 1990s. A similar trend of declining sawnwood imports can be seen in the Netherlands; a continued flat demand in this market is forecast. This decline has been offset in the Netherlands by an increase in imports of secondary processed products.

Figure 2: Meranti sawnwood FOB price trends, 1999



Meranti sawnwood prices in January 1999 stood at about 70 per cent of those seen in 1997. In the first quarter of the year, prices moved a modest seven per cent to about US$280 per m^3 FOB. However, gains of almost 30 per cent were recorded in the second and third quarters of the year, taking prices to almost pre-crisis levels (Figure 2). In contrast, African sawnwood and even Brazilian mahogany have been trading in a narrow range, never really suffering the sharp declines seen with Asian sawnwood. The exception to this has been utility hardwood exported mainly to Thailand and the Philippines by Brazil. Here, the once lucrative market for

such timbers as guaruba, angelim pedro and mandioqueira was wiped out overnight. Efforts to rekindle it continue to be thwarted by a lack of supply.

Logs

Tropical hardwood log exports by ITTO producer member countries in 1999 are still less than half the level they were at the beginning of the decade. Japan remains the number one importer of tropical hardwood logs; in 1999, imports rose by four per cent to 3.6 million m^3. Malaysia continues to be the biggest tropical log exporter, although its dominant position in the Chinese market has been overtaken by African exporters.

African log export prices showed modest improvement during the year but at best managed only a five per cent increase on end 1998 levels (Figure 3). However, having been far less affected by the global market downturn than the Asia-Pacific suppliers, African logs are earning FOB prices only marginally below 1997 levels.

SE Asian log prices remained flat in the first quarter at around US$130–135 per m^3 FOB, but between March and June jumped eleven per cent and again between June and September added a further 6–7 per cent. At year's end, prices had begun to weaken, largely because demand from Japanese plywood manufacturers remained very subdued.

Consumption Forecasts

The recent financial crisis sent tropical timber consumption into a free-fall in most of the major markets. While there are good signs of recovery, the longer-term prognosis for the market remains hazy, given that many of the pre-crisis consumption forecasts may no longer be valid. ITTO recently conducted a poll of traders and market analysts who subscribe to its market information service to gauge their perceptions about where the market might be headed. More detailed results of the poll will be presented in the next edition of the *TFU*. Here, we take a brief look at two features: global prospects, and estimates of changes in consumption.

Figure 3: African log FOB price trends, 1999

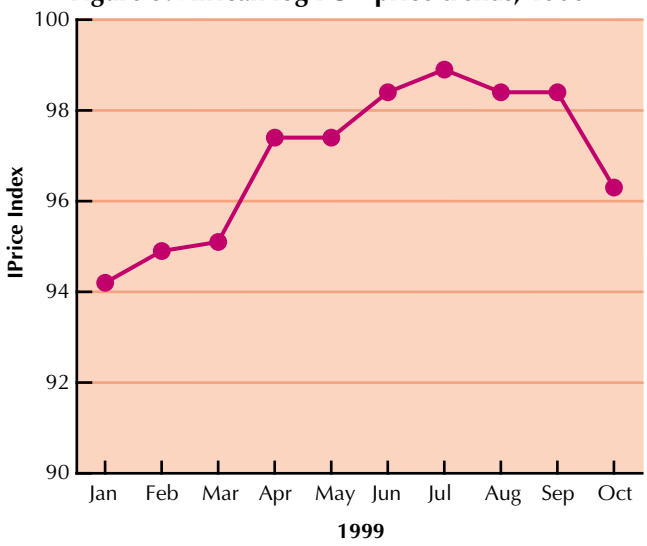
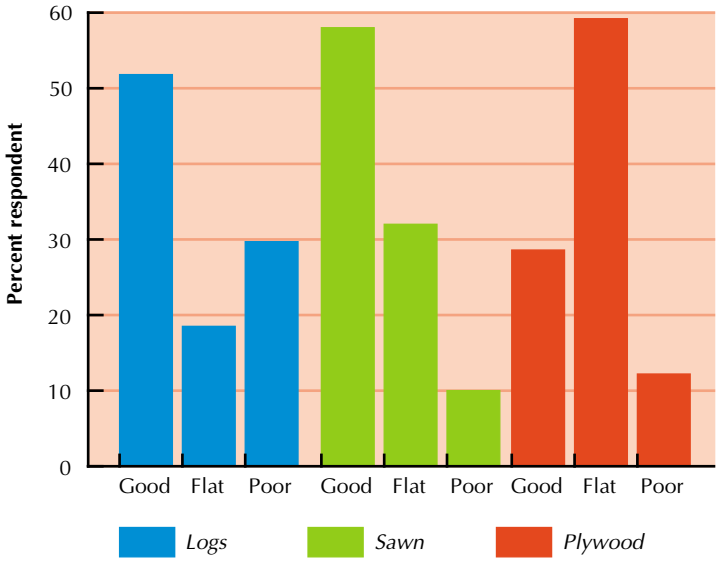


Figure 4: Global market prospects for tropical timbers over the next 5 years



The response to the question "what are the global market prospects for tropical timbers over the next five years" is illustrated in Figure 4. It shows that poll respondents were clearly confident of prospects for tropical logs and sawnwood. The picture for tropical plywood is different but also unmistakeable. The trade is clearly posting a warning that the market prospects for plywood are flat. This of course begs the question: 'what should plywood producers do to reverse this scenario?'

In a series of questions canvassing opinion on where the best markets will be over the next ten years, Japan and China – as might be expected – emerged as markets with the strongest potential.

Nevertheless, in Japan at least, competition from other timbers appears to be increasing. Current short-term forecasts in Japan predict an expansion of imports of Russian logs, European lumber, North American lumber and plywood, although log imports from North America are not seen as increasing in the short term.

Current short-term forecasts in Japan are for an expansion of imports of Russian logs, European lumber and North American lumber and plywood. On the other hand, Japan's forestry agency forecasts that imports of radiata pine products from New Zealand and Chile as well as Southsea hardwood products will contract.

According to Chinese trade analysts, the buyer's market of recent years began to fade when the country initiated its Natural Forest Protection Programme, effectively reducing domestic log availability. According to a recent survey, China's timber imports remain at about 800,000 m^3 per month, meaning that 1999 imports should exceed ten million m^3.

There is growing concern in China that the timber import business is over-heating and that there is a danger of periods of oversupply followed by periods of scarcity, a situation which will play havoc with price structures and market development. In recent months, there have been calls for government intervention in an effort to impose some order on the business. Local analysts are saying that it will take about two years for the Chinese timber markets to stabilise, at which time annual import volumes will probably not exceed seven million m^3. Given the country's imminent membership of the World Trade Organization and the impact that this will have on growth, investment and trade, one thing we can be quite sure of in coming years is that China is one market that tropical timber exporters must continue to cultivate. ■

Market Developments in Africa, Latin America and the Caribbean

Trade Pages

A series of brief summaries of trade impediments, industrial development plans and general economic conditions in ITTO's producing countries

by the ITTO Secretariat

Yokohama, Japan

Cameroon

Cameroon imports very small quantities of wood products (2000–3000 m^3 of plywood from Gabon). However, all tertiary wood products are imported, with customs duties varying according to import prices and the country of origin. Special agreements govern customs duties for products imported from countries of the UDEAC zone (Central African Customs and Economic Union). Cameroon imposes a 25 per cent tax on the value of all logs exported.

The Cameroon economy is on its way to recovery. The building and public works sector is picking up, raising the consumption of formwork timber. In addition, the consumption of timber products has been increasing significantly in urban areas, mostly as firewood and construction timber.

In Cameroon, 90 per cent of logging companies are foreign-owned. Cameroon nationals are sometimes involved as owners of forestland in logging areas. All marketing operations are managed by expatriates and geared towards parent companies overseas.

The Central African Republic

Every logging company operating in the Central African Republic is now obliged by law to have a forest management plan prior to undertaking logging operations within their forest concessions. Funding is being provided by the French Development Fund to assess each company's management plan.

The 1995 Finance Act requires all timber companies to process 85 per cent of their forest products locally and allows them to export only 15 per cent of harvested timber as logs. However, this law has not yet been implemented successfully.

Republic of Congo

The development of five new forest management units in the northern region of the country through the establishment of large industrial facilities will lead to a considerable increase in timber production, perhaps doubling or even trebling it in volume terms. The country recently introduced a new policy which requires that at least 60 per cent of log production be processed locally, rising to 100 per cent by 2000.

Congo is currently going through a major housing crisis, with 20,000 people needing housing each year in the two main cities (Brazzaville and Pointe-Noire) alone. Towns destroyed in the recent conflict need reconstruction, so the demand for timber will grow. However, despite the Congo's huge timber potential in both natural and planted forests and the comparative benefits of timber against substitute materials, timber use remains low in the construction industry.

Côte d'Ivoire

Côte d'Ivoire is pursuing policies to promote the value-added processing of timber products. These include:

- a log export ban (except in the case of teak);
- requiring industry to channel 40 per cent of their output to the local market; and
- promoting lesser-used species.

In the construction/housing industry, tropical timber is often replaced by aluminium. Timber is becoming increasingly uncompetitive on the domestic market as producers tend to apply the same pricing policy as in export markets. About 85 per cent of capital stakes in the primary timber products sector are held by foreigners, while Côte d'Ivoire nationals account for about three-quarters of the workforce.

Gabon

The current tariff rates applied to tropical timber exports in Gabon stand at eleven per cent. The tariff policy is designed to promote the export of processed or semi-processed timber products by acting as a disincentive for the export of logs. The Commission on Industrialisation has taken note of the very limited use of local timber in the construction of public buildings such as schools and hospitals; an effort is under way to address this. The Société Nationale des Bois du Gabon (a government-owned timber trade corporation) retains its monopoly on sales of okoumé and ozigo, the main export log species. The Government of Gabon is in the process of adopting new forestry legislation to further promote domestic timber processing and sustained yield production.

New wood-processing facilities (mainly sawmills) are being established by foreign investors in the provinces of Mid-Ogooué,

Estuary and Woleu-Ntem. However, most investments in the sector are in the form of foreign stakeholdings in timber concessions.

Ghana

The EU/Ghana Government Woodworking Sector Development Program commenced in January this year. It provides strategies, incentives and technical assistance to raise production of value-added wood products, especially those made from lesser-used species. The Timber Export Development Board also waives its one per cent export levy on value-added wood products to promote increased capacity in further processing.

Ghana is about to initiate a plantation development project which aims in part to reduce pressure on the natural forest. Initial funding for the project will come from the African Development Bank and the European Union and from export levies collected on selected air-dried lumber species.

Growth in the economy has sparked a series of development projects, most of which require high wood usage. However, timber usage generally is suffering from increasing substitution by plastics in the manufacture of crates, tables and chairs and by aluminium in the manufacture of door and window frames.

The Natural Resource Management Project (NRMP) was launched in June this year. This is a ten-year program seeking to protect, rehabilitate and sustainably manage national lands, forest and wildlife resources. The successful implementation of the NRMP will provide Ghana with a new image in the international tropical timber market.

Liberia

In 1998, the Government of Liberia introduced a suite of incentives to encourage the establishment of timber industries. This followed Liberia's seven years of civil war, which subjected the forest and its industries to immense destruction.

The incentives remained in place during 1999. Recently, the President established a Commission on the Environment to monitor and supervise the management and utilisation of natural resources. This could affect the production, consumption and export of timber products.

Some concessions are re-opening their sawmills to cope with government demand for increased local processing. Renovation works have increased at private and public processing establishments. However, the largest integrated processing plant remains closed.

The renovation and construction of homes increased in 1999. The rehabilitation of public structures (government agencies and institutions) has also registered an upward trend, although at a moderate level.

The logging industry is dominated by expatriate entrepreneurs, especially Lebanese and Europeans. In 1998, a Russian company imported equipment worth about US$1 million with which to commence logging operations.

Togo

The Ministry of Environment and Forest Production has taken urgent steps to better regulate the logging and export of teak, significantly reducing teak log exports from the country in 1998. Official customs and port activity statistics indicate that this trade decreased to 16,000 m^3 from 68,000 m^3 in 1997.

No firm industrial timber development projects are being considered in Togo at present. Small furniture manufacturing industries represent the only further-processing activities to have shown a measure of development lately; this is due to an emerging taste for teak furniture among local consumers during the past few years.

Bolivia

Bolivia has implemented an export promotion policy that provides tax relief to forest products exporters and free trade zones for establishing processing capacity.

In 1998, interest rates for construction and industrial loans were an average of 18.2 per cent. In 1999, in an effort to safeguard existing loans, the Banks and Financial Institutions Commission implemented a new loan classification system, comprising five categories of loans. Under this system, the bank must provide a percentage of the credit according to standards established by the Commission. This has had immediate repercussions for the production and industrial sectors, as well as on the building sector, by restricting access to credit.

Brazil

In July 1998, Brazil extended and tightened a 1996 moratorium on new permits for logging mahogany and virola. Officially sanctioned production levels of mahogany have fallen from 150,000 m^3 in 1990 to 65,000 m^3 in 1997. Meanwhile, a ban on new Amazon rainforest logging permits introduced in February 1999 was lifted a couple of months later after landowners and loggers agreed to reduce logging rates.

The country suffered an economic slowdown in the wake of the Asian economic crisis, which affected the domestic market for forest products in 1998. The international market also suffered, with Korea cancelling major plywood orders and prices declining. Nevertheless, signs of revival have been seen in 1999.

Colombia

The Colombian National Development Plan stipulates the promotion of new production plantations through Forest Incentive Certificates with a view to encouraging exports, employment and rural capitalisation. A budget of just over US$7 million was allocated for 1999, which will enable the establishment of over 16,000 hectares of new protection/production plantations.

A competitiveness agreement has recently been concluded for sawn timber, furniture and processed timber products; this establishes credit and tax incentives for participating companies showing adequate levels of efficiency. A similar agreement was signed in 1996 for the pulp and paper sector.

Ecuador

Import and export tariff rates for forest products are based on the National Import and Export Tariff Schedules of the Cartagena Agreement (NANDINA). Ecuador has a housing shortage and there is increasing construction of community housing with the support of the public and private sectors. The main inputs for this construction are low commercial value timber and guadua cane (*Guadua angustifolia*).

Guyana

The USA is becoming more stringent in its buying practices and producers are finding it increasingly difficult to maintain markets there without certification. For example, the New

York City Council has stopped purchasing greenheart (*Chlorocardium rodiei*) from Guyana pending elimination from their list of approved species for NYC boardwalks and other uses. NYC is one of Guyana's largest buyers of greenheart piles and the possibility of a ban would have a great impact on Guyana's forest industry.

The Precision Woodworking Establishment, currently Guyana's only kiln-drying facility, is planning to invest US$2.5 million in modernisation and expansion. The new premises will double the present physical size and is expected to create employment for 80 more people to add to the current workforce of 120. In March 1998, Demerara Timbers Limited imported equipment valued at US$7 million. Construction was due to start in 1999 on a US$20 million complex, which will include a new sawmill with capacity to produce 2000 cubic feet per month (based on an eight-hour shift).

Honduras

The domestic consumption of timber, particularly from conifer species, has increased due to the devastating effects of Hurricane Mitch, which hit the country on 28 October 1998, damaging houses and roads. The hurricane precipitated short and medium term reconstruction work, accelerating the implementation of housing and bridge reconstruction projects; this led to an increase in the price of timber (and timber-substitute) products. These projects are largely financed from external sources.

Panama

A new Environmental Strategy in Panama provides for the development of economic, fiscal and legal mechanisms to promote the integrated, sustainable and diversified use of forests. It also provides for the establishment of a Marketing and Technical Assistance Centre (processing, finished products, drying and preservation) for the harvesting and marketing of forest products. The legal basis is defined in the Forestry Law Regulations promulgated in 1998.

Government policy is to gradually reduce direct State involvement in housing starts and to increase the private market using tax-relief schemes for building materials. The import of non-tropical timber for construction uses and plywood production has had a significant impact on tropical timber consumption in the country. The extent of foreign involvement in the forest sector has not been significant to date, but is expected to increase with the public tender of larger production forest areas.

Peru

In the political/economic framework of free market conditions currently in place in Peru, there are no tariff barriers or any other related factors which may significantly affect the trade of tropical timber products.

The building industry has traditionally been the sector with the highest demand for timber. The majority of housing starts do not use timber components for construction and there are no mortgage/interest rate incentives to encourage or support the construction of houses either in timber or in any other type of material.

Peru recently created eleven permanent forest zones in its Amazonian forests covering a total of 10.6 million hectares. The first zone to be developed covers 2.1 million hectares, out of which 1.4 million hectares have been set aside for protection. International public bidding commenced in September 1999 for 50-year logging concessions in the remaining 630,000 hectares.

Suriname

From November 1998, an export tax applies to logs (20 per cent of export value) and poles (ten per cent of export value) for all species. The tax is designed to promote local processing.

The Suriname Forestry Training Centre is engaged in the development of a training program to increase efficiency and productivity in the sawmill industry.

Trinidad and Tobago

Sawmillers are showing interest in the importation of timber from Caribbean and Latin American countries to meet growing consumer demand. The government is offering incentives to the private sector to engage in reforestation.

Venezuela

Current import tariff rates in Venezuela range from five to 15 per cent. Imports from other Andean Pact countries are tax-exempt. Current trade policy regulations stipulate the progressive phasing out of tariff barriers.

A proposal is currently being developed to update the National Forestry Plan, which includes plans to upgrade and increase the efficiency of the sawmilling industry. Housing construction in Venezuela is still based on the traditional brick and mortar model, using timber mainly for decorative components.

There are about 130 non-timber forest products of significance for local communities as food products, medicinal plants, food additives, oil, fruit, nuts and crafts. These products serve to increase local incomes and many are being marketed at the national and international levels.

These notes are adapted from those prepared for the ITTO Annual Review and Assessment of the World Timber Situation 1999, *using country responses and other sources where available. Similar notes on countries in Asia and the Pacific were published in the last issue of the* TFU. *Readers should consult the Annual Review for more detail on each country.* ■

Country Profile – The Netherlands

by Alistair Sarre

The Netherlands is located in western Europe, bordered by Belgium to the south, Germany to the east and the North Sea to the north and west. It occupies 3.4 million hectares, almost all of which is at less than 50 m altitude. Around 60 per cent of residents live below sea level, making the country particularly vulnerable to the rising sea levels predicted under some global warming scenarios.

The Netherlands' gross domestic product (GDP) was US$362 billion (using purchasing power parities, which correct for the differences in price levels between countries) in 1998, having grown at an average of 2.6 per cent since 1990. Its GDP per capita was US$24,100, which is above average for OECD (Organization for Economic Cooperation and Development) countries. Its population was estimated to be 15.6 million in 1997 and was shrinking at a rate of 1.4 per cent per year (OECD 1999). It is one of the most densely populated countries in the world, with around 460 people per km^2.

Forests

In 1995, nearly ten per cent (334,000 hectares) of the Netherlands was forested, with no net change in area recorded in the period 1990–95 (FAO 1999). The state forest service SBB (*Staatsbosbeheer*) is responsible for the management of more than 180,000 hectares, of which about half is actually forest (Lette et al. 1998). Under the National Forest Policy Plan, the aim is to expand the forest area by 75,000 hectares over the period 1994–2020 (Oosterveld 1997).

Tropical Forestry

The Netherlands has been importing timber on a large scale since at least the 17th century, when it had a thriving shipbuilding industry (Lette et al. 1998). It also has a longstanding association with tropical forestry, having helped develop forest management techniques in its former colonies of Indonesia, Suriname and the Dutch Antilles (a now fully autonomous island group located near Venezuela in the Caribbean).

Table 1: Imports and exports of all timber and of tropical timber ('000m^3) by the Netherlands, 1992 and 1998

Product	Import		Export	
	1992	*1998*	*1992*	*1998*
Logs	629	532	549	338
of which tropical	*123*	*91*	*18*	*4*
Sawnwood	3222	3511	440	413
of which tropical	*578*	*357*	*141*	*80*
Veneer	25	28	9	16
of which tropical	*13*	*10*	*6*	*12*
Plywood	583	538	67	58
of which tropical	*322*	*212*	*37*	*29*

Sources: ITTO 1999; 1996

Tropical Timber

While the Netherlands is one of Europe's largest importers of tropical timber and its largest tropical sawnwood importer, Table 1 shows that import volumes are declining. Possible reasons include campaigns against tropical timber on environmental grounds, changing consumer tastes, and substitution by other timbers and by non-timber products. Table 1 shows that despite the decline in the import of tropical timber products, imports of all timber actually increased over the period for some products.

Tropical Forest Assistance

The Netherlands provides a relatively high level of overseas development assistance (ODA). In 1997, its ODA/GNP (gross national product) ratio was 0.81 per cent, equating to a total ODA outlay of US$2.95 billion (OECD 1999). Among ITTO member countries that benefited from this assistance in 1996–97 were India (3.1 per cent), Suriname (2.4 per cent), Bolivia (1.8 per cent) and Peru (1.1 per cent).

Lette et al. (1998) reported that since 1994 the annual target for the delivery of tropical forestry assistance has been set at 150 million Dutch gilders (currently around US$75 million), of which one third is reserved for activities related directly to tropical rainforests and the remainder reserved for institutional support, the formulation and implementation of national forest plans, and participatory forest management and forestry activities. The target allocation has not yet been achieved.

The Netherlands and ITTO

The Netherlands has been a member of ITTO since the mid 1980s, both in its own right and as part of the European Union. As of November 1999, it had contributed some US$3.6 million towards ITTO projects, pre-projects and activities.

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The Interafrican Forest Industries Association

by Jean Jacques Landrot

IFIA General Secretary

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Aware of their key role in the sustainable development of their respective countries, forest industry companies in the private sectors of the principal forested African countries founded the Interafrican Forest Industries Association (IFIA) in 1996. It brings together some 300 companies that employ over 100,000 people through trade and industry associations in Côte d'Ivoire, Ghana, Cameroon, Gabon, the Central African Republic, Congo Brazzaville, the Congo Democratic Republic, and Angola. The economic activity created by these companies has helped to indirectly create a base for another million or more jobs and has helped improve the quality of life of an estimated ten million people. The IFIA is presided over by a three-person directorate of member-company chief executive officers and has its General Secretariat in Paris.

Goals of the IFIA

The IFIA has the following goals:

- to actively contribute to social and economic development by using forest resources and applying best ecological care in forest management;
- to sustain an information and communication network related to the particular interests of members and other professionals, organisations, institutions or individuals;
- to represent the industry's interests in an international context. At a time when the environment is of worldwide concern, the IFIA puts forward the points-of-view of African forest and timber operators. It represents the African forest products sector within national and international organisations and institutions at the highest level;
- to promote forest use, while respecting the environment. IFIA has the necessary field experience to contribute to the development and promotion of the best methods of sustainable management of forest resources in every field: forest legislation, tax systems, forestry methods, reforestation, local industrialisation, professional training, and safeguarding flora and fauna through the development of alternative food sources such as animal breeding, pisciculture and agroforestry;
- to be a driving force in the economic and social aspects of countries where they are established. This involves the promotion of: local industrialisation; job creation; improved quality of life and personnel training; social infrastructure on forestry and industrial sites (hospitals, schools etc); general infrastructure (roads, ports, railways etc); and primary and processed African timber internationally.

Activities of the IFIA

IFIA maintains an ongoing dialogue with all stakeholders through the activities of its members. It participates actively at national and international meetings. It is involved in dialogue with such organisation as FAO, the World Bank, the European Commission, ITTO, the African Timber Organization, the International Union for the Conservation of Nature and Natural Resouces (IUCN), the Conference on the Moist Closed Forest Ecosystems of Central Africa (CEFDHAC), the World Wide Fund for Nature, the US-based Wildlife Conservation Society, and other environmental and social NGOs. In 1999, the IFIA took part in many international-level conferences, including the International Conference on the Conservation of Forest Ecosystems and the Development of the South and East of Cameroon (Yaoundé, February 1999); the CEFDHAC Workshop on the Comparative Study of Forest Policies and Laws in Countries of Central Africa (Yaoundé, February 1999); and the meeting of the Economic Development Institute/World Bank/European Commission focussing on training and cooperation in the development of a forest policy in the Congo Basin (Libreville, March 1999).

The IFIA is a permanent partner in the World Bank's Working Group 3 'CEOs of Forest Industries', which meets several times a year to develop, in collaboration with the private sector, long-term forest management strategies and concrete improvements in reduced impact logging methods.

The IFIA is a member of the ATIBT (the International Technical Tropical Timber Association – see *TFU* 1999/1 p 25) and has lent financial and technical support for ATIBT strategic studies and publications that contribute to the achievement of IFIA goals. Publications include:

- *The sustainable management of tropical rainforests* – ATIBT 1997;
- *Forestry tax reform in Cameroon* – CERNA 1998; and
- *Road infrastructures in tropical forests: roads to development or roads to destruction?* – FAO/ATIBT 1999.

IFIA activities were principally financed in 1998 by the industrial groups Alpi, Bruno, Danzer, Dassi, Fumagalli, Mussi Bianchi

Fellowship Report

A summary of research carried out under an ITTO Fellowship into policies and incentives for commercial tree plantation development in Ghana

by Dr Kwame Asumadu

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Between 6 February and 6 March 1998, I visited Ghana under an ITTO Fellowship to study policies and incentives that might encourage commercial tree plantation development in Ghana. Information for the study was gathered by means of a questionnaire and 32 personal interviews conducted with representatives of forestry-related organisations and agencies and other interested people.

For the purposes of the study, a 'commercial tree plantation' is defined as the growing of trees for profit. Commercial tree plantations can range from intensive management of tree crops for a limited range of products to those that integrate tree-growing with other land uses such as agriculture.

Ghana's Comparative Advantage

Within Africa, Ghana possesses a number of comparative advantages for attracting foreign investment for the development of commercial tree plantations. These include: the availability of suitable land; the availability of well-trained forestry professionals; the availability of low-cost skilled and semi-skilled labour; research and technical capability in support of commercial plantations; a globalised economy; generous government development incentive programs; emerging private financing institutions; and relative political and economic stability.

Continued over

Institutional Profile
Continued from page 22

Fossati, Pasquet, Rougier, Servant, Thanry, TT Feldmeyer, Vasto Legno, Vergnault, Wijma and Wonnemann. The local subsidiaries of these companies committed themselves to the search for better forest management as part of the development of their industrial investments.

Support for IFIA activities is not exclusive and all African forest industry companies and associations are invited to join it. The *IFIA Bulletin* is published once a year in English and French and may be subscribed to by contacting the IFIA Secretariat. ■

Foundation Pledges Support for Sustainability Moves

The principal European industrial groups in the IFIA formed the European Foundation for the Preservation of African Forest Resources in 1996. These groups, which together manage forestry concessions of 14 million hectares, generate a turnover of some US$650 million and employ more than 20,000 people, met in September in Milan, Italy. They subsequently issued a press statement announcing that they had decided:

1) "To request that the ATIBT, with the support of Foundation member forest managers and key consultants setting up forestry management plans in Africa, define a practical forestry management plan in general, with specific focus on forest inventories, that serves as a realistic and applicable common denominator, technically and financially, for the various areas, regions and enterprises in the sector. Foundation members are committed to, upon reaching an accord with the African governments concerned, promoting and implementing this plan;

2) "To finalize, in concert with the IUCN and the CEFDHAC, a professional code of conduct, initiated by IFIA and under negotiation among the different parties. Once approved, this code of conduct will be signed by the Foundation members, who are bound to respect and promote it throughout the profession. Partners of the Foundation and of the IUCN will set up, in the coming months, a monitoring and evaluation committee to verify the application of this code of conduct by the signatories.

3) "To encourage international donors to continue their technical and financial support in completing the task of defining the Principles, Criteria and Indicators already developed and tested in five African countries by the ATO [African Timber Organization] and the CIFOR [Centre for International Forestry Research], in order to rapidly establish with all the parties concerned, and make available to companies desiring it, a Pan-African Certification which is both adapted to regional specifications and internationally credible. The Foundation Members will lend technical assistance to make this Certification operational.

4) "Foundation members confirm their assistance and financial support of IFIA and ATIBT.

"These four decisions will be put into effect immediately."

Incentives for Plantations Development

Ghana already provides a number of incentives to encourage and promote investments in the Ghanaian economy. Those that can be applied to investments in commercial tree plantation development include:

- tax concessions for up to ten years for tree crops (coffee, oil palm, shea butter, rubber and coconut);
- accelerated depreciation provisions for capital equipment;
- tax rebates (up to 50 per cent) for economic activities located in regional capitals other than the Accra-Tema metropolitan area;
- generous corporate tax rates (eight per cent for plantations);
- exemption from income tax payable on certain facilities and amenities, such as accommodation provided to employees;
- provisions to carry over financial losses; and
- exemption from minimum chargeable income of five per cent of turnover during the first five years.

Constraints

Despite its comparative advantages, Ghana has made less progress than might be expected in expanding its plantation estate. This is due to constraints such as:

- government policies and regulations that may act as a disincentive;
- complex land tenure systems that make it difficult to securely acquire land for large-scale economic activities;
- the high cost of borrowed funds;
- technical issues such as the scarcity of reliable quantitative data on forestry production, processing, marketing and export, and a lack of suitable planting material;
- the negative attitude of some sectors of the timber industry towards plantation development; and
- excessive up-front demands placed on potential investors by some local communities.

Strategies for Further Development

Strategies that could be adopted to promote large-scale commercial tree-growing in Ghana include:

- development of a national plantations strategy which defines a vision for the industry and sets realistic planting targets to be achieved over a nominated time period;
- creation of 'plantation zones' to enable investors to benefit from the economies of scale associated with co-location;
- enforcement of Ghana's new *Timber Resources Management Act (1997)*, which aims to grant timber rights in the form of 'timber utilisation contracts' to firms that will also undertake plantation establishment. This can be achieved by requiring concessionaires to enter into a legal contract with the national government, obliging them to manage their concessions sustainably while they implement a plantations project commensurate with the productivity of their concessions. The agreement with government would indicate annual planting targets, which would be monitored independently and the results tabled in Parliament.

Several different models have been used successfully in other parts of the world to encourage large-scale commercial plantation development. These schemes, which involve landowners providing land for which they receive annual payments and/or a share of the harvest revenue, can be adapted for application in Ghana. Some such schemes are similar to Ghana's traditional a*bunu* and *abusa* share-cropping systems and could be modified for large-scale commercial plantations.

Recommendations

The study recommended that the Government of Ghana should:

- specifically enshrine in law the ownership of planted trees, including the 'right to harvest and utilise';
- exempt wood sourced from plantations from royalties, charges and other fees levied on wood from natural forests;
- exempt plantation wood from export bans and other controls applied to wood from natural forests;
- exempt plantation development from the requirement to complete an environmental impact assessment and replace it with a set of environmental principles to minimise the potential environmental impacts of commercial tree plantations;
- adopt a multi-sectoral approach to forest policy formulation;
- implement measures to provide legal security over land acquired for plantation development;
- consider acquiring land directly from traditional landowners and leasing it to potential investors at market rates, with the rental income paid as compensation to the landowners. This would assist large-scale investors overcome the problems associated with land acquisition;
- consider facilitating arrangements which could enable traditional landowners to participate in economic projects as financial partners. For example, the rent they would have otherwise received from leasing or renting the land could be converted into equity in the economic activity or project;
- facilitate the development of large-scale plantation development by creating conditions that will encourage the private sector to invest in wood resource development rather than by providing direct financial subsidy to the industry;
- implement a program to educate the industry, traditional landowners, district assemblies and the community at large about the economic and environmental benefits of commercial tree plantations, and to involve these stakeholders and other interested parties in efforts to achieve progress in large-scale tree-growing;
- develop a national plantations strategy jointly with the industry and other relevant stakeholders, which defines a vision for the industry and sets realistic planting targets to be achieved over a nominated time period. Planting targets should be monitored annually and reported in a transparent manner to the government and the public;
- consider creating 'plantation zones' similar to 'manufacturing zones' in forest reserve areas where the land has been degraded; and
- require holders of timber utilisation permits to enter into legal contracts which oblige them to meet agreed annual planting targets and to report progress annually to Parliament.

A copy of the full report can be obtained from Dr Chisato Aoki at the ITTO Secretariat (contact details on page 31). ■

Topical and Tropical

Edited by Alistair Sarre

Are Rodents Needed for Tree Survival?

A paper published recently in the *Journal of Tropical Ecology* (15:229–35) explores the role of a rodent known as agouti in the survival of the neotropical canopy tree species *Hymenaea courbaril*. Authors Asquith, Terborgh, Arnold and Riveros compared dispersal and germination of *H. courbaril* seeds on several islands created by Lago Guri, a hydroelectric impoundment in Venezuela, on which the presence or absence of agouti was known. They found that agouti enhanced the probability of seedling recruitment and suggested that their presence may be necessary for the long-term survival of *H. courbaril*.

As the authors noted, this is more than a hypothetical situation: agouti and other large mammal species have already been eradicated from Los Tuxtlas in Mexico. This study suggests that *H. courbaril* and other tree species with similar dispersal requirements may, as a consequence, also eventually vanish from the area.

Australia to Host Carbon Credits Market

The potential of carbon credits to help fund forestry activities has been highlighted by a recent report (*Sydney Morning Herald*, 31 August 1999) that the Sydney Futures Exchange (SFE) will create the world's first exchange-traded market for carbon credits. Carbon credits are a mechanism whereby companies emitting large quantities of carbon dioxide and other greenhouse gases might 'offset' such emissions by buying credits for carbon sequestered (absorbed) elsewhere. One of the best ways to sequester carbon is by growing trees.

According to the report, the SFE's Chief Executive reckons the Australian carbon credits market could be worth up to US$5 billion. It would serve as a precursor to a global emissions trading market, which has been valued by some analysts at US$700 billion. In a related development, the Tokyo Electric Power Company recently signed a deal with an Australian forest agency to plant 1,000 hectares in the year 2000 and up to 40,000 hectares over the next decade to help offset its greenhouse gas emissions.

Wood Sales and Smoke Hazes

The thick smoke haze that blanketed Malaysia, Singapore, Brunei, the Philippines and Thailand in 1997 was caused by forest fires on Sumatra and Borneo, many set by small-scale farmers. In a recent issue of *Forest Ecology and Management* (120: 1999, 157–169), Ketterings and co-authors report a survey of 37 small-scale rubber producers in Sepunggur, Jambi Province on Sumatra in Indonesia. These farmers are not shifting cultivators; they seek ownership of small plots (on average, 2–5 hectares in size) for conversion – through slash-and-burn – to permanent rubber plantations.

The survey suggested five reasons why farmers in this region use slash-and-burn to clear their plots: 1) the residual wood ash acts as a fertilizer; 2) burning reduces weed and tree competition; 3) burning creates space to plant and walk; 4) burning reduces the occurrence of pests and diseases; and 5) burning improves soil structure, enabling faster establishment of seedlings. The authors concluded that alternatives to slash-and-burn that do not include fire, such as slash-and-mulch and slash-and-remove-wood, would increase the poverty of the farmers in the region, since they would be denied many of the cited benefits of burning. However, there is one promising alternative: slash-sell-and-burn. This would involve selling merchantable wood, helping to fund development and the purchase of high-yielding rubber tree clones. Removal of the largest pieces of wood from the pile prior to burning would reduce smoke development while retaining some of the benefits of fire. However, the authors say that if this alternative is to be realistic, high export levies and local trade regulations which severely restrict the sale of timber species by small producers would have to be removed.

The Impacts of Trade Liberalisation

An article by CIFOR's David Kaimowitz in a recent edition of *Bridges Between Trade and Sustainable Development* (Year 3, No 6) canvasses the possible environmental impacts of liberalising the trade in forest products. Trade liberalisation, he says, tends to increase domestic log prices in producing countries and reduce them in consuming countries, promoting consumption and production of forest products. This might lead to greater pressure on the forests and exacerbate problems of degradation.

But there are at least two possible reasons why this might not always happen. First, if timber is supplied from managed natural forests and plantations, increased demand and profitability may lead to greater investment in forest management and an expansion in forest area. Second, higher prices tend to promote technological change designed to grow, harvest and process timber more efficiently. This could mean less waste, which would have positive environmental effects, although it might also mean that smaller diameter trees and non-traditional species are harvested, with potential adverse side-effects on environmental values. The author concludes that liberalisation of the trade has both potential dangers and benefits for the environment that will vary from one context to another. But he suggests that complete liberalisation will remove any tools by which governments can compensate for the fact that markets don't fully reflect the public goods produced by forests. ■

On the Conference Circuit

Pacific Islands Seek Implementation of Logging Codes

Regional Consultation on Implementation of Codes of Logging Practice and Directions for the Future

12–17 July 1999
Port Vila, Vanuatu

Report by Douglas Pattie

ITTO Secretariat, Yokohama, Japan

Reduced impact logging (RIL) has become the focus of a great number of discussions and policy initiatives in the Pacific Island countries and elsewhere during the last decade (and see related articles in *TFUs* 2:6, 4:3 and 5:1).

This consultation was organised by the Pacific Islands Forest and Trees Support Programme and attended by more than fifty people from Fiji, Papua New Guinea, Samoa, Solomon Islands, Vanuatu, Australia, Indonesia, Japan, Malaysia, the UK and the USA, as well as by representatives of ITTO, FAO, AusAID, the Japan International Forestry Promotion and Cooperation Center and the USDA Forest Service. Its objective was to expose participants to the current state of national and regional codes of logging practice within the Pacific Island countries with a view toward encouraging their wider adoption and implementation.

The conference heard reports on various national codes; these now exist in Fiji, New Zealand, Papua New Guinea, Solomon Islands, Vanuatu and several states in Australia. The recently published FAO Code of Practice for Forest Harvesting in Asia-Pacific (see page 15) was the subject of discussion, as was a consultant's report on the overall status and assessment of such codes in the region. Participants detailed their own experiences in the implementation of various codes in Fiji, PNG, the Solomon Islands and Vanuatu. Also discussed were the possible impacts on Pacific Island countries of various NGO certification initiatives and intergovernmental processes such as the UN Framework Convention on Climate Change and the Intergovernmental Forum on Forests.

There was a general recognition among participants that existing logging practices need to be improved to ensure that the forest is in an adequate condition for subsequent cutting cycles. The progression from national or regional codes of logging practice to sustainable forest management should include the development of demonstration forest sites and pilot model forests. Although logging codes provide a general guide for improving forest harvesting, they do not guarantee sustainable forest management. To be effective, the codes must be backed by strict monitoring of their implementation, the application of complementary technical guidelines, effective forest and land-use planning, and sound integration with other national and regional initiatives.

Participants in the consultation were generally impressed with the activities and results of the various initiatives. Numerous questions arose, particularly with regard to the cost-effectiveness of specific RIL activities and the benefits they offer. Participants also recognised the need for extensive training of managers and field workers to achieve overall positive improvements in harvesting practices. They pointed out the need to carefully consider the level of advancement of various Pacific Island countries in developing and implementing national codes of logging practice. For example, it was recognised that the successful implementation of the codes will require vast amounts of training at various levels. However, such training would be premature if strong political and administrative support for the implementation of the codes did not exist at the country level. It was therefore recommended that the Asia-Pacific Forestry Commission Working Group continue to build up such awareness of, and support for, national and regional RIL codes.

A full report summarising the consultation and copies of the related papers presented at the consultation can be requested from: Mr Tang Hon Tat, Project Coordinator for the Pacific Islands Forest and Trees Support Programme, PIF&TSP C/UNDP, PMB Suva, Fiji; Tel 679–300 432; Fax 679–305 212; Email spforest@spc.org.fj ■

Restoring the Forests

International Conference on Tropical Restoration for the New Millenium

23–28 May 1999
San Juan, Puerto Rico

Report by John Parrotta

Deputy Coordinator of IUFRO Division 1 (Rehabilitation of Degraded Sites, 1.17.00)

This conference, held in conjunction with the 4th Annual Puerto Rico Forestry Conference, was organised by the International Institute of Tropical Forestry (USDA Forest Service) and the University of Puerto Rico in conjunction with IUFRO 1.17.00 and the Society for Ecological Restoration. It brought together research scientists, restoration practitioners, educators, students and public- and private-sector land managers from a wide diversity of backgrounds and perspectives to discuss the current status of tropical forest rehabilitation and restoration research and practice worldwide.

The meeting, which included plenary, technical, and poster sessions with 75 presentations on a variety of topics, was attended by over 150 participants from 25 countries in North and South America, the Caribbean, Europe, Africa, Asia and Australia. The keynote address, titled 'The Restoration of Research', was presented by IUFRO President Jeff Burley. Plenary speakers included, among others, Dan Janzen, Joseph Wunderle, David Lamb and Jean C.L. Dubois. Technical sessions covered a broad range of topics related to the ecology of tropical forest succession and its implications for restoration, mangrove ecosystem restoration, the role of wildlife and below-ground processes in tropical forest regeneration, social and economic issues, opportunities and constraints,

urban forest ecosystem management, and the role of individual landholders and communities in tropical landscape rehabilitation. Field trips covering the major lowland, upland and wetland forest ecosystems in Puerto Rico focussed on the impact of land-use changes, management practices and conservation/restoration initiatives affecting their current ecological status and societal value.

Selected papers from the conference will be published in special issues of *Forest Ecology and Management* and *Restoration Ecology*. Copies of the conference program (which includes abstracts of all presentations) are available free of charge by writing to the Librarian, USDA Forest Service, International Institute of Tropical Forestry, PO Box 25000, Rio Piedras, PR 00928–5000 (USA). ■

Talking Teak

Regional Seminar on Site, Technology and Productivity of Teak Plantations

26–29 January 1999
Chiang Mai, Thailand

This seminar, organised by FAO's Forestry Research Support Program for Asia and the Pacific (FORSPA), Chiang Mai University and TEAKNET, was attended by 102 people, including teak growers and investment companies. Attendees came from around Asia and from Brazil, Costa Rica, the USA, the Netherlands, France, Ireland, Côte d'Ivoire and Tanzania.

The seminar was organised in the context of:

- the importance of teak as a tropical hardwood species fulfilling the demand for high-value timber;
- private sector interest – including plantation companies, farmers and small-scale growers – in investing in teak;
- expansion of teak into new areas outside its natural habitat; and
- varied claims of productivity and financial rate of returns for teak investments, which may mislead potential investors.

Presentations at the seminar included a global overview paper prepared by FAO, country papers from most of the significant teak-growing countries, and thematic papers on pest management, genetics and tree improvement, wood utilisation and economics.

The seminar made a number of recommendations, some of which are summarised below:

- systematic efforts are required at the national, regional and global levels to assess trends in the area planted to teak, the rate of spread of various technologies, and their impact on growth rates and production;
- improved yield tables that provide growth and yield estimates under a range of site and treatment conditions are needed. A network of teak plots covering the entire range of growth conditions and intensities of management should be established;
- in view of the critical nature of site conditions on productivity, the tools for site selection should be refined and the criteria for selecting land should be widely disseminated;
- teak-growing countries and supporting institutions should define a long-term strategy for teak-breeding;
- coordinated efforts should be initiated to assess the long-term impact of teak plantations on site productivity;
- global, regional and national studies should be undertaken to assess the long-term demand, supply and prices of teak, taking into account the segmented nature of the market;
- the current and potential uses of small-dimension wood from teak plantations should be assessed, and further research and technology development should be conducted to ensure improved value adding;
- economic assessments of teak plantation investment should be undertaken to provide basic information to investors;
- national and international agencies should strive to promote best practice in the cultivation and management of teak. Such efforts are particularly required to ensure that small growers are able to establish and manage plantations in a sustainable manner without necessarily resorting to costly certification processes;
- the possibility of extending TEAKNET activities to Latin America and the Caribbean and Africa should be considered; and
- the feasibility of establishing a promoting body to support global efforts to strengthen conservation and management should be examined. Such a body may consist of investors, growers, international and national agencies, industries and trading community and research organisations.

For more information and to obtain a summary report, contact: Forestry Research and Support Programme for Asia and the Pacific (FORSPA), FAO Regional Office for Asia and the Pacific, 39 Phra Atit Rd, Bangkok 10200, Thailand; Tel 66–2–281 7844; Fax 66–2–280 4565; Email forspa@fao.org

Summarised from Tigerpaper *26:1, Jan–March 1999.* ■

Current Literature

Buttoud, G. and Samyn, J.M. 1999. **Politique et Planification Forestières: Guide pour le formulation et l'élaboration.** ***Intercooperation, Berne.***

Available from: Intercooperation, Maulbeerstrasse 10, Postfach 6724, CH-3001 Berne, Switzerland; Tel 41–31–382 0861; Fax 41–31–382 3605; Email intercooperation@intercoop.ch; http//www.intercooperation.ch

Review by E. Ze Meka

ITTO Secretariat, Yokohama, Japan

The formulation of forest policy and the planning that follows are important exercises because they highlight what a country wishes to do with its forest resources. The various stakeholders in the country must define matrices within which the different activities related to the development and conservation of forest resources would have to meld, or at least landmarks that should serve to guide all actions in this area. To the outside world, these elements contribute to clarifying the intentions of the country and thus represent its commitment to the development and conservation of its forest resources.

Developing countries are well aware of the importance of forest policy and strategic planning as major elements of forest development and international cooperation. In the 1980s and under the impetus of donors and the FAO, several countries embarked on exercises of national forest plan formulation. The same passion also followed the Earth Summit held in Rio de Janeiro in June 1992, when countries had to adapt their forest policies to the guidelines that emerged during the Summit.

Can one say, however, that all these exercises have been unquestionably successful? Not by a long chalk. Several exercises in forest policy formulation stopped short, or did not succeed in establishing real credibility. Several forest policies, apparently well formulated, did not produce the expected effects.

There are several non-mutually exclusive reasons for this:

- some major stakeholders did not identify themselves with the guidelines or actions decided on;
- there was a lack of measures enabling such stakeholders to contribute actively to the implementation of the policy decided on; and
- the necessary funds were not made available, notably by external donors.

It is in this context, without analysing the different exercises of forest policy and national forest plan formulation undertaken to date, that *Politique et Planification Forestière* is of great interest.

The authors

The first author, Gérard Buttoud, is Professor of forest policy at the National University for Rural Engineering and Forestry in Nancy (France) and well known in tropical forestry circles. In this book he focuses on describing the theoretical, methodological and practical bases for the formulation of forest policies and strategic forest plans, while extracting, with remarkable attention to detail, the ingredients for success and the pitfalls to avoid.

The second author, Jean-Marie Samyn, also a specialist in tropical forestry, shares Professor Buttoud's field experience in Africa on the formulation and implementation of forest policies, especially in Madagascar. He describes the procedure followed in the development of Madagascar's national forest plan and highlights the different stages of the participatory process at both the national and regional levels.

The book

The book is divided into five chapters, to which has been added the description of the Madagascar case study. There is also a postscript underlining the importance of the actual application of the forest policy, the benchmark against which the quality of the formulation exercise will ultimately be judged.

Chapter 1 defines forest policy and its challenges. It also outlines three essential characteristics of a good policy. It must be global and take into account economic, ecological and social interests. It must look to the long term and be linked to the other public policies which have an impact on forest resources. Finally, it has to be the result of a compromise between the various stakeholders, who should participate actively both in the formulation of the forest policy and in the subsequent stages of implementation, monitoring and evaluation. From the conceptual point of view, this chapter summarises the message of the authors.

The two main approaches to forest policy formulation are analysed in Chapter 2. These are the so-called administrative approach, where the forest administration plays the major role, and the so-called negotiation approach, which is a participatory process that allows the various stakeholders to negotiate between themselves in order to reach a compromise. However, the

authors advocate a third, 'mixed' approach. This combines the advantages of the first two and calls upon facilitators/mediators/organisers to help in the expression of individual positions, the dialogue and the negotiation so as to reach a compromise.

The formulation procedure, which is virtually the same, with a few variations, for both the forest policy and the strategic forest plan, is described in detail in Chapter 5. The different stages are noted and important aspects such as the organisation and composition of the working groups, the role of mediators and the leadership of groups, and the management and steering of the participatory process, are discussed at both national and regional levels.

The formulation process produces a forestry policy document and a planning document, the latter of which may be labelled as a National Forest Plan, Action Plan or National Forest Master Plan. The characteristics and content of such plans are given in detail in Chapter 4.

Although the formulation process can be perceived as a participatory process of research and negotiation towards a compromise between several stakeholders with divergent interests, the negotiated solution should however be considered by all as a consensual measure, the application of which also requires the active participation of all parties.

Who should read it?

This book is of interest primarily to the heads of forest administrations wishing to formulate, revise or evaluate their forest policy or their strategic forest plan. In fact, they will find it to be a practical guide to doing just that. However, it is also of interest to all those who deal with forest development problems in any country. This is because the basic concepts developed therein – namely, taking into account all the forest resources, the various interests at stake, the promotion of dialogue and the active participation of all actors in the research, implementation and evaluation of solutions to forest problems – continue to be of universal application.

Translated from the French by Yvonne Cunnington. ■

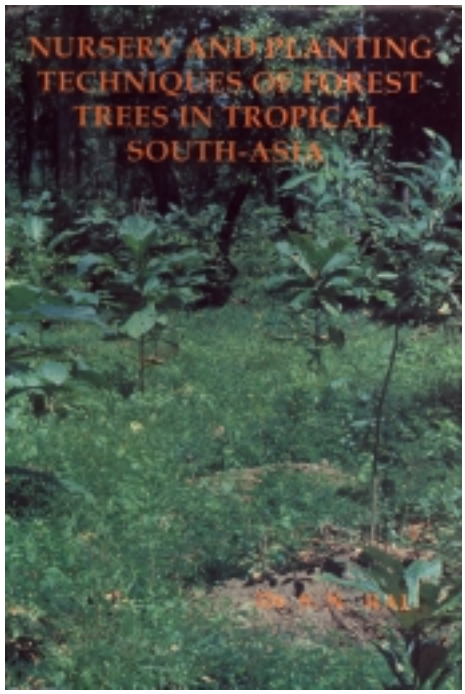
Rai, S.N. 1999.* Nursery and Planting Techniques of Forest Trees in Tropical South Asia. *Punarvasu Publications, Dharwad, India.

Available from: Punarvasu Publications, Pentagon House, Kalaghatagi Rd, Dharwad 580 002, India; or contact the author at: Aranya Bhavan, Malleswaram, 18th Cross, Bangalore 560 003, India

The restoration of trees and forests on degraded lands will require knowledge about the best ways to efficiently and effectively plant various species of woody plants, and this knowledge will not come easily because the woody flora of South Asia is very diverse. For many tree species, we do not have sufficient information about even such basic features of reproduction as the formation, maturation and germination of seeds, the growth of seedlings, and the conditions under which seedlings survive.

Thus, this book fills an important gap in our knowledge. A compilation of methods to raise seedlings of forest trees in large numbers, this clearly written book addresses a basic need of the people engaged in growing trees. There are descriptions of various steps involved in the collection and processing of seeds for germination, and for the care of seedlings in the nursery. Of particular interest is the information about roots and the early growth of seedlings, which is often not available elsewhere. Insightful comments about diseases and other aspects of natural history are scattered throughout the text, and special sections on the preparation of soils, watering, hardening of seedlings and grafting further enhance the utility of this work.

The real value of books like this lies in their utilitarian and practical approach based on many years experience in collecting and handling seeds for germination in nurseries. Often, the lessons learned from such experiences remain in the minds of professionals. Dr S.N. Rai is to be commended for sharing his knowledge with others and for laying the foundations of other similar works, which, inspired by the current effort, will certainly follow.



This work underscores the importance of documenting the basic and practical knowledge of our forest trees. The rate at which we are accumulating information about our native forest trees is slow at a time when natural habitats and their biota are disappearing at a rapid pace. The success of our efforts to green the earth, to restore degraded lands, to sustainably utilise our precious forest resources and to conserve our natural endowment would be greatly enhanced by such information.

Adapted from the foreword to the book by Professor Kamaljit S. Bawa, University of Massachusetts, USA. ■

Noticeboard

Improvements to the ITTO Fellowship Program

At its 27th Session, the ITTC revised some aspects of the ITTO Fellowship Program. These include a revised objective, eligible activities, priority areas and selection criteria.

Objective: to develop human resources and enhance professional expertise in member countries in tropical forestry and related disciplines, with a view to promoting sustainable management of tropical forests, efficient utilisation and processing of tropical timber, and better economic information on 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 mongraphs; and
- post-graduate studies.

Priority areas: eligible activities will aim at developing human resources and professional expertise in one or more of the following areas:

- improving the transparency of the tropical timber market;
- improving 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 marketing and standardisation of tropical timber exports;
- improving efficiency of processing tropical timber from sustainable sources; and
- in any of the above areas, 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. ■

ITTO Fellowship Grants

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

Fellowships are provided for short-term activities, such as participation in training courses, training internships, study tours, lecture/demonstration tours, and attendance at international/regional conferences. Fellowships are also granted for technical document preparation, publication and dissemination (e.g. manuals and monographs). Small grants are available for post-graduate studies. The maximum amount for a fellowship grant is US$10,000. See above for further guidance on priority areas and selection criteria.

Only nationals of ITTO member countries are eligible to apply. Applications are appraised in May and November each year. The next deadline for applications is **24 March 2000** and this is for activities that will begin no sooner than July 2000.

Further details and application forms (in English, French or Spanish) are available from Dr Chisato Aoki, Fellowship Programme, ITTO; Fax 81–45–223–1111; Email itto@mail.itto-unet.ocn.ne.jp (see page 31 for ITTO mailing address). ■

Making Contact

I would like to make contact with people or businesses involved in carbon trading and the use of forests as carbon sinks.

Preferred language: English

Margaret Tongo, PNG Forest Authority, PO Box 1172, Wewak, East Sepik Province, Papua New Guinea; Fax 675–856 3294

I would like to make contact with researchers working in the field of harvesting, utilisation and processing of timber residues.

Preferred language: Spanish

Esther Alvarez Godoy, Centro de Estudios de Biomasa Vegetal, Universidad de Pinar del Rio, Calle Marti No 270 CP 20100, Pinar del Rio, Cuba; Email biomasa@netupr.upr.edu.cu

Course Calendar

◆ **The SFI℠ Standard for Sustainable Forestry, and SFI℠ Program Implementation**

13–14 January 2000 Atlanta, USA

10–11 February 2000 Orono, USA

9–10 March 2000 Minneapolis, USA

This course aims to: familiarise participants with the American Forest and Paper Association SFI℠ (Sustainable Forestry Initiative) principles, objectives and performance measures for sustainable forestry, and the SFI℠ voluntary verification process; demonstrate a process for determining the appropriate set of SFI℠ verification indicators; and assist participants in implementing the SFI℠ sustainable forestry program within the ISO 14001 EMS framework.

Cost: $550 per person

Contact: Steve Ruddell, BioForest Technologies USA, PO Box 318, Rockford, MI 49341, USA; Tel 1–616–866 3430; Fax 1–616–866 5934; Email crs@mich.com

◆ **XII International Intensive Course on Diversified Management of Natural Tropical Forests**

14 February–17 March 2000
Turrialba, Costa Rica

Upon completion of this course, participants should be able to: design and coordinate an information-gathering system for forest management planning; carry out forest inventories and prepare a preliminary diagnosis for management purposes; design and implement harvesting and silvicultural operations; develop effective management plans as a business management tool; evaluate management plans on financial and economic bases; formulate extension and technology transfer strategies; and evaluate and define the contribution of forests to biodiversity conservation.

Cost: US$3,000 Language: Spanish

Contact: Ing. Javier Zamora Murillo, Coordinator, CATIE 7170, Turrialba, Costa Rica; Fax 506–556 7730; Email jzamora@catie.ac.cr

◆ **Vegetative Propagation of Tropical Forest Tree Species**

6–24 March 2000 and 6–24 November 2000
Gympie, Australia

These two identical courses aim to train participants in the rationale, techniques and strategies for the effective use of vegetative propagation for forest tree species. Participants will gain hands-on experience in: selection of suitable genotypes; establishing and managing hedges; the collection, preparation and setting of cuttings; constructing and equipping propagation facilities; and establishing and managing basic vegetative propagation experiments. Participants will also become familiar with family and clonal forestry systems and the potential applications of biotechnology in tree improvement programs. Cost: AUD $6,500

Contact: Stephen Walker, Program Leader Genetic Resources, Queensland Forest Research Institute, MS 483 Gympie Queensland 4570 Australia; Tel 61–7–5482 0886; Fax 61–7–5482 8755; Email walkers@qfri1.se2.dpi.qld.gov.au

◆ **Forest Genetics and Tree Improvement**

27 May–13 June 2001 Raleigh, USA

Topics include the genetic basis for tree improvement; distribution and seed collection for a range of tropical hardwoods and softwoods; initiating tree improvement programs for indigenous and exotic species; seed orchards; *Eucalyptus*/*Gmelina*/*Acacia*; progeny testing; quantitative genetics; breeding strategies; propagation strategies; and biotechnology. Cost to be determined.

Contact: Jennifer Barnes, North Carolina State University Forestry Educational Outreach Program, Box 8003, Raleigh, NC 27695–8003, USA; Tel 1–919–515 3184; Fax 1–919–515 6883; Email barnes@cfr.cfr.ncsu.edu; http://www.ces.ncsu.edu/nreos/forest/feop/ifg2000.html

◆ **Managing Forests: Managing Change**

8–26 May 2000 Chatham Maritime, UK

This course covers working with people, administering inputs and using natural resources. It draws on the extensive practical field experience of Natural Resources Institute professionals on long and short-term forestry projects around the world, and concentrates on what does and doesn't work. Aimed at mid-career professionals, it conveys new ideas and approaches in forestry management quickly and effectively, fitting the new sympathetically with the old.

Cost: £3,120 based on Medway Campus rates. Delivery in host country in French or Spanish also possible.

Contact: The Training Officer, Natural Resources Institute, University of Greenwich Medway Campus, Central Ave, Chatham Maritime, Kent ME4 4TB, UK; Tel 44–1634–883 884; Fax 44–1634–883 386/880 066; Email j.pilcher@gre.ac.uk; Web http://www.nri.org/Training/training.htm

All courses conducted in English unless stated otherwise

Courses at the Training Center for Tropical Resources and Ecosystems Sustainability

◆ **Forest Products Marketing**

6 June–17 July 2000 Cost: US$3,600

This course equips participants with training in environmental and global marketing, market research, the development of marketing information systems and the preparation of marketing plans.

◆ **Agroforestry for Sustainable Development**

6 June–17 July 2000 Cost: US$3,600

This course examines the concepts of sustainable development through the application of agroforestry; demonstrates methods and techniques for designing, implementing, monitoring and evaluating agroforestry projects; and addresses issues of food security and woodfuel productivity.

◆ **Seed and Seedling Production Technology for Environmental Restoration**

20 June–10 July 2000 Cost: US$2,000

This course provides foresters and forest managers with the knowledge and skills to apply technologies for sustaining the production of quality seeds and seedlings for environmental restoration.

◆ **Biological and Landscape Diversity**

11 July–31 July 2000 Cost: US$2,000

This course is designed for natural resource and environmental professionals. It develops an understanding of the concepts of biodiversity and components of the landscape as well as principles underlying bioregional planning and the landscape approach to conserving biodiversity.

◆ **Integrated Watershed Resources Management**

18 July–28 August 2000 Cost: US$3,600

This course develops among resource planners a broad understanding of the concepts, principles and tools of integrated watershed resources management and conservation.

◆ **Agroforestry Training and Education Development**

18 July–28 August 2000 Cost: US$3,600

This course is designed for teachers and school administrators involved in agroforestry education, specifically to improve their skills and knowledge in the teaching/learning process as applied to agroforestry education.

Contact: Training Program Leader, Training Center for Tropical Resources and Ecosystem Sustainability, College of Forestry, University of the Philippines Los Baños, PO Box 434, College, Laguna 4031, Philippines; Fax 63–49–536 3340; Email ifc@uplb.edu.ph

ITTO Tropical Forest Update

Guest Editor: Alistair Sarre

Layout: Justine Underwood

Desktop 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.

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

The **ITTO Homepage** can be found at http://www.itto.or.jp

Forthcoming Meetings

◆ 9–13 January 2000. **Developing Policies to Encourage Small-scale Forestry**. Cairns, Australia. IUFRO 3.08.00. Contact: John Herbohn, James Cook University, Townsville Qld 4811, Australia; Tel 61–7–4781 4250; Fax 61–7–4781 4019; Email john.herbohn@jcu.edu.au; http://www.jcu.edu.au/school/cea/crc/trem

◆ 10–20 January 2000. **Geospatial Information in Agriculture and Forestry**. Florida, USA. Contact: El Conferences, PO Box 134008, Ann Arbor MI 48113-4008, USA; Fax 1–734–994 5123; http://www.erim-int.com/CONF/conf.html

◆ February 2000. **The Future of Perennial Crops: Investment & Sustainability in the Humid Tropics.** Abidjan, Côte d'Ivoire. Contact: Hubert Omont, CIRAD, BP 5035, 34032 Montpellier Cedex, France; Tel 33–4–6761 7178; Fax 33–4–6761 7120; Email hubert.omont@cirad.fr

◆ 1–3 February 2000. **The Rattans of Africa: A State-of-the-Knowledge Seminar**. Limbe, Cameroon. Contact: Terry Sunderland, African Rattan Research Programme, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, UK; Fax 44–(0)181–332 5278; Email afrirattan@aol.com; or Jean-Pierre Profizi, PAFT Gabon, BP 199, Libreville, Gabon; Email paftgabon@internetgabon.com

◆ 14–18 February 2000. **International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21st Century.** Contact: A.K. Singh, Secretary-General, Indian Agricultural Research Institute, 110 012 New Delhi, India; Tel 91–11–573 1494; Fax 91–11–575 5529; Email: icmnr@bic-iari.ren.nic.in

◆ 13–16 March 2000. **Conference on Land Stewardship in the 21st Century: the Contributions of Watershed Management.** Tucson, Arizona, USA. IUFRO 8.04.04. Contact: Peter F. Ffolliott, School of Renewable Natural Resources, University of Arizona, Tucson AZ 85721, USA; Tel 1–520–621 7276; Fax 1–520–621 8801; Email ffolpete@ag.arizona.edu; http://www.srnr.arizona.edu/2000conf/landconf.html

◆ 14–16 March 2000. **International Workshop on Agroforestry and Forest Products**. Aizawl, India. IUFRO 5.11.00. Contact, L.K. Jha, Convenor, PO Box No 08, PO Chandamari, Aizawl 796007, India; Email jhalk@dte.vsnl.net.in

◆ 20–25 March 2000. **Future of Eucalypts for Wood Products**. Launceston, Australia. IUFRO 5.06.03. Contact: Gary Waugh, CSIRO Forestry and Forest Products, Private Bag 10, Clayton South, 3169, Victoria, Australia; Tel 61–3–9545 2122; Fax 61–3–9545 2133; Email g.waugh@ffp.csiro.au; http://www.ffp.csiro.au/conference/iufro/

◆ 21–25 March 2000. **Criteria and Indicators for Sustainable Forest Management at the Forest Management Unit Level.** IUFRO Task Force on Sustainable Forest Management. Nancy, France. Contact: Olivier Laroussinie, GIP ECOFOR, 19, avenue du Maine, 75732 Paris Cedex 15, France; Tel 33–1–4549 8836; Fax 33–1–4549 8839; Email laroussinie@engref.fr

◆ 27–31 March 2000. **Information for Sustainable Development – 28th Int'l Symposium on Remote Sensing and the Environment.** Cape Town, South Africa. Contact: Deirdre Cloete, PO Box 452, Stellenbosch 7599, South Africa; Fax 27–21–883 8177; Email isrse@mikom.csir.co.za; http://www.isrse.co.za

◆ 6–8 April 2000. **Information Management in Forest Enterprises**. Munich, Germany. IUFRO 4.04.02. Contact: Martin Moog, Chair of Forest Economy Science, Ludwig-Maximilian University, Munich, Am Hochanger 13, D-85354 Freising, Germany; Tel 49–8161 7146–30; Fax 49–8161 7146–31; Email fwl@forst.uni-muenchen.de

◆ 9–14 April 2000. **Symposium on Hybrid Breeding and Genetics**. Noosa, Australia. Contact: Heidi Dungey, Queensland Forest Research Institute, MS 483, Fraser Rd, Gympie Qld 4570, Australia; Fax 61–7–5482 8755; Email dungeyh@qfri1.se2.dpi.qld.gov.au

◆ 10–12 April 2000. **International Conference on Forest Ecosystem Restoration**. Vienna, Austria. Contact: Dr Erhard Halmschlager, Univ. Agricultural Sciences, Hasenauerstrasse 38, A-1190 Vienna, Austria; Email halmi@mail.boku.ac.at; http://www.boku.ac.at/

◆ 24–29 April 2000. **Manejo Sostenible de los Recursos Forestales**. Pinar del Rio, Cuba. IUFRO 1.07.09. Contact: Pastor Amador, Universidad de Pinar del Rio, Facultad Forestal, Marti No 270, Pinar del Rio 20100, Cuba; Email dptopfor@netupr.upr.edu.cu; http://iufro.boku.ac.at/iufro/iufronet

◆ 28–29 April 2000. **Workshop on Learning from Resource Users – a Paradigm Shift in Tropical Forestry.** Vienna, Austria. Contact: Ms Julia Roetzer, Austrian National Node of the European Tropical Forest Research Network, Institute for Forest Ecology, University of Agricultural Sciences – BOKU, Peter Jordan Str. 82, A-1190 Vienna, Austria; Tel 42–(0)1–47654 4124; Fax 43–(0)1–479 7896; Email jroetzer@woek.boku.ac.at; http://nuf.boku.ac.at

◆ 15–26 May 2000. **5th Meeting of the Conference of the Parties to the Convention on Biological Diversity.** Nairobi, Kenya. Contact: CBD Secretariat, World Trade Center, 393 Jaques St., Suite 300, Montreal, Quebec, Canada H2Y 1N9; Tel 1–514–288 2220; Fax 1–514–288 6588; Email chm@biodiv.org; http://www.biodiv.org

◆ 27–30 May 2000. **Impacts of Air Pollution and Climate Change on Forests – 19th International Meeting for Specialists in Air Pollution Effects on Forests.** Houghton, USA. IUFRO 7.04.00. Contact: David Karnosky, School of Forestry and Wood Products, Michigan Technological University, 101 U.J. Noblet Forestry Building, 1400 Townsend Drive, Houghton, Michigan 49931-1295, USA; Tel 1–906–487 2898; Fax 1–906–487 2897; Email karnosky@mtu.edu

◆ 4–9 June 2000. **International Symposium on the Biogeography of Southeast Asia 2000**. Leiden, the Netherlands. Contact: Rienk de Jong, Nationaal Natuurhistorisch Museum, Dept of Entomology, PO Box 9517, 2300 RA, Leiden, the Netherlands; Fax 31–71–513 3344; Email jong@nnm.nl

◆ 22–23 June 2000. **Wood Adhesives 2000**. Lake Tahoe, USA. IUFRO 5.00.00 Forest Products. Contact: John A. Youngquist, USDA Forest Service, Forest Products Lab, One Gifford Pinchot Dr, Madison Wisconsin 53705, USA; Tel 1–608–231 9398; Fax 1–608–231 9582; www.fpl.fs.fed.us/pdcomp/

◆ 26–30 June 2000. **2000 World Conference on Natural Resource Modelling**. Wageningen, the Netherlands. Contact: Joost Meulenbroek, Congress Office, Wageningen University, Costerweg 60, 6701 BH Wageningen, Netherlands; Fax 31–317–485309; Email joost.meulenbroek@alg.vl.wau.nl; www.cqs.washington.edu/~gordie/rma/html

◆ 16–23 July 2000. Amsterdam, the Netherlands. **Geoinformation for All.** Contact: S. Tempelman, c/o ITC, PO Box 6, 7500 AA Enschede, Netherlands; Tel 31–53–487 4358; Fax 31–53–487 4335; Email isprs@itc.nl; http://www.itc.nl/~isprs

◆ 2–4 August 2000. **Tropical Forestry Research: Challenges in the New Millennium.** Peechi, India. Contact: Dr J.K. Sharma, Kerala Forest Research Institute, Peechi - 680 653, Kerala, India; Tel 91–487–782 061; Fax 91–487–782 249; Email libkfri@md2.vsnl.net.in

◆ 2–4 August 2000. **Bamboo 2000 International Symposium**. Chiang Mai, Thailand. Contact: Bamboo 2000 Secretariat, Faculty of Forestry, Kasetsart University, Bangkok 10900 Thailand; Tel 66–2–579 0171; Fax 66–2–942 8112; Email fforlwp@nontri.ku.ac.th

◆ 5–6 August 2000. **Improved Forest Management and Harvesting Practices for Tropical Forest.** IUFRO/FAO Satellite Meeting. Kuala Lumpur, Malaysia. Contact: R. Heinrich, Forest Harvesting, Trade and Marketing Branch, FAO Forestry Department, Viale delle Terme di Caracalla, 00100 Rome, Italy; Fax 39–06–5705 5137; Email Forest-Harvesting@FAO.org

◆ 7–12 August 2000. Kuala Lumpur, Malaysia. **The Effect of Nursery and Silvicultural Operations on the Environment and Society.** IUFRO 3.02.00 at the XXI IUFRO World Congress. Contact: Mike Menzies, New Zealand Forest Research Institute Ltd, Biotechnology Division, Private Bag 3020, Rotorua, New Zealand; Tel 64–7–3475899; Fax 64–7–3479380; Email menziesm@tawa.fri.cri.nz

ITTO Calendar

◆ 30 January–4 February 2000. **Forest Restoration for Wildlife Conservation**. Chiang Mai, Thailand. Sponsored by ITTO. Contact: Janice Kerby, FORRU, Department of Biology, Chiang Mai University, Chiang Mai 50200, Thailand; Tel 66-53-943358; Fax 66-53-892259; Email scopplrn@cmu.chiangmai.ac.th

◆ 24–30 May 2000. **XXVIII Session of the ITTC and Associated Sessions of the Committees**. Lima, Peru.

◆ 30 October–4 November 2000. **XXIX Session of the ITTC and Associated Sessions of the Committees.** Yokohama, Japan.

◆ 28 May–2 June 2001. **XXX Session of the ITTC and Associated Sessions of the Committees.** Abidjan, Côte d'Ivoire.

◆ 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. Soedojo, 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

◆ 7–12 August 2000. Kuala Lumpur, Malaysia. **Data Collection in the Tropics.** IUFRO 4.02.01 at the IUFRO World Congress. Contact: Mohammed Ellatifi, Service des Eaux et Forêts , PB 12507 Casablanca, Morocco; Fax 212–2–982428; Email m.ellatifi@mailcity.com

◆ 7–12 August 2000. **XXI IUFRO World Congress 2000**. Kuala Lumpur, Malaysia. Contact: XXI IUFRO World Congress Organizing Committee, Forest Research Institute Malaysia, Kepong, 52109 Kuala Lumpur, Malaysia; Fax 60–3–636 7753; Email iufroxxi@frim. gov.my; http://frim.gov.my/iufro.html

◆ 15–21 August 2000. **Forest Ecosystems – Ecology, Conservation and Sustainable Management.** Chengdu, Sichuan, China. IUFRO 1.14.00. Contact: Dr Shi Zuomin & Ms Dong Na, Institute of Forest Ecology, Environment & Protection, Chinese Academy of Forestry, Wanshoushan, Beijing, 100091 China; Tel 86–10–62888308 or 62889513; Fax 86–10–62884972; Email Shizm@fee.forestry.ac.cn

◆ 20–26 August 2000. **XXI International Congress of Entomology**. Iguaçu Falls, Brazil. Contact: Dr Décio Luiz Gazzoni, PO Box 231, 86001–970 Londrina - PR Brazil; Fax 55–43–371 6100; Email iceweb@cnpso.embrapa.br; www.embrapa.br/ice

◆ 20–22 September 2000. **New Approaches to the Management of Neotropical Primary Rainforests 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 55–91–226 6622; Fax 55–91–226 9845; Email natalino@cpatu.embrapa.br

◆ 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 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; http://online.anu.edu.au/Forestry/wood/bio/bio.html

◆ 18–25 April 2001. Fremantle, Australia. **16th Commonwealth Forestry Conference**. 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

◆ 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