Research Abstracts **2002**

Center for International Forestry Research

Research Abstracts 2002

Donors
The Center for International Forestry Research (CIFOR) receives its major funding from governments, international development organizations, private foundations and regional organizations. In 2002, CIFOR received financial support from the African Timber Organization, Aracruz Celulose SA - Brazil, Asian Development Bank, Australia, Belgium, Brazil, Canada, China, Conservation International Foundation, Denmark, European Commission, Finland, Food and Agriculture Organization of the United Nations (FAO), Ford Foundation, France, German Agency for Technical Cooperation (GTZ), German Federal Ministry for Economic Cooperation and Development (BMZ), Indonesia, International Development Research Centre (IDRC), International Tropical Timber Organization (ITTO), Japan, Korea, MacArthur Foundation, Netherlands, Norway, Peruvian Institute for Natural Renewable Resources (INRENA), Philippines, PI Environmental Consulting, Secretariat of the Convention on Biological Diversity, Sweden, Switzerland, The Overbrook Foundation, Tropical Forest Foundation, USA, United Kingdom, United Nations Environment Programme, United States Forest Service, United States National Oceanic and Atmospheric Administration, World Bank, World Conservation Union (IUCN), World Resources Institute and World Wide Fund for Nature (WWF).

The Center for International Forestry Research (CIFOR) was established in 1993 as part of the Consultative Group on International Agricultural Research (CGIAR) in response to global concerns about the social, environmental and economic consequences of forest loss and degradation. CIFOR research produces knowledge and methods needed to improve the well-being of forest-dependent people and to help tropical countries manage their forests wisely for sustained benefits. This research is done in more than two dozen countries, in partnership with numerous partners. Since it was founded, CIFOR has also played a central role in influencing global and national forestry policies.

Compiled and edited by Yuni Soeripto
Format and lay out by Gideon Suharyanto, Yani Saloh,
Yuan Oktafian, Eko Priyanto

Cover photos by Brian Belcher, Takeshi Toma, Alain Compost,
Jusupta Tarigan, Tony Ruth (WWF), Mary Milne

Center for International Forestry Research
Bogor, Indonesia

Preface

CIFOR's 2002 Research Abstracts is a compilation of the abstracts of in-house and external publications produced in the year 2002 by CIFOR scientists and their collaborators. The abstracts are grouped into seven themes that represent CIFOR's research activities. To facilitate easy access to the abstracts, indexes are provided by author and keyword.

The full text of many CIFOR publications can be accessed and downloaded in pdf format from our website.

If you do not have access to the web, we can send you a pdf file as e-mail attachment; please email *n.sabarniati@cgiar.org*. To obtain a printed copy of the publication, please send a request to:

Communication Unit
CIFOR
P.O. Box 6596 JKPWB
Jakarta 10065
Tel.: +62 (251) 622 622
Fax: +62 (251) 622 100
E-mail: cifor@cgiar.org
Website: http://www.cifor.cgiar.org

We encourage you to obtain copies of papers published externally from libraries or information centers closest to you.

Contents

General

1. CIFOR annual report 2001: forests for the future

CIFOR

Overview of CIFOR's research and achievements for 2001 including complete financial statements, listings of donors and partners, key projects, staff and publications. The Report also provides the global, regional and national perspectives of CIFOR's work. Feature stories focus on a range of forest issues, including: carbon, biodiversity, women and forest livelihoods, decentralization in Africa, secondary forests in Asia, forests and fires, forests and health, community forestry, non timber forest products, watersheds in Central America and forest policy in China.

Bogor, Indonesia, CIFOR. 56p.
Also available in French

2. CIFOR research abstracts 2001

CIFOR

This book is a compilation of the abstracts of in-house and external publications produced in the year 2001 by CIFOR scientists and their collaborators. The abstracts are grouped into seven themes: general, biodiversity, forest governance and community forestry, forest management, non-timber forest products, plantations and rehabilitation of degraded forests, policy and extrasectoral issues that represent CIFOR's research activities. Indexes are available by author and keyword.

Bogor, Indonesia, CIFOR. 154p.
Also available in French

3. Curua-Una: 50 anos de Pesquisa

Pokorny, B., Vasconselos, L., eds.

- Abstract not available

Belem, Brazil, Faculdade de Ciencias Agrarias do Para (FCAP).
1 CD ROM. ISBN: 85-7295-025-7.
To obtain a copy of the CD-ROM, contact FCAP: e-mail: bibliotheca@fcap.br

4. How to know more about forests? Supply and use of information for forest policy.

Janz, K., Persson, R.

There are serious shortcomings in the supply and use of information needed for policy making in the forestry sectors of developing countries (and often also in developed countries). The main weakness is the failure to connect supply to demand. Much information has been gathered not because it was needed but because donors were willing to fund inventories, on traditional lines, that were vaguely thought to be potentially useful. Information is usually inadequate on topics such as actual removals of wood and other products, or the usefulness of the forests, especially to the local people. Not enough provision is made for continuous inventories to the necessarily high standards that are needed to measure change. The way in which remote sensing has been used has often been heavily influenced by the facilities that are on offer, rather than the potential usefulness of the results. It is suggested, for example, that the resources would be better used on the assessment of changes in land use and forest cover than on elaborate cartography. A key proposal is to set up national 'Analysis Units' that will collate and interpret available information, help users to define their needs, and make the link with suppliers, so that information gathering can be more driven by demand. Information at international level depends on what is available nationally, and therefore improvement should be sought mainly at national level.

CIFOR Occasional Paper, no.36. Bogor, Indonesia, CIFOR.

Biodiversity

5. Biodiversity research in Malinau

Sheil, D.

This chapter reports on a range of research conducted in CIFOR's research area in Malinau, East Kalimantan. A major emphasis of this work was to begin to document the biological wealth of this area. The main task had three major aspects: 1) finding out what occurs where, 2) assessing to whom it matters and in what way, and 3) identifying how to maintain this biota in the future. These studies combined both biological and social aspects, in order to determine not only what species and habitats were present but also how local communities used and view them. Background data also characterises sites and soils in the wider landscape. Surveys were undertaken in seven communities with the full participation of the villagers. The survey established 200 plots on a wide range of vegetations, and collected a wide range of specimens and related information. The survey area of these community territories is about 2,000 km^2. Preliminary results of this research are presented. Additional research activities include assessments of fish, of reptiles and amphibians. Baseline data for mammals, birds and some invertebrates are also reported from the main logging studies. Local communities are found to be very dependent on the forest in many ways. Over two thousand plant taxa were recorded and over one thousand species are found to have significant direct values. Many animals were also indirectly recorded and found to have value to the communities. The area is found to be very infertile, and few options for sustainable agriculture or plantations are viable due to poor soils, and steep terrain. Various suggestions for improved forest and land-use management are presented. The region is found to be very rich in biodiversity. Several new species are reported.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 57-107. Bogor, Indonesia, CIFOR and ITTO.

6. Criteria and indicators for sustainability forest management: assessment and monitoring of genetic variation

Namkoong, G., Boyle, T.J.B., El-Kassaby, Y.A., Palmberg-Lerche, C., Eriksson, G., Gregorius, H.-R., Joly, H., Kremer, A., Savolainen, O., Wickneswari, R., Young, A., Zeh-Nlo, M., Prabhu, R.

The paper contains proposals for genetic criteria and indicators which can form part of a more general set of economic, environmental and social criteria and indicators for the monitoring of forest sustainability at the scale of forest management units. It proposes one criterion for conservation of forest genetic resources and four indicators related to processes that maintain genetic diversity. For each indicator, sets of verifiers are suggested which differ in the biologically relevant features they measure, in their precision, and in technical facilities they require. Finally, the need for rapid assessment and precision under difficult conditions requires research and development of efficient direct surrogate measures of the genetic resource. The authors therefore include recommendations for short- and medium term research that would improve the scientific value, cost effectiveness, ease of use, and further development of genetic criteria and indicators.

Rome, FAO, Forest Resources Development Service, Forest Resource Division. Forest Genetic Resources Working Papers, Working Paper FGR/37E. unpublished. http://www.fao.org/DOCREP/005/AC649E/AC649E00.HTM.

7. Disturbing hypotheses in tropical forests

Sheil, D., Burslem, D.F.R.P.

The intermediate disturbance hypothesis (IDH) is a controversial explanation for the maintenance of tropical forest tree diversity, but empirical tests of it are rare. Two data intensive evaluations have recently yielded contradictory outcomes: one for and one against the IDH. The authors propose that the explanation for these results lies in the subtleties of divergent interpretations and approaches, and in the different characteristics of the study sites. The apparent simplicity of the IDH is deceptive, because a range

of distinct phenomena is involved, each of which can be defined and examined. Recent developments offer exciting opportunities for a deeper comprehension of how disturbance influences forest diversity.

Trends in Ecology & Evolution 18(1): 18-26.
Published online 2002 and print edition January 2003

8. Field test of CIFOR's ecological criteria and indicators for sustainable forest management: Bulungan Research Forest East Kalimantan, Indonesia 1-12 September 1999

Poulsen, J., (ed.)

CIFOR's existing set of criteria and indicators (C&I) was evaluated during a workshop in the Bulungan research forest, East Kalimantan, Indonesia. It has been recognized that CIFOR's biodiversity C&I were too academic and were impractical for field application. This report presents: a) review and assessment of the suitability of CIFOR's generic biodiversity Critetia & Indicators (C&I), b) evaluation whether CIFOR's generic biodiversity C&I adequately assessed the quality of management performance, c) suggestions developed to adapt the biodiversity components of the CIFOR C&I generic template to local conditions, d) evaluation and to suggestion to improve to the wording in current biodiversity C&I manuals, and e) relevant recommendations pertaining to the implementation of the C&I, and the agenda for future research on these.

Bogor, Indonesia, CIFOR. 114p. ISBN: 979-8764-91-9.
Limited edition

9. Forest fire and biological diversity

Nasi, R., Meijaard, E., Applegate, G., Moore, P.

Forest fires have many implications for biological diversity. This article showed the effects of forest fires on the forest ecology, the impact of human-induced or severe natural wildfire on plant diversity, effects of fire on forest fauna and effects of suppression of the natural fire regime. In forest

where fire is not a natural disturbance, it can have devastating impacts on forest vertebrates and invertebrates, loss of fruit-trees results in overall decline in bird and animal species that rely on fruits for food. Deliberate human suppression of fire can also have direct negative impacts on species. However, not all species suffer from fire. Fire can have positive effects on wildlife populations in boreal forests, where fire is a major natural disturbance mechanism.

Unasylva 53(209): 36-40.

10. Integrating biodiversity into the forestry sector

Nasi, R., Santoso, L., Prianto, E., Suharyanto, G.

Biodiversity Planning Support Programme (BPSP) aims to provide support to national biodiversity planners with sectoral integration of National Biodiversity Strategy and Actions Plans (NBSAPs) into the broader national development framework - specifically in relation to Article 6 General Measures of the Convention on Biological Diversity. This CD ROM is particularly dedicated to the forestry thematic study. It includes an overall synthesis report, series of national case studies, a bibliography of relevant literature (web-based and paper-based) and additional reference documents produced by The Center for International Forestry Research (CIFOR).

Bogor, Indonesia, CIFOR. 1 CD-ROM.

11. Les forets de montagne de la Nouvelle-Caledonie: Montane forests in New Calidonia

Nasi, R., Jaffre, T., Sarrailh, J.-M.

Higher local temperature gradients near isolated mountains (inselbergs) result in continuous cloud cover at below normal elevations, creating the right conditions for the development of montane forests in New Caledonia at altitudes below 1600 m. These forests are especially important for biodiversity and to improve our understanding of the phytogeography and phylogeny of groups such as conifers or genera such as

Metrosideros (*Myrtaceae*) and Cunonia (*Cunoniaceae*). They provide vital refuge areas for endangered fauna and play a significant role in water regulation. These forests are relatively well protected, with few threats from logging though slightly more from mining activities. The main threat seems to be the global warming phenomenon, which could cause the disappearance of the very specific ecological conditions that are vital to their survival.

Bois et Forets des Tropiques 274(4): 5-17.

12. Why doesn't biodiversity monitoring support conservation priorities in the tropics?

Sheil, D.

Biodiversity monitoring activities can hinder rather than promote conservation in tropical countries. The national institutions responsible for conservation in developing countries have very limited resources, which given donors and richer agencies scope for considerable influence. However, those nominally concerned with supporting conservation often overlook the practicalities. As a result, many initiatives divert scarce resources away from fundamental management priorities. This article addresses the importance of various types of biodiversity monitoring, suggests practical biodiversity conservation priorities and indicates how external agencies can deflect local management from addressing these. The article is an elaboration of opinions published recently (Sheil, 2001), based mainly on author's personal experiences in Africa and South-east Asia. One vital step to addressing the problem is a frank discussion of how conservation goals should be supported.

Unasylva 53(209): 50-54.

Forest Governance and Community Forestry

13. Adaptive collaborative management: a value-adding approach to CBFM in the Philippines

Hartanto, H., Lorenzo, M.C.B., Valmores, C., Burton, L., Arda-Minas, L.

CIFOR conducted a research on Adaptive Collaborative Management (ACM) in two Community Based Forest Management (CBFM) sites in the Philippines for 3 years. This paper describes how different ACM processes were applied at the site level to help the community and local stakeholders in managing their CBFM in a collaborative and adaptive way. As the result of these processes, several changes were noted. These include, among others, increased trust, attitude and awareness among the PO members and different stakeholders, increased skills of People's Organization (PO) members, increased communication and information flow within and between stakeholder groups, increased collective action within PO members and across different stakeholders in CBFM implementation, improved feedback mechanisms from local forest managers to decision makers, increased income for PO members, and improved forest resource use and management. This paper concludes by describing how ACM provides adds-on value to the existing CBFM program and putting forward several recommendations to improve CBFM implementation.

In: Hartanto, H., Evangelista, R. (eds.). Proceedings of a National Workshop on Building Partnerships, Strengthening Capacities and Developing Forest Resource thru Community Based Forest Management, Angeles City, August 6-7, 2002. 50-72. Bogor, Indonesia, CIFOR and Department of Environmental and Natural Resources (DENR).

14. Anticipandose al cambio: guia para el uso de escenarios como instrumento para el manejo forestal adaptable

Wollenberg, E., Edmunds, D., Buck, L.

Scenario methods can be used to anticipate the future and expand the creativity of people thinking about complex forest

management situations. This manual describes the use of scenarios with multiple stakeholders, with examples drawn from community-based forest management. Four classes of scenario methods are described: visions, projections, pathways and alternative scenarios. Examples of rapid participatory techniques relevant to scenario methods are also summarized. It is hoped that these methods will be useful for bringing together different groups of people concerned about forest management to exchange views, expand the realm of decision possibilities and reach more innovative solutions.

Bogor, Indonesia, CIFOR. 38p.
Also available in English and Indonesian

15. Building agreements among stakeholders

Wollenberg, E., Anau, N., Iwan, R., van Heist, M., Limberg, G., Sudana, M.

CIFOR facilitated 27 communities in the Upper Malinau watershed to develop agreements about their village boundaries and map them through participatory methods. Decentralization reforms created new values of forest resources and uncertainties that increased conflict over local resources. The authors report on the nature of these conflicts, the stability of agreements and the factors affecting how agreements were reached.

Tropical Forest Update 12(2): 7p. Online URL:
http://www.itto.or.jp/newsletter/v12n2/2.html.

16. Can common property resource system work in Zimbabwe?

Campbell, B.M., de Jong, W., Luckert, M., Mandondo, A., Matose, F., Nemarundwe, N.

Common property resource (CPR) management approaches are now thought to provide a viable alternative to natural resource management. This article contains result of the investigations on common property issues for woodlands in communal areas in Zimbabwe. It reveals numerous cases

showing a breakdown of local institutions for CPR management, and the lack of any emerging alternative institutions for such management. A number of economic, social and ecological factors contribute to these problems. It argues that current institutional systems are rooted in norm-based controls contrary to the formal rule-based systems that form the cornerstones of the proposed CPR systems. It suggests that interventions that propose CPR systems need critical analysis.

Zimbabwe Science News 36(1+2): 13-17. ISSN: 1016-1503.

17. Changes in Miombo woodland cover in and around Sengwa Wildlife Research area, Zimbabwe, in relation to elephants and fire

Mapaure, I., Campbell, B.M.

One of the consequences of impacts of elephants and fire on woodlands is a change in woody cover, which often results in major challenges for wildlife managers. Changes in Miombo woodland cover in and around Sengwa Wildlife Research Area (SWRA) between 1958 and 1996 were quantified by analyzing aerial photographs. Woody cover in SWRA decreased from 95.2% in 1958 to 68.2% in 1996, with a lowest mean of 62.9% in 1983. The annual absolute rate of woody cover change in SWRA increased from -1.1% per-annum between 1993 and 1996, while the annual relative rate increased from -1.1% per annum between 1958 and 1964 to 3.3% per annum between 1993 and 1996. There was a strong negative correlation between elephant densities and woody cover in SWRA, suggesting that loss of woody cover was mainly due to elephants. Woodland recovery after 1983 was due to reductions in elephant populations through legal and illegal off-take and reductions in fire frequency. Surrounding areas experienced less woody cover losses than SWRA, mainly due to tree removal by locals whose densities increased after the eradication of tsetse fly in the 1970s.

African Journal of Ecology 40: 212-219.

18. Claiming the forest: Punan local histories and recent developments in Bulungan, East Kalimantan

Kaskija, L.

This book focuses primarily on changes that have taken place in the Malinau area in East Kalimantan in recent years. The Punan Malinau, who inhabit the area, are former nomads who subsist on a wide range of forest-oriented activities, including swidden agriculture, hunting and the collection of and trade in forest products. During the past ten years, the arrival of a growing number of powerful outsiders, including NGO's, timber and mining companies, has contributed to increasing competition for land and for various new sources of income. In the context of recent changes, local historical knowledge has become an increasingly important political asset. Such knowledge provides one way for local people to strengthen the legitimacy of their claims to land and forests.

Bogor, Indonesia, CIFOR. 118p. ISBN: 979-8764-90-0.

19. CO-VIEW (Collaborative Vision and Exploration Workbench): software and manual

Haggith, M., Purnomo, H., Zacharias, T., Yulianto, E., Prabhu, R., Theodore, Y., Muetzelfeldt, R., Yuliani, L., Yasmi, Y., Suharyanto, G., Koesnadi, R.

Co-View is a tool to help facilitators of natural resource management and stakeholders to articulate and explore a shared vision of the future and to develop strategies to achieve it. One promising approach for coping with change is by generating a shared vision of the future through facilitated participatory visioning processes. Visioning has become widely accepted as an important tool for empowering local communities to gain confidence over their future. Co-View includes: 1. Practical guide to facilitate a participatory visioning process; 2. Future scenarios as a tool for adaptive forest management; 3. a simply written, illustrated guide to participatory modeling; 4. 'The bridge', a computer-based tool for expressing a vision and converting it into the basis of a simulation model; 5. 'The power to change!" game, a team

game for using a model to explore various future scenarios. (Simile software is required).

Bogor, Indonesia, CIFOR. Online URL: http://www.cifor.cgiar.org/acm/pub/co-view.html.

20. Collective action and learning in developing a local monitoring system

Hartanto, H., Lorenzo, M.C.B., Frio, A.L.

One of the challenges the communities face when managing forests is the lack of a systematic and transparent monitoring system that can be used to monitor their resource management strategies and to communicate their successes to outsiders. This paper argues that monitoring efforts will be sustainable only if the system had been developed by the communities in collaboration with other relevant stakeholders with an aim of enhancing their learning and understanding rather than for compliance purposes. This paper describes the processes used by a People's Organisation in Palawan, Philippines, in developing their monitoring system with the support of several key stakeholders. The processes include the development of the monitoring framework, negotiation on how to collaborate in this effort, and the development of monitoring arrangements (including who collects data, what data to collect, and how to collect it). It shows how the development processes brought different community groups and stakeholders with different interests, objectives, and mandates together for collective action and learning.

International Forestry Review 4(3): 184-195.

21. Community forestry and the stewardship of tropical forests in Asia

de Jong, W.

A heated debate has been going on for roughly three decades about who should hold stewardship over Asia's tropical forests. This essay reviews how the debate evolved. Communal forestry

advocates like NGOs point out that local groups living in remote corners of countries like Indonesia, Thailand, the Philippines, and India have been managing forests for centuries. They provide examples of successful precolonial communal management practices, which eventually gave way to commercial interests in the late nineteenth century. Postcolonial governments, backed by international organizations, continued to believe in modernist and exploitative forestry practices until the development discourse began to question the impact of economic growth on natural resources and the environment. By the 1980s, the idea emerged of putting local communities back in charge of tropical forests, both for their own livelihoods and the forests' health. By the 1990s, community forestry coincided with the trend toward decentralization. Unfortunately, the result has often been more exploitation as newly responsible district authorities and village elites seek revenue through timber concessions and oil palm plantations. Despite positive examples—almost 3 million ha under community control in the Philippines—the larger picture is of central authorities reluctant to give up lucrative sources of income. When they do grant local responsibility, it is often over degraded or low quality forests, a burden rather than an asset to local communities. Future agendas must recognize that forests are now of value to a growing number of stakeholders. Local communities may therefore play important roles in restoring forests—if they are compensated—but the complexity of rights and interests suggests that the future lies in co-management. The struggle will shift from who should have control, to how communal stewardship can become feasible and attractive to communities, while meeting the demands of other constituencies.

Kyoto Review of Southeast Asia (2): Online URL:
http://kyotoreview.cseas.kyoto-u.ac.jp/issue/issue1/index.html.

22. Conflict in forest management: a study for collaborative forest management in Indonesia

Yasmi, Y.

The main objective of the study was to obtain a better understanding of forestry conflicts, particularly in the context of the Bulungan Research Forest (BRF) in East Kalimantan. The results show that conflict took place between local people within a particular locality (settlement); between different localities; and between local people and various companies (e.g. logging, coal-mining) operating near their localities. In term of conflict resolution, the people from the communities have proposed three kinds of mechanisms for different types of conflicts. Those mechanisms are adat (customary laws), government involvement and negotiation. The key task one faces in undertaking conflict resolution is to manage its occurrence. The overall goal should not be to eliminate conflict; instead, it should be to adopt procedures or mechanisms for maximizing its potential benefits while minimizing its potential drawbacks. This study concludes that choosing the "best" conflict resolution mechanism is, in itself, a strategic choice. There is no single panacea for resolving any kind of conflict situation.

Thesis (MSc.) - Wageningen University
Wageningen, Netherlands, Wageningen University. 140p.

23. Coping with crisis - smoke, drought, flood and currency: Iban women and their households in West Kalimantan

Wadley, R.L.

In recent years, rural households throughout Indonesia have faced a variety of crises, including severe drought, smoke from forest fires, and floods - all of which have affected subsistence farming. Simultaneous with these problems has been the wider Asian economic crisis that destabilized Indonesia both economically and politically. For rural people, it has affected cash-earning opportunities and prices of basic

goods. Focusing on the Iban of West Kalimantan, this paper explores the impacts these various crises have had on Iban farming and wage labor, and how the Iban have coped. It touches on the successful strategies from the past as well as recent local developments that have appeared to cushion the continuing economic uncertainty. This paper contributes to the growing literature on the impact of climatic fluctuation and economic change on the livelihoods of local people in Southeast Asia and other parts of the Third World.

Culture and Agriculture 24(1): 26-33.

24. Corporate debt and the Indonesian forestry sector

Barr, C., Brown, D., Casson, A., Kaimowitz, D.

The Indonesian Bank Restructuring Agency (IBRA) holds US$ 4.1 billion in loans related to forest and estate crop activities, of which US$ 2.7 billion are non-performing. Ten large conglomerates account for over 70% of the bad forest and estate crop debt. These groups are also responsible for some US$ 2.4 billion in domestic non-performing loans in other sectors and US$ 15 billion in offshore debt. The current high level of non-performing loans stems, in large part, from the failure by banks to exercise due diligence (i.e., seriously assess the potential for loan default) when Indonesia's forest-linked conglomerates sought to borrow funds prior to the crisis. Direct government subsidies for forest and estate crop activities also encouraged corporate risk taking. Strong evidence suggests that debt write-offs and loan restructuring may provide Indonesia's forest-related industries with a substantial capital subsidy. This study projects that IBRA will eventually write-off US$ 1.3 – 1.9 billion of debts associated with timber, wood processing, pulp and paper, and oil palm investments. Debt write-off on this scale, together with IBRA's current lack of supervision over the forest-related companies that owe it large sums of money, will serve as an impetus for

debtor firms to continue to engage in practices involving an inordinate degree of financial risk.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 277-292. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

25. Criteria & indicators for community forest management: building-up criteria and indicators for sustainable forest management at community level: a case in Ghana

Louvet, S.

This study was carried out in Ghana with two communities managing two forest reserves. Two sets of participatory criteria and indicators (C&I) for sustainable forest management have been defined: the communities themselves decided what their own C&I would be. This gives an example of what participatory sets could be. They are small and tractable to allow easy ownership, while covering all the major issues of sustainability. They contain a majority of indicators of results, which give more intrasigence to the assessment, necessary since communities will be in the position of both judge and jury when they will accomplish their assessment. Concerning the method, this case study tested and validated the approach of the CIFOR C&I while ideas for improvement emerged.

Paris, ENGREF and CIFOR. 110p. + annexes.

26. Decentralisation and forests resources in Indonesia: removing institutional constraints and redesigning policies for better future

Djogo, A.P.Y.

The political transformation in Indonesia, followed by administrative decentralisation through the provision of regional autonomy, has had catastrophic consequences. The decentralisation of forest resource governance and management has engendered a parallel decentralisation of

moral hazards such as opportunistic behaviour, abuse of power and uncontrolled markets. Forestry sector policies neither facilitate nor support community-based forest resource management, nor forest conservation and restoration. This paper analyses the current situation in forest resource exploitation from institutional perspectives. The analysis is based on case studies from two sites in Indonesia and consultation with stakeholders in various hierarchies. It identifies key points that institutions should observe in the decentralisation process to secure better performance or outcomes in forest resource management. In addition to removing institutional constraints, it is argued that policies need to be redesigned. This paper concludes with recommendations to remove institutional constraints and to redesigning policies.

In: Brown, A.G. (ed.). Pathways to sustainable forest management: proceedings of the Second Hermon Slade International Workshop, Ubud, Bali, 5-8 June, 2001. 70-74. Parkville, Vic. Australia, The ATSE Crawford Fund.

27. Development of multistakeholder scenarios of secondary forest management: a multiagent system simulation approach

Purnomo, H., Priyadi, H., Yasmi, Y., Yuliani, L., Prabhu, R.

The state owned company, PT. Inhutani II Sub Unit Malinau, has managed the lowland dipterocarps forest in Malinau District, East Kalimantan for over 10 years. They established permanent sample plots (PSP) for measuring the growth and the yield in their area. However, current regulations do not give the company a sufficient space to use the PSP data for managing the area, nor a systematic way to involve the communities in the management of the forest. This research was aimed to seek scenarios of sustainable secondary forest management. The scenarios were developed through simulation of social and biophysical components in the area using Multi-Agent System (MAS). MAS is a branch of artificial intelligent for creating artificial society used for social simulation. This paper presents scenarios' development process and scenarios of collaborative management of the forest. The results reveal that Multi-Agent System (MAS) is a powerful tool in simulating and in developing

scenarios of sustainable dipterocarps forest management. The sustainability was measured by indicators of forest cover and standing stock, carbon stock, communities incomes, the company revenue and taxes paid to the local and center governments. It was also found that collaboration between PT. Inhutani II and the communities appeared to be the most suitable alternative for sustainable secondary dipterocarps forest management.

In: Sabarnurdin, M.A., Hardiwinoto, S., Rimbawanto, A., Okimori, Y. (eds.). Proceedings of the Seminar on Dipterocarp Reforestation to Restore Environment Through Carbon Sequestration, Yogyakarta, 26-27 September 2001. 199-217. Yogyakarta, Indonesia, Faculty of Forestry, Gadjah Mada University and Kansai Environmental Engineering Centre. ISBN: 979-3178-00-0.

28. Devolution and community-based natural resource management: creating space for local people to participate and benefit?

Shackleton, S., Campbell, B.M., Wollenberg, E., Edmunds, D.

This paper draws together evidence from a number of studies on the impacts of natural resource devolution policies in several Asian and southern African countries from the perspective of local people. Devolution outcomes are assessed in terms of who has greater benefits and decision-making authority. Factors that have influenced the devolution process are also examined.

Natural Resources Perspectives (ODI) 76:1-6.
Online URL: http://www.odi.org.uk/nrp/76.pdf

29. Devolution and Indonesia's new forestry law

Wollenberg, E., Kartodihardjo, H.

Indonesia's new basic forestry law makes some promising steps towards devolving control over forests to customary communities. This chapter analyzes the law's provisions for new institutional arrangements, "customary communities" and co-operatives. The analysis shows how the extent of

centralized control over these institutions potentially limits the law's support for local management. Rights to local management under the new law are vulnerable to abuse if they are acquired by unintended parties. Empowerment of customary communities is constrained by the restrictions on economic rights. For devolution to occur, the implementing regulations should create legal possibilities for communities to manage with more certainty, to gain secure access to valuable economic benefits and to overcome conflicts with more powerful groups. A broader base of civil society organisational capacity and systematic checks and balances within government are necessary to support these changes.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 81-109. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

30. Effects of crisis and political change, 1997-1999

Sunderlin, W.D.

An economic crisis and political changes that have occurred in Indonesia since 1997 have presented grave dangers but also important opportunities for the country. On the one hand, the depreciation of the rupiah against the dollar is part of a drastic economic downturn, but on the other hand, it represents an opportunity for increased competitiveness of Indonesian exports and for increased prosperity for those involved in the export economy. The changeover of regimes from Soeharto to B.J. Habibie led to much political instability, which compounded economic problems, but at the same time it has offered the potential for fundamental policy changes. This article assesses the consequences of these changes — both negative and positive — on people living in forested areas, on commercial activity within the forest sector and on the extent of forest itself. Among the findings are that: (1) two-thirds of the people in forested areas have become worse off during the crisis compared with their situation in the year before the crisis; (2) during the crisis small farmers increased clearing of forests for perennial tree crops and

decreased attention to food crops in shifting cultivation systems; (3) pulp and paper have replaced plywood as the mainstay source of export revenue in the forest sector, although the origins of this transformation pre-date the crisis and the change cannot be solely explained by the crisis; (4) illegal logging has boomed during the crisis, but also cannot be entirely explained by the crisis; (5) oil palm development has slowed in the crisis period but is poised for future growth; and (6) positive forest policy changes have been introduced but in general fall short of the expectations of the reform community in Indonesia.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 246-276. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

31. Equitable ecology: collaborative learning for local benefit in Amazonia

Shanley, P., Rodrigues Gaia, G.

Rapid growth of timber, mining and ranching industries in forested areas worldwide often offer small holders opportunities to sell forest resources. Rural communities, however, often have little notion of the market value or economic and ecological consequences of forest transformation. Within such scenarios, the learning process needs to be consciously constructed so as to catalyse new ways of thinking about forest management effectively and quickly. This article describes an ecological research project that integrated data and process-oriented approaches to promote collaborative learning. Results indicate that user-centered approaches are needed to ensure that locally relevant information is generated by scientists, and that learning is catalysed not only among information saturated stakeholders such as policy makers and academics, but also among stakeholders who are directly dependent upon forest resources.

Agricultural Systems 73: 83-97.

32. Expanding our conceptual and methodological understanding of the role of trees and forests in rural livelihoods

Luckert, M.K., Campbell, B.M.

Estimates of forest values may enable us to inform policy makers, donor agencies, and local decision makers who are attempting to plan and implement interventions that improve livelihoods. However, it needs to link these values with patterns of behaviour; and link the patterns of behaviour with changes in livelihoods. Whether or not behavioural change occurs depends on a number of factors; these include property rights, social differentiation, time, risk perceptions, and whether values are considered in "partial" or "general" contexts. Discussion on these factors indicate that the estimation of values themselves are not as important as their interpretations within specific contexts. This article suggests that the conceptual models of people and their resources, in terms of livelihoods, need to be expanded. It also suggests that it needs to consider relevant systems beyond socio-economic variables. It also needs to expand the methodological boundaries; thus, for example, valuation approaches need to be interfaced with GIS, systems modelling. The infancy of using applied economics tools in developing country settings is evident throughout this book. Indeed, many of the tools are so new, and complex, that their use is still sometimes hotly debated. Nonetheless, the examples presented in this book show that great strides have been made, largely through benefits of inter-disciplinary work. Economics experts, specialising in valuation methods and property rights, have been working with sociologists, anthropologists and ecologists to attempt to address the complexities inherent in introducing human dimensions into research to inform development projects and policies.

In: Luckert, M.K. and Campbell, B.M. (eds.). Uncovering the hidden harvest: valuation methods for woodlands and forest resources. 228-238. London, Earthscan Publications. People and Plants Conservation Series.

33. First experiences with adaptive co-management in Para, Brazilian Amazon

Pokorny, B., Cayres, G., Nunes, W., Segebart, D., Drude, R.

Adaptive Co-Management (ACM) is an integrative approach for implementing sustainable forest management. An ACM team started working on ACM in Para State in year 2000. Its pilot activities in Para were carried out in three sites, each representing different realities of communities established in the Eastern Amazon region. The research focused on the concept of Collaborative Diagnostic Studies (CDS) as an opportunity to replace externally driven background studies, which are important for documentation and impact monitoring, with a collaborative evaluation of an expert-defined set of criteria and indicators for assessing sustainability (C&I). The defined set of C&I was structured in three categories: collaboration, adaptive management of natural resources and impacts/conditions. A variety of participatory methods were tested, described and evaluated in relation to their contribution to ACM. Pilot studies showed that CDS are not suitable as a substitute for background studies. Special efforts have to be undertaken so as to diminish the danger of external dominance and to ensure the participation of local actors. The pilot studies also confirmed the need for a systematic and well structured documentation of the complex and dynamic processes related to ACM. Due to the promising results obtained so far, it is recommended to focus ACM research in Brazil on work shared with local researcher teams and existing community projects.

In: Sabogal, C., Macedo Silva, J.N. (eds.). Manejo integrado de florestas umidas neotropicais por industrias e comunidades: aplicando resultados de pesquisa, envolvendo atores e definindo politicas publicas: Simposio Internacional da IUFRO, Belem PA, Brazil, 4-7 Decembre, 2000. 258-280. Belem, Brazil, CIFOR and Embrapa Amazonia Oriental.

34. Forest and regional autonomy: the challenge of sharing the profits and pains

Dermawan, A., Resosudarmo, I.A.P.

For more than thirty years beginning in the early 70's, the forests of Indonesia were administered and managed centrally; mirroring the centralistic characteristics of the way the Indonesian government had functioned during the same period. The first day of year 2001, however, marked a momentous change in Indonesian history, when it is formally effective that the authority or power of a significant chunk of decision-making in various aspects was transferred to local governments, including authority with regard forests. This paper attempts to present documentation and preliminary findings on what has been happening in the forestry arena in the period of transition from a centrally managed administration to decentralized administration. Field research has been done from the first quarter until the third quarter of year 2000 in four forest-rich provinces to document the process of decentralization on the ground. The methodology used was interviews with numerous informants of various stakeholders in forestry or forestry related activities at the provincial, regency, and village levels, in addition to secondary data for background materials. Preliminary findings suggest that the general perceptions of the regions toward decentralization were a mix of enthusiasm, pessimism, confusion, uncertainty, and pride in taking more responsibility. Regions have tended to be more proactive in taking advantage of their potential to raise revenues from forests. These will undoubtedly have some implications on forest resources and communities living in forested areas.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 325-357. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

35. From new order to regional autonomy: shifting dynamics of "illegal" logging in Kalimantan, Indonesia

Casson, A., Obidzinski, K.

In recent years there has been a tendency to view the seemingly irremediable spread of "illegal" logging in Indonesia in isolation, or as a result of disassociated and premediated criminal acts. This paper proposes a different view of the problem by discussing the changing dynamics of the "illegal" logging sector in the two districts of Berau, East Kalimantan and Kotawaringin Timur, Central Kalimantan. It suggests that illegal logging is not a simple case of criminality, but a complex economic and political system involving multiple stakeholders. Furthermore, "illegal" logging is not a stationary condition that can be effectively dealt with through cohesive or repressive measures alone. Rather, it should be viewed as a dynamic and changing system deeply engrained in the realities of rural life in Indonesia. Regional autonomy has also created a supportive environment for the "illegal" logging trade and allowed it to gain resilience.

World Development 30(12): 2133-2151.

36. Giving back: making research results relevant to local groups and conservation

Shanley, P., Laird, S.A.

Information generated by researchers to formulate policy and planning often remains in the domain of policy makers, academics and researchers, conceptually and geographically distant from the region of study. Furthermore, governments and conservation organizations frequently make or promote land use decisions without fully informing or involving the local communities most affected. This article describes several case studies in which making research results available to local people held numerous conservation and development advantages, and improved project impact.

In: Laird, S.A. (ed.). Biodiversity and traditional knowledge: equitable partnerships in practice. 102-124. London, Earthscan Publications. People and Plants Conservation Series. ISBN: 1-85383-698-2.

37. The history of displacement and forced settlement in West Kalimantan, Indonesia: implications for co-managing Danau Sentarum wildlife reserve

Wadley, R.L.

The history of local settlement in conservation areas, even that occurring prior to conservation activities, is of great value in efforts to co-manage protected resources. It shows how local people came to be where they are now, and how they view the local landscape. It also indicates how reserve resources have been shaped by the people who have relied on them in the past; and it provides insight into present and future conditions, such as how resource competition between reserve residents is and might be structured and perceived. Thus, in conjunction with studies aimed at understanding present local resource use, attention needs to be given to settlement history in conservation areas as one critical component of the local condition. This paper focuses on the history of population change in and around Danau Sentarum Wildlife Reserve in West Kalimantan, Indonesia, and its implications for co-management. There are numerous communities from two different ethnic groups - Iban swidden farmers and Melayu fishers - located within and around the reserve core, relying to various degrees on its resources. The demographic history of the lakes area is marked by population displacement and forced settlement. Over the years the Iban and the Melayu settled, used, and abandoned the area as wars and raiding ebbed and flowed. Today with a growing local population and increased resource competition, the reserve faces many critical challenges to its future.

In: Chatty, D., and Colchester, M. (eds.). Conservation and indigenous mobile peoples: displacement, forced settlement and sustainable development. 330-346. Oxford, Berghahn Books.

38. Household livelihoods in semi-arid regions: options and constraints

Campbell, B.M., Jeffrey, S., Kozanayi, W., Luckert, M., Mutamba, M., Zindi, C.

The overall aim of this study was to explore what the development community can do, or facilitate, to significantly improve livelihoods in semi-arid systems. The authors based their analysis on two case-study sites in the communal lands of southern Zimbabwe. The main tool was a detailed livelihood questionnaire, supplemented by participatory appraisal and observation, action research, biophysical analysis and systems modeling. Most households rely on cash and subsistence income from a number of sources – dry land crop production, gardening, livestock production, woodland activities, wage or home industries and remittances/gifts. Marked wealth differentiation occurs, with local people recognising the different wealth groupings largely on the basis of various capital assets. One factor driving differentiation is whether a household has access to remittance income. Elements of change can be identified in numerous aspects of the capital assets and the livelihood strategies. The authors suggest that there are some key drivers of change, namely: (a) rainfall, (b) macro-economic changes, (c) changing institutional arrangements and social processes, and (d) demographic processes and HIV/AIDS. The overall conclusion is that there are very few options for significantly improving livelihoods in semi-arid regions and that the poverty alleviation targets set by the international community are overly ambitious. The analyses suggest that rainfall variation and the state of the macro-economy are likely to have a greater impact on livelihood status than local rural development interventions.

Bogor, Indonesia, CIFOR. 153p. ISBN: 979-8764-78-1.

39. Increasing the benefits to disadvantaged groups in multistakeholder forestry negotiations

CIFOR

This infobrief provides key points that will benefit disadvantaged groups in multistakeholder negotiations. Negotiations that include all the groups or stakeholders concerned should increase democratic decision-making and compromise. Experience has shown that the benefits that disadvantaged groups receive from multistakeholder negotiations depend on how the negotiations are done. This infobrief describes some of the pitfalls of multistakeholder negotiations and proposes ways for disadvantaged groups to avoid them.

Bogor, Indonesia, CIFOR. CIFOR Infobrief, no.3. 4p.

40. Introducing criteria and indicators for monitoring and auditing forest management in the Brazilian Amazon

Pokorny, B., Sabogal, C., Prabhu, R., Silva, J. N. M.

The development of criteria and indicators (C&I) for good forest management was identified as one of the essential components of a research and demonstration project in the Brazilian Amazon under the leadership of Embrapa Eastern Amazon and CIFOR. Four steps were envisaged: (1) Definition of a preliminary list of regionally adapted C&I during an international expert workshop; (2) Evaluation and refinement of this list by four key stakeholder groups (researchers, government officials, managers, and local actors); (3) Development of monitoring and auditing prototypes based on the assessment results, and (4) Validation of the defined instruments through supervised application in different forest enterprises and auditing entities. As part of this process, a field-test of a preliminary list of C&I by stakeholder group confirmed the high practicability of C&I based control activities as well as the need and potential of participatory methods in the development process. Further analysis confirmed that practical work on C&I systems will have to focus more at the verifiers level. Social and ecological verifiers need to be more

specific and practicable methods for their assessing will have to be developed. To ensure an effective interpretation of monitoring and auditing results it is recommended to structure the C&I in four categories: existence and quality of documentation, efficient implementation plans, impact of enterprise activities, and external conditions for sustainability.

In: Sabogal, C., Macedo Silva, J.N. (eds.). Manejo integrado de florestas umidas neotropicais por industrias e comunidades: aplicando resultados de pesquisa, envolvendo atores e definindo politicas publicas: Simposio Internacional da IUFRO, Belem PA, Brazil, 4-7 Decembre, 2000. 390-409. Belem, Brazil, CIFOR and Embrapa Amazonia Oriental.

41. Manual praktek mengelola hutan dan lahan: suatu kombinasi pengetahuan tradisional masyarakat Dayak Kenyah dengan ilmu-ilmu kehutanan dan pertanian

Suhardiman, A., Hidayat, A., Applegate, G., Colfer, C.J.P.

This simple manual is intended for general guidelines on traditional methods in managing natural resources. It is based on the indigenous/traditional knowledge of people of Dayak Kenyah Uma' Jalan society, East Kutai, Kalimantan, Indonesia. Local traditional knowledge is one of the important components to utilise and conserve the natural resources. This manual shows how to prepare the land for planting food crops, community forest management procedures and fire prevention.

Bogor, Indonesia, CIFOR. 38p. ISBN: 979-8764-94-3.

42. Natural resources and decentralization in Nicaragua: are local government up to the job?

Larson, A.M.

Both decentralization and natural resource management literature suggest that natural resources could benefit from the redistribution of centralized management authority. Yet, neither has sufficiently examined the processes already underway in numerous developing countries to decentralize resource management from central to municipal government

authorities. This study reviews the role of 21 local governments in forest management in Nicaragua. It finds that most interventions are economically motivated, and that three key factors are needed for local governments to be good resource managers: capacity, incentive and long-term commitment. These three factors are part of a process in which civil society can play a critical role.

World Development 30(1): 17-31.

43. Nature, wealth, and power: emerging best practice for revitalizing rural Africa

USAID - Africa Bureau (AFR/SD)

This document is about rural development in Africa. It is a preliminary statement of lessons learned from more than 20 years of natural resource-based development in rural Africa. Twenty years ago, natural resource management programs took a predominantly technical approach and followed by economic approach to getting rural development moving and responding to perceived environmental crises. The limitations of these approaches revealed as projects failed to meet their objectives and be sustainable. More recently, it has become clear that the governance aspects of rural development are also key. Experience demonstrates that programs that integrate nature, wealth, and power (good governance) have promising results. This experience generated a set of principles-summarized in this booklet as action steps-that can serve as a guide to investment in rural Africa. The three case studies presented: Namibia, Madagascar, and Mali illustrate the effectiveness of the integration of all three dimensions and the various principles and actions recommended under each dimension.

Washington, DC, USAID in collaboration with CIFOR, Winrock International, WRI, IRG. 35p.

44. Negotiating more than boundaries: conflict, power, and agreement building in the demarcation of village borders in Malinau

Anau, N., Iwan, R., van Heist, M., Limberg, G., Sudana, I.M., Wollenberg, E.

CIFOR facilitated 27 communities in the Upper Malinau watershed to develop agreements about their village boundaries and map them through participatory methods. Decentralization reforms created new values of forest resources and uncertainties that increased conflict over local resources. We report on the nature of these conflicts, the stability of agreements and the factors affecting how agreements were reached.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 131-156. Bogor, Indonesia, CIFOR and ITTO.

45. Organizing for community-based natural resources management

Campbell, B.M., Shackleton, S.

There has been a move to decentralize natural resource management (NRM) throughout southern Africa but this has taken many forms, resulting in different organizational structures. Fourteen case studies from eight countries can be classed into four types: district-level organizations, village organizations, organizations outside the state hierarchy, and corporate organizations at the village level. Attitudes towards district-level schemes amongst local people are generally negative. The greater the authority village organizations receive the more likely they are to succeed. In the cases of corporate organizations, local residents have received user or proprietary rights over resources. Such cases indicate the best chances of community-based natural resources management (CBNRM) being successful. The impact of private sector stakeholders can be positive or negative depending on the institutional arrangements in place. Many of the cases have demonstrated the key role that external facilitation plays

in building the capacity of local organizations. Traditional leaders have continued to play a role in NRM, with varying degree of authority and control.

Zimbabwe Science News 36(1+2): 5-12.

46. Proceedings of a National Workshop on Building Partnership, Strengthening Capacities and Developing Forest Resources Thru Community Based Forest Management, Angeles City, Philippines, August 6-7, 2002

Hartanto, H., Evangelista, R., (eds.)

CIFOR initiated their research program on Adaptive Collaborative Management (ACM) in the Philippines in 1999. The results of ACM work in two Community Based Forest Management (CBFM) sites over a period of 3 years have been very positive and promising. At this workshop, CIFOR attempted to share the experience and lessons learnt with different audiences at different levels. Besides reviewing the results of ACM, this workshop also attempted to identify different strategies and approaches applied by different initiatives and projects in CBFM and to provide recommendations to improve the existing CBFM framework and policies. The wealth of experience and expertise of the workshop participants were also tapped to review and improve three CBFM-related regulations. The workshop showed that there are still many challenges and problems in CBFM that need to be addressed in the future so that CBFM can really benefit local communities and improve forest conditions in the country. Despite differences in the strategies and approaches used by the different projects, there were several common elements given attention to by these different projects. These include collaboration among stakeholders, monitoring, learning and incremental adjustments, and complexity. All these elements were embraced by Adaptive Collaborative Management (ACM) approach.

Bogor, Indonesia, CIFOR and Department of Environmental and Natural Resources (DENR). 159p. Limited edition

47. Property rights and participatory forest management: an overview

Moeliono, M.

This paper is an overview of participatory forest management in relation with property rights issue. It highlights the difficulty in defining property rights. Although the issues presented are applicable throughout tropical Asia, albeit less so in the Pacific, this paper is based primarily on the author's experience in Indonesia, and almost all of examples are from Indonesia. This paper discuss the diversity and changing nature of property rights and continues with a discussion on the issue of communities demanding the rights and possible responses of the government. At the end it presents a short review on participation of local communities in forest management.

In: Brown, A.G. (ed.). Pathways to sustainable forest management. Proceedings of the Second Hermon Slade International Workshop, Ubud, Bali, 5-8 June, 2001. 58-63. Parkville, Vic., Australia, ATSE Crawford Fund.

48. Ten propositions to explain Kalimantan's fires

Colfer, C.J.P.

This short paper summarizes the conclusions of a 1999 investigation into the causes of fires in six communities in East Kalimantan. Drawing on the author's long-term experience with the Kenyah (inhabitants of five of the communities), perceived causes of the fires in these six locations were documented. Ten propositions relating to fire causes are listed here, as a preliminary step in the development of a typology of causes of fire. The first three general propositions relate to environmental conditions like drought, to human conditions like the response time required to adapt to environmental change, and to political conditions like corrupt and uncoordinated governance. Five propositions revolve around the conditions that evolve when multiple actors with different values, patterns of behaviour, and access to resources are thrown together. The final two propositions relate to economic issues (potential for gain and need). The paper concludes with a simple scoring system that may contribute to identifying fire-prone communities in the future,

and to developing appropriate solutions to the relevant fire causes.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 309-324. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

49. Timber concession reform: questioning the "sustainable logging" paradigm

Barr, C.

Since the mid-1980s, policy discussions aimed at promoting sustainable forest management in Indonesia have focused almost exclusively on reforming the HPH (Hak Pengusahaan Hutan) timber concession system. Policy interventions proposed by the World Bank and other advocates of the "sustainable logging" reform agenda have generally been structured around three key principles – selective cutting, full rent capture, and market-based efficiency. This chapter examines five basic assumptions made by proponents of HPH reform and the policy prescriptions that emerge from them. It argues that HPH reform is unlikely to succeed in reducing Indonesia's timber harvests to the 'sustainability threshold' of 25 million m3 per year promoted by the government in the 1990s. The HPH reform agenda fails to address the supply-demand imbalance that exists within Indonesia's wood processing industries and new technologies that have made previously marginal areas and species commercially viable. It also overlooks the marked decline in the volume of logs generated by concession-holders since the 1980s, as well as a corresponding rise in large-scale forest conversion. Moreover, proponents of the "sustainable logging" paradigm erroneously conclude that sustainable concession management is profitable and that timber companies will have an economic incentive to employ sustainable harvesting practices if they are required to do so.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 191-220. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

50. Timber management and related policies: a review

Resosudarmo, I.A.P.

The forests of Indonesia have been a major source of foreign exchange and have provided substantial employment opportunities. But evidence indicates that commercial forest harvests in Indonesia have been carried out in an economically unsustainable manner. The dramatic economic and political changes in Indonesia in 1997-99 have potentially increased pressures on remaining timber resources, and the economic crisis and national leadership transition have given rise to demands for substantial changes in the management of forests. It is therefore timely to review commercial timber activities and policies to date. This paper reviews commercial forest practices and national forestry policies that affect the commercial timber sector, along with contributing factors outside the forestry sector that may have affected commercial forest practices. It finds that existing policies are insufficient to achieve sustainable management, or are ineffectively enforced. At the same time, current conditions offer an opportunity to carry out important policy changes in relation to the commercial timber sector. A preliminary analysis of these changes shows the timber sector is subject to greater potential pressures than ever before, but that there are also possibilities for important policy improvements.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 161-190. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

51. Towards understanding the role of forests in rural livelihoods

Campbell, B.M., Luckert, M.K.

To understand the role of forest products in households people need to understand the nature of rural livelihoods and the characteristics of forest products. Rural households typically have a wide livelihood portfolio, encompassing a range of activities. They also generally face low availability of capital, are prone to risks and have little formal education. Many forest products are common pool resources, with some

showing very little exclusivity. Many of them can be brought into a marketing chain with minimum capital investment. In the face of risk, forest products are often a source of sustenance or can be used to raise cash in the case of emergencies. Most forest products do not require high skill levels to bring them into production. There is thus a strong match between the characteristics of the rural poor and the characteristics of forest products. While this book is focused on households, it is always necessary to see the household within the broader framework, of national policies, of a specific macro-economic framework, of international tourist markets, of a global climate, etc. The book is directed to non-economists working in the context of developing countries. The purpose is to provide an overview of methods that may be used to assess the economic importance of forests to household livelihoods. The methods are presented with a number of examples of their use, most of them drawn from developing countries. There is a danger that the numbers derived by valuation become ends in themselves. A valuation exercise is only one part of a much broader understanding that is required. The authors stress the need to understand the complexity inherent in rural livelihood strategies, to fully understand the context of particular case studies, and to use valuation only as one step towards understanding decision-making within rural households.

In: Luckert, M.K. and Campbell, B.M. (eds.). Uncovering the hidden harvest: valuation methods for woodlands and forest resources. 1-12. London, Earthscan Publications. People and Plants Conservation Series.

52. Uncovering the hidden harvest: valuation methods for woodland and forest resources

Campbell, B.M., Luckert, M.K., eds.

This book is directed to non-economists working in the context of developing countries. The purpose is to provide an overview of methods that may be used to assess the economic importance of forests to household livelihoods. The methods are presented with a number of examples of their use, most of them drawn from developing countries. The importance of an interdisciplinary approach is now well

recognized, and non-economists are increasingly working in teams that include economists. Moreover, many non-economists are being asked to plan and execute projects that include an economic element. This book will provide the reader with the tools to understand the different approaches and methods and make more informed decisions as to which methods may be applicable. The book comprises of eight chapters: 1. Bruce Campbell and Martin K. Luckert. Towards understanding the role of forests in rural livelihoods. 2. William Cavendish. Quantitative methods for estimating the economic value of resource use to rural households. 3. Michele Veeman. Understanding local and regional markets for forest products. 4. Peter C. Boxal and Tom Beckley. An introduction to approach and issues for measuring non-market values in developing economies. 5. Terrence S. Veenan and Martin K. Luckert. Economic decision-making framework for considering resource values: procedures, perils and promise. 6. Nontokozo Nemarundwe and Michael Richards. Participatory methods for exploring livelihood values derived from forests: potential and limitations. 7. Bev Sithole, Peter Frost and Terrence S. Veeman. Searching for synthesis: integrating economic perspectives with those from other disciplines. 8. Martin K. Luckert and Bruce M. Campbell. Expanding our conceptual and methodological understanding of the role of trees and forests in rural livelihoods.

London, Earthscan Publications. People and Plants Conservation Series.
262p. ISBN: 1-85383-809-8.
Also available in Spanish

53. Usages culturels de la forzt au Sud-Cameroun: rudiments d'écologie sociale et matériau pour la gestion du pluralisme

Oyono, P.R.

Based on social ecology, anthropological and policy research conducted on social dimension of natural resources management in Cameroon, this contribution liberates a given number of findings: 1. local communities in Cameroon have both an horizontal (practical) and a vertical (metaphysical)

perception of the forest; 2. in the course of the time, they have been manipulating forest resources for cultural uses at the two levels. In that sense, cultural manipulation of forest resources is showing beneath popular narration with craft, toponymy and ritual orders. These cultural constructions need to be carefully and meaningfully, captured and channeled in the implementation of Programs and policy design. Because local systems are resilient and cannot be emarginated successfully in the issue of forest management, the author calls for a cultural adjustment.

Africa 57(3): 334-355.

54. Water, woodlands, livelihoods and institutions Romwe and Mutangi in Southern Zimbabwe: data archive 2002

Sampurna, Y., van Heist, M., Chandra, R., Agustian, I., Hendrik, Campbell, B.M., Yuzar, Y., (comp.)

This CD is a data archive for an integrated natural resource management research programme in Southern Zimbabwe. It has been produced as an initiative to explore knowledge management in the Integrated Natural Resource Management (INRM). It has a wide range of data types available to stakeholders with variable computer resources. Thus the CD has been set up for viewing GIS data, tables, and reports without having any specialised software.

Bogor, Indonesia, CIFOR. 1 CD-ROM.
Limited edition.

55. Where the power lies: multiple stakeholder politics over natural resources: a participatory methods guide

Sithole, B.

This manual is a participatory methods guide (1) to assist those involved with multiple stakeholder situations or groups to appreciate and acknowledge the relevance and impact of micro-politics on stakeholder relations and resultant cooperative behaviour in these groups; (2) to provide a simple and systematic approach or framework to gather and analyse

data on micro-politics among multiple stakeholders; (3) to highlight and offer practical suggestions for dealing with some of the methodological issues that influence gathering data on politics and relations among stakeholders; (4) to suggest some methods drawn from participatory methodologies like Participatory Rural Appraisal (PRA) and Participatory Action Research (PAR) that can be used in data gathering. Data from two sites in Zimbabwe are presented at various stages and the annexes to illustrate how this framework can be applied and show the type of data that can be gathered.

Bogor, Indonesia, CIFOR. 40p. + (annex, 30p.). ISBN: 979-8764-99-4.

56. Which way forward?: people, forests, and policymaking in Indonesia

Colfer, C.J.P., Resosudarmo, I.A.P., eds.

Indonesia contains some of the world's most biodiversity and threatened forests. The challenges result from both long-term management problems and the political, social, and economic turmoil of the past few years. This book explores recent events in Indonesia, while focusing on what can be done differently to counter the destruction due to asset-stripping, corruption, and the absence of government authority. It consists of 16 chapters written by authors from a wide range of disciplines. It begins with a series of chapters 1-6 that focuses on the links between the government's policies on forests and forest people. The next set of chapters 7-12 turns to in-depth, sector-level analyses of what happened in Indonesia immediately following the president Soeharto's fall. Chapter 13 and 14 focused on Indonesia's experience of the fires in 1997-98. The final chapters 15 and 16 update the reader, focusing on the two most important trends at work in the Outer Islands of Indonesia at this time: decentralization and illegal logging.

Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS). 433p. ISBN: 1-891853-45-7.

Forest Management

57. Afforestation and reforestation in the clean development mechanism of the Kyoto Protocol: implications for forests and forest people

Smith, J.

The social and environmental implications of plantations in the CDM are analysed under a hypothetical laissez faire approach and a proactive approach to sustainable development (SD), bounded by existing COP7 agreements and efficiency and equity considerations. Implications for timber rich, timber depleted and inherently timber poor regions are assessed. The social risks of industrial plantations cannot fully addressed under COP7 rules and are likely to be highest in timber rich regions under repressive regimes or where politics dominate the forestry sector. Risk could, however, be reduced through minimum standards for stakeholder consultation and favourable legal institutions. Low cost opportunities with multiple benefits exist and require information dissemination, but some opportunities for biodiversity benefits will need financial support. Reduction of transaction costs would increase the participation of small holder plantations but their role is likely to remain limited. Inclusion of assisted natural regeneration opens up opportunities for options with multiple benefits.

International Journal of Global Environmental Issues 2(3/4): 322-343.

58. Africa's tropical dry forests - time to re-engage: an agenda for priority research

CIFOR

This document reviews the state of research in African dry forests and sets up the framework for a dry forest programme of research in the Center for International Forestry Research (CIFOR). The documents consist of three sections, which represent increasing levels of focus in a proposed dry forest research programme. Section 1 (Issues and questions) largerly

consists of the review of the main issues in dry forests, and suggest various lines of research. It presents issues in the context of three regions: Francophone West Africa; Anglophone Africa north of the equator; and Southern Africa; Section 2 (A framework for a dry forests' programe) provides the justification, framework and over-arching objectives for CIFOR's research and development agenda on dry forests, and was prepared after further internal discussion amongst CIFOR staff; Section 3 (Summary proposal for SIDA for a dry forest programme) is the proposed research agenda, given the immediate funds that are available.

Bogor, Indonesia, CIFOR. 115p.

59. Applying reduced impact logging to advance sustainable forest management: international conference proceedings 26 February to 1 March 2001, Kuching, Malaysia

Enters, T., Durst, P.B., Applegate, G., Kho, P.C.S., Man, G., eds.

In tropical forests, RIL has been tested and applied on a small scale for more than a decade. Various timber-producing countries in Asia and the Pacific have recognized its potential for advancing sustainable forest management. Yet many questions remain and the lack of sound and appropriate information continues to impede the widespread application of RIL. This book helps fill that critical information gap. It includes a wealth of information that was presented during the International conference on the application of reduced impact logging to advance sustainable forest management, 26 February to 1 March 2001, Kuching, Malaysia. The conference assessed past and ongoing efforts to implement RIL and considered options for future application. It reflects an important milestone in the efforts to improve forest management in the region. While acknowledging that considerable challenges lie ahead, it provides reason for cautious optimism concerning the wider application of RIL in the future.

Bangkok, Thailand, FAO Regional Office for Asia and the Pacific. RAP Publication, No.2002/14. 311p. ISBN: 974-7946-23-8.

60. Cash for tropical peat: land use change and forestry projects for climate change mitigation

MacDicken, K.

While tropical peat swamps can present very large stocks, the threat of greenhouse gas emissions to the atmosphere is much lower. Given the current agreement for activities to be conducted through the Clean Development Mechanism (afforestation and reforestation only), it seems there is little opportunity for peat swamp project because they are unlikely to effectively compete with projects on terra firma. There is still a chance that forest conservation could be included as a project alternative in the future commitment periods. it is important that scientists working on tropical peat swamps seek to influence policy makers to include forest conservation in the Kyoto Protocol if peat swamps are to be conserved through climate change mitigation mechanisms.

In: Rieley, J.O., Page, S.E. (eds.). Peatlands for people: natural resource functions and sustainable management: proceedings of the International Symposium on Tropical Peatlands, held in Jakarta, Indonesia on 22-23 August 2001. 1-6. Jakarta, Indonesia, Agency for the Assessment and Application of Technology (BPPT) and Indonesian Peat Association (IPA).

61. Codes of practice and reduced impact logging in tropical forests: an overview

Applegate, G.

This paper highlights how early experience gained in north Queensland rainforests provided input to the development of Pacific island codes and the code of conduct for logging of indigenous forests in selected South Pacific countries in the mid-1990s. In a number of these countries, the development of codes of practice has been undertaken in parallel with the preparation of reduced impact guidelines and improved silvicultural practices. The work in the Pacific has recently been extended to include Asia with the publishing of the code of practice for forest harvesting in Asia-Pacific developed for the Asia Pacific Forestry Commission in 1999. A number of countries in this region are now developing their own national codes based on the Asia-Pacific code.

Impediments to adoption of codes of practice are highlighted, along with some of the issues relating to costs as an impediment. Some of the research initiatives are aimed at analysing who pays the costs, who should pay and who benefits in the short and long term from improved timber harvesting practices.

In: Brown, A.G. (ed.). Pathways to sustainable forest management. Proceedings of the Second Hermon Slade International Workshop, Ubud, Bali, 5-8 June, 2001. 41-47. Parkville, Vic., Australia, ATSE Crawford Fund.

62. Community-based fire management, land tenure and conflict: insights from Sumatra, Indonesia

Suyanto, S., Applegate, G., Tacconi, L.

Community-based fire management in parts of Indonesia can have both positive and negative impacts on the forest environment, and can lead to short-and long-term changes in income. This paper examines two examples from Lampung province in Southern Sumatra, Indonesia and in Sekincau, located in a national park. Based on knowledge of fire behaviour, communities often encourage fire to escape from adjacent areas and burn in previously illegally logged forest. This suggests that the community knows how to manage fire to meet specific objectives. In Menggala in the vast swamps of East Lampung province, the traditional communities use fire as a tool for burning organic matter to prepare the ground for "traditional swamp rice cultivation" (sonor) during extended dry periods. The fires have facilitated the regeneration and expansion of areas of *Melaleuca cajuputi*, a fast-growing species that responds positively to disturbance. The regenerating forests are harvested for domestic consumption and supplementing income through the production and sale of charcoal, poles and sawn timber.

In: Peter Moore, David Ganz, Lay Cheng Tan, Thomas Enters and Patrick B. Durst. Communities in flames: proceedings of an international conference on community involvement in fire management. 27-32. Bangkok, Thailand, FAO Regional Office for Asia and the Pacific. Online URL: http:www.pffsea.com/frame1.asp?fl=publication.htm.

63. Evaluations for sustainable forest management: towards an adaptive standard for the evaluation of the ecological sustainability of forest management in Costa Rica

McGinley, K., Finegan, B.

The research was carried out with the general objectives of contributing to the definition of sustainable forest management in the region of Central America, determining guidelines for the ecological sustainability of forest management that include elements for adaptive management and developing principle, criteria, indicators & verifiers (PCI&V) for its reliable and efficient evaluation in Costa Rica. The process began with an initial set of PCI&V comprised of elements from the national standard for forest management in Costa Rica and the CIFOR generic template of C & I for adaptive management. The first phase consisted of office evaluations on the relative importance and priority of the initial set of PCI&V by a group of expert in forest management and ecology. The second phase, which served as a filter through which each element was either recommended, modified or rejected for the final set of PCI&V, included testing and evaluation of the initial set of PCI&V by expert group. The third and final phase consisted of a workshop with a larger group of experts in forest management, ecology and policy in which the results were presented and approved. The distribution of institutional responsibility associated with the implementation of the recommended elements was also discussed and evaluated.

Turrialba, Costa Rica, CATIE. Serie Technica. Informe Tecnico, No.328. 72p. ISBN: 9977-57-380-8. Also available in Spanish

64. An extreme-value approach to detect clumping and an application to tropical forest gap-mosaic dynamics

Sheil, D., Ducey, M.J.

Although forest tree pattern-dynamics has long been a focus for ecological theory, many aspects of basic analysis remain problematic. This paper describes, examines and illustrates an ‘extrem-value’ approach to clump detection. Simulations

demonstrate that the approach, though simple, is sensitive and well suited to identifying aggregation, even in small data sets. Though powerful, the extreme-value tests are slightly conservative. The approach is adaptable to other null distributions and applications. An illustration uses tree data from a Ugandan forest plot with records from 1939 to 1992. One plausible explanation for observed stem increases in this plot is an unusually high incidence of large tree-fall events. Evidence for this is sought through spatial localization of various stem populations. Various technical and ecological aspects of the extreme-value approach and tree spatial analyses are discussed.

Journal of Tropical Ecology 18: 671-686.

65. Financial costs of reduced impact timber harvesting in Indonesia: case study comparison

Applegate, G.

Several Indonesian plywood industry companies involved in logging are beginning to adopt improved harvesting practices. A number of organizations and individuals have undertaken analyses of the costs and impacts of implementing selected reduced impact logging (RIL) components. These analyses include cost estimates of the impact of RIL compared with conventional logging (CL). This work has been undertaken in an attempt to provide support for the adoption of the various RIL components. While there is a general consensus on the benefits of RIL to the forest environment compared to CL, there is considerable disparity in the estimates in the financial costs of RIL in comparison to CL in Indonesia. This paper summarizes the results from four case studies of harvesting operation in Indonesia where selected components of RIL have been implemented. The results of the case studies indicate the following: difficulties in determining harvesting costs by component and activity that reflect the reality of commercial operations; inadequate provision of realistic cost estimates; and the need to understand the cost implications of the interrelationships among harvesting components. It

concludes with recommendations to assist with increase adoption of improved harvesting practices.

In: Enters, T., Durst, P.B., Applegate, G., Kho, P.C.S., Man, G. (eds.). Applying reduced impact logging to advance sustainable forest management. 163-173. Bangkok, Thailand, FAO Regional Office for Asia and the Pacific. RAP Publication, No.2002/14. ISBN: 974-7946-23-8.

66. Fire use, peatland transformation and local livelihoods: a case of positive reinforcement

Chokkalingam, U., Tacconi, L., Ruhiyat, Y.

A case study from the central extensive peatland sections of the Middle Mahakam Area, East Kalimantan, is used to depic how local use of fire for agriculture extraction activities could be a major factor driving peatland transformation. Large-scale fires that occured in the area in 1982/83 and 1997/98, have resulted in transformation of some of the forested peatlands to open grass and water patches. Many of these degraded areas continue to be subject to annual, largerly uncontrolled, burning in the dry season for fish extraction. Conversion of the forested lanscape to open grass and water areas, and ultimately to lakes with repeated burning may actually enhance fishing conditions and benefit local communities, at least in the short run. The potential long-term impacts of repeated fires and landscape transformation on the vegetation, hydrological conditions, fisheries, and local livelihoods need further investigation. The scope for harmonisation of potentially divergent local interest and activities, and non-local biodiversity conservation and climate stabilisation interest in this tropical peatland ecosystem are discussed.

In: Rieley, J.O., Page, S.E. (eds.). Peatlands for people: natural resources functions and sustainable management. Proceedings of the International Symposium on Tropical Peatlands, held in Jakarta, Indonesia on 22nd and 23rd August 2001. 191-196. Jakarta, Indonesia, Agency for the Assessment and Application of Technology (BPPT) and Indonesian Peat Association (IPA).

67. Forest ecosystem services: can they pay our way out of deforestation?

Nasi, R., Wunder, S., Campos A., J.J.

This paper first provides a brief overview of what are and what represent forest ecosystem services. Then it considers the issues of price and valuation, and shows that valuation itself is not a solution but merely a tool. Considering then the reasons of the overall degradation of forest ecosystem services it shows that the main reasons tend to be fundamental: deforestation most often happens because it pays for local people - not so much because the institutionally created arrangements are perverse. This paper concludes that if national, regional and global "off-site" beneficiaries can increasingly "pay their way out" of the actual vicious circle, there will be more scope for optimism regarding the conservation of forests and their services to mankind throughout the world.

A discussion paper prepared for the GEF for the Forestry Roundtable to be held in conjunction with the UNFF II, Costa Rica on March 11, 2002 Bogor, Indonesia, CIFOR for the Global Environmental Facility (GEF). 33p.

68. Forest fires in Indonesia: impacts and solutions

Applegate, G., Smith, R., Fox, J.J., Mitchell, A., Packham, D., Tapper, N., Baines, G.

The severe fires that burned over 9.7 million ha of Indonesia in 1997/98 occurred in an El Nino year. Much of the impact of fires could have been avoided if appropriate fire management systems were in place and policies relating to fire and land use were appropriate to deal with the situation. The fires affected a large portion of the Indonesian population causing economic hardship and disruption to commerce and short and long term health problems. The smoke and haze generated by the fires also caused disruptions and economic loss to many neighbouring countries, causing diplomatic tensions. Much of the haze was generated by burning peat which not only generates 17 times more smoke than forests, but as a fossil fuel contributed over 700 tonnes of carbon dioxide in

harmful emissions over an eight-month period. This chapter provides an assessment of the fire situation in 1997/98 and some technical and institutional policy recommendations to reduce the risk of fire prior to and during the next El Nino event currently predicted to occur in 2001.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 293-308. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

69. Forest products and local forest management in West Kalimantan, Indonesia: implications for conservation and development

de Jong, W.

This book critically investigates the proposition that commercialisation of forest products contribute to both enhancing people's income and to conservation of tropical forests, using evidence from a case study from West Kalimantan, Indonesia. It draws the main conclusion that promoting commercialisation of forest products often leads to a shift of the dominance of this trade by outside entrepreneurs. Even where local people manage to control the trade, the conservation impact on tropical forests is only indirect. By studying detailed examples of local forest management in three indigenous villages in West Kalimantan, Indonesia, this book concludes that the conservation of tropical forests through forest products commercialisation is most likely to happen when local producers shift to active management of forest products in anthropogenic forests. The long term impact of such local forest management depends importantly on how local or regional economies develop. Land use intensification may take place on some parts in the landscape, where previously intensively managed forests may be left to themselves.

Wageningen, Netherlands, Tropenbos International. Tropenbos-Kalimantan Series, no.6. 120p. ISBN: 90-5113-056-2.

70. General description of the Bulungan Research Project

Machfudh

This chapter presents the introduction of the natural resources of the study area of the Bulungan Research Project. It covers information on topography, climate, hydrology, geology, soils, forest types, and socio-economic conditions of local people as well as the economic development plan of the local government in the area. Colour maps of the research locations and statistical data are included.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 8-22. Bogor, Indonesia, CIFOR and ITTO.

71. Iban forest management and wildlife conservation along the Danau Sentarum periphery, West Kalimanatan, Indonesia

Wadley, R.L.

Danau Sentarum National Park in West Kalimantan, Indonesia is bordered on three sides by Iban settlements and the forests they manage. The forest management system practiced by an Iban community on the northeastern periphery of the reserve is described here. Iban agroforestry is based on two principal components: swidden cultivation, which creates a field-secondary forest mosaic and various kinds of preserved and managed forest. Iban hunt within these forests, and the species and numbers of animals they encounter are analysed here with respect to their exploitation of the agroforests and fields. The merits and constraints of this management system are discussed. Based on the data analysed here, this system appears to promote some degree of biodiversity conservation and may serve as a partial buffer zone around the nearby wildlife reserve.

Malayan Nature Journal 56(1): 83-101.

72. Introduction

Kartawinata, K., Sheil, D., Wollenberg, E., Levang, P., Machfudh

It is an introduction of CIFOR's research in Bulungan, Kalimantan with the Ministry of Forestry in Indonesia and ITTO. CIFOR's strategic research is focused on policy issues to enable more informed, productive, sustainable and equitable decisions about the management and use of forests. CIFOR works closely with ITTO and FORDA (the Forestry Research and Development Agency, Ministry of Forestry, Indonesia) as important strategic partners in the Bulungan model forest project phase 1, 1997-2001. The aim of the research is to carry out a systematic investigation of how to achieve forest sustainability for a 'large forest landscape' in the humid tropics, where diverse, rapidly changing and often conflicting land use demand exist. The specific objectives of the activities conducted with ITTO support are: 1) Assessment of the effect of reduced-impact logging (RIL) on biodiversity, conservation, ecology and socio-economics, 2) Assessment of rural development trends and future policy options including the effects of macro-level development activities on people dependent on the forest.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 1-3. Bogor, Indonesia, CIFOR and ITTO.

73. ITTO project PD 12/97 Rev.1 (F) - Forest, science and sustainability: the Bulungan model forest: completion report phase I 1997-2001

CIFOR

This document is a report on the implementation of an initial project of Bulungan Research Forest in East Kalimantan, Indonesia 1997-2001 with financial support from International Tropical Timber Organization (ITTO). It contains an executive summary, the main text of the project objectives and outputs, brief report on technical and scientific aspects, lessons learned and recommendations for future projects. The general objective of the present research is to carry out

systematic investigation of how to achieve long-term forest sustainability for a 'large forest landscape' by integrating social, ecological and silvicultural aspects. The first phase focussed on gathering baseline information on the physical and human environment. Specific two objectives are: (1) assessment of the effect of Reduced-Impact Logging (RIL) on biodiversity, conservation, ecology and socio-economics; (2) assesment of rural development trends and future policy options including the effects of macro-level development activities on people dependent on the forest.

Bogor, Indonesia, CIFOR and ITTO. 48p. + annexes in 1 CD-ROM.

74. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase I, 1997-2001

CIFOR

CIFOR's research in the Bulungan Model Forest in Malinau, East Kalimantan, Indonesia took the form of a 3-year investigation into ways of achieving forest sustainability in a large forest landscape with diverse, rapidly changing and conflicting uses. The study reported in this book highligts the complexity of the challenge while also clarifying the key aspects. By understanding how the forest can yield timber, while also maintaining other important values to numerous stakeholders, by recognising the threat and institutional means available to address them, by understanding how the needs of the poorest communities of the forest see changes as both threats and opportunities, we can build up the understanding that decision makers need to make better decisions for sustainable forest management into the future. The research projects include: Reducing the impact logging on the forest; Biodiversity across the landscape; Forest people's dependency on forest products; and Coordination and agreement in boundary negotiation. The lessons learned from these researches provide baseline information that will support longer-term research.

Bogor, Indonesia, CIFOR and ITTO. 168p. + annex in 1 CD-ROM.
The CD-ROM contains publications and unpublished reports.

75. Konsekuensi ekologis pembalakan dalam kawasan hutan yang terbakar di Kalimantan Timur
van Nieuwstadt, M.G.L., Kartawinata, K., Sheil, D.

Results of a 2-year study on post-fire vegetation dynamics in the unlogged dipterocarp rainforest of Sungai Wain near Balikpapan East Kalimantan, Indonesia are discussed. Results showed that the maintenance of a productive permanent forest estate is likely to be served best by avoiding logging activities in burned areas.

Notes: This jurnal is an additional topic inserted into the HutanIndonesia.
Jurnal Hutan Indonesia. Edisi perdana Agustus: 1-4.
It is the first special edition of the jurnal.

76. Manejo integrado de florestas úmidas neotropicais por indústrias e comunidades: aplicando resultados de pesquisa, envolvendo atores e definindo políticas públicas: Simpósio Internacional da IUFRO, Belem PA, Brazil, 4-7 Decembre, 2000
Sabogal, C., Macedo Silva, J.N., eds.

The book includes a selection of 37 contributions (all in the original language - 16 in Portuguese, 13 in English and 8 in Spanish - but with abstracts in English) presented to the International Symposium "Integrated Management of Neotropical Rainforests by Industries and Communities: Applying Research Results, Involving Stakeholders and Defining Policy", held in Belem, Brazil, from December 4 - 7 , 2000. The symposium intended to contribute - by providing information and recommendations - to the efforts underway at different levels (local, national, regional) to improve the perspectives for a wider adoption of sustainable forest management in the neotropics. The papers are divided in the three themes of the Symposium: Industrial-scale forest management (16 contributions), Community forest management and extrativism (15) and Means to promote the adoption of sustainable forest management (6). Overall, the papers provide a wide variety of conceptual, methodological and technical aspects related to the planning and implementation of forest management

under different conditions, as well as practical experiences, research results and recommendations to improve the quality of forest management by different actors.

Belem, Brazil, CIFOR and Embrapa Amazonia Oriental. 476p.

77. Monitoring permanent sample plots (PSPs) after conventional and reduced-impact logging in the Bulungan research forest, East Kalimantan, Indonesia

Priyadi, H., Kartawinata, K, Sheil, D., Sist, P.

Twenty four permanents sample plots (PSPs), of one ha each have been randomly set up to be a long term monitoring in the hill mixed dipterocarps forest in the Bulungan Research Forest, East Kalimantan. All trees (DBH=20cm) were measured and identified. In this study area, reduced-impact logging (RIL) trial has been carried out in the compartment of operational scale (over 100 ha). The objective of the study was to observe how far RIL can reduce logging damage compared with conventional logging which was done by state-owned company, PT Inhutani II and in line with those activity also to do monitoring PSPs. The results confirmed with other published research that RIL significantly reduced damage to residual stand. However, under high felling intensity (>8 trees/ha) the proportion of injured and dead trees in RIL were similar to those recorded in the conventional logging. Growth measurement in those PSPs after two years were also reported. Canopy openness and skid trail length after logging were measured.

In: Mohamad Ismail, Shaharudin bin, Thai, S. K., Yap, Y.H., Deris, Othman bin, Korsgaard, S. Proceedings of the Malaysia-ITTO International Workshop on Growth and Yield of Managed Tropical Forests, 25th –29th June, 2002, Kuala Lumpur. 226-235. Kuala Lumpur, Malaysia, Forestry Department Peninsular Malaysia. ISBN: 983-9269-17-8.

78. Multicriteria and critical threshold value analyses in assessing sustainable forestry: model development and application

Mendoza, G.A., Hartanto, H., Prabhu, R., Villanueva, T.

This paper presents different models designed to operationalise the principle of forest sustainability. Concepts such as resource or environmental utilization space, carrying capacity and critical thresholds are defined. The paper also describes an application of the qualitative and quantitative multicriteria models in assessing forest sustainability. Sustainability analysis was done in three stages: stage 1 involves the development of an appropriate set of criteria and indicators (C&I); stage 2 involves the use of multicriteria analysis (MCA) models for estimating relative importance of each C&I; and stage 3 involves the qualitative and quantitative assessment of each C&I. The qualitative model based on a simple flagging method where C&I elements are evaluated and assigned appropriate flag colors depending on the experts' judgements on their criticality. Similarly, the same set of C&I elements were also evaluated quantitatively using a scaled scoring system. These models were applied in a case study involving a community-managed forest in the Philippines. Feedback received from the assessors indicate that the models were found to be useful, transparent, and helpful tools in generating relevant sets of C&I and in evaluating these C&I with respect to overall forest sustainability.

Journal of Sustainable Forestry 15(2): 25-62.

79. Overview of approaches and methods

Kartawinata, K., Sheil, D., Wollenberg, E., Levang, P., Sist, P.

The CIFOR-ITTO project's general objective is to achieve long-term forest management for multiple uses, integrating social and silvicultural objectives in Malinau, Kalimantan, Indonesia. To achieve this objective there are complicated issues to be dealt with and requires integrated research that combined biological and socioeconomics aspects. The underlying issue

is: what are the appropriate research methods and conceptual approaches to guide sustainability for a large forest landscape, where diverse, rapidly changing and often conflicting land use demand exist?. This chapter provides a comprehensive coverage of the main issues and perspective of the basic assessment of existing conditions and trends. The approaches adopted in the implementation of the project on reduced impact logging (RIL) technique, biodiversity multidisciplinary landscape assessment (MLA), forest product dependency and adaptive co-management of forests are described.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 4-7. Bogor, Indonesia, CIFOR and ITTO.

80. People's dependencies on forests

Levang, P.

Considering the role and importance of the forest to local people, what first strikes any visitor to the Bulungan research forest is the strong contradiction between talk and action. On one hand side the contribution of the forest to local people's livelihoods is widely acknowledged, on the other hand side forest people are willing to strike any deal with concessionaires as long as it proves lucrative. The surveys taken out in a dozen of villages and hamlets along the Malinau and Tubu rivers show that dependency on forest products for subsistence needs is still very high especially in the most remote settlements. Though nowadays the main staple is rice complemented with cassava, wild sago is still considered as a safety net in case of bad harvests. Most of the protein and fat intake are provided from hunting. However, among the numerous forest products available, only very few like eaglewood are cash-earning. Forest people depend more on available (and accessible) markets and on traders than on the bare availability of forest products. Nowadays, new opportunities have emerged for local communities. Collecting compensations and fees from concessionaires has proved to be a lucrative source of income. Especially in the less remote areas, people are facing new needs: education and health costs, electronic

goods, leisure activities. Forest people want to become part of the modern world. Their increasing dependence on cash explains why they are ready to give away their forest.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 109-130. Bogor, Indonesia, CIFOR and ITTO.

81. Recherche et conservation: réalités, priorités et distractions

Sheil, D., Nasi, R.

Monitoring and research activities may hinder rather than improve conservation in tropical countries. Those concerned with conservation - particularly academics and aid agencies - too often overlook the practical realities of achieving conservation in the tropics. As a result, many initiatives divert scarce resources away from fundamental management priorities. This article identifies some critical threats to biodiversity and emphasizes the limited resources to defend against them, defines practical conservation priorities and explains how external agencies can deflect management from addressing these. After outlining some examples, it discusses contributory factors, and options for improved practice. Interventions should bolster, not undermine, the attainment of conservation goals. Case-by-case assessment is needed. Conservation in many parts of the world needs more resources. But in the short-term more can be achieved by careful allocation of the resources already available.

Canopee 22: 4-5.

82. Regeneración y crecimiento de la caoba (*Swietenia macrophylla King*) en selvas de Quintana Roo

Snook, L.K.

To determine the regeneration dynamics and growth rate of mahogany in the natural tropical forests of Quintana Roo, oral histories were used to find essentially even-aged stands that had become established naturally between 2 and 75 years ago, after a hurricane, forest fires, or mechanical disturbance (logyards) had occured. Trees in these stands were sampled

using transects and sample plots, and differentiated into residual trees that had become established subsequently. New individuals of mahogany became established at an average density of 18 per ha after fires and 6 per ha after hurricane. This pattern indicates that mahoganies become established more successfully on clearings than in gaps, which are densely populated with saplings and seedlings of other species. The average diameters of post-disturbance mahoganies in stands of different ages revealed that mahogany trees grow to 26 cm DBH in 45 years and 37 cm DBH in 75 years. Extrapolating from the last periodic annual increment (0.38 cm year-1), it was calculated that a mahogany tree requires over 120 years to reach the current commercial diameter of 55 cm, although the fastest growing trees may reach this size in 82 years. To ensure the sustainability of mahogany timber harvests from the forests of Quintana Roo, it would be appropriate to reevaluate the current cutting cycle in light of the calculated growth rates, and to try to duplicate the conditions that have favored natural regeneration of mahogany in these forests.

Rev. Ciencia Forestal en Mexico 25(87): 59-76.

83. Research in the Bulungan model forest: the management of a large, multistakeholder forest

Stapleton, P., Sheil, D., Wollenberg, E., Kartawinata, K., Levang, P., Machfudh

CIFOR's research in the Bulungan Model Forest in Bulungan, East Kalimanatan took the form of a systematic investigation into ways of achieving forest sustainability in a large forest landscape with diverse, rapidly changing and often conflicting land-use demands. The Integrated approach to research was applied to research on reduced impact logging, biodiversity of the area by using multidisciplinary methods across the landscape, forest people's dependency on forest products particularly on economic dependencies, and coordination and agreement in boundary negotiation among local

communities, government and the private sectors. A brief report on the results of these researches is presented in this chapter.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 157-161. Bogor, Indonesia, CIFOR and ITTO.

84. Research on logging: comparison of reduced-impact logging and conventional logging techniques

Kartawinata, K., Dwiprabowo, H., Sist, P.

This chapter provides a brief overview of the reduced impact logging (RIL) as one of the main objectives of the first phase of the Bulungan research project. This activity was conducted in response to a question whether timber harvesting can be compatible with other forest services, values and functions. The main objective of RIL is to reduce soil disturbance, damage to residual trees and maintain future production of timber.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 23-25. Bogor, Indonesia, CIFOR and ITTO.

85. Research on logging: cost-benefit analysis of reduced-impact logging in a lowland Dipterocarp forest in Malinau, East Kalimantan

Dwiprabowo, H., Grulois, S., Sist, P., Kartawinata, K.

This study is a part of the Reduced-Impact Logging (RIL) studies constituting a developmental phase within a long term research strategy in Bulungan research Forest, East Kalimantan. The sylviculture component of the project was to start logging experiments, focusing on the implementation of RIL technique by INHUTANI II in its concession in Malinau, East Kalimantan. Research on the assessment of the immediate and long-term impact of timber harvesting with conventional logging (CL) and RIL techniques in economical terms were carried out to promote the integration of RIL into the current logging

techniques at the concession scale. The study was conducted in 1998-1999 on 244 ha block for CL and 138 ha for RIL. This paper mainly presents the immediate financial cost-benefit part of RIL study. Motion study was used to estimate productivity. Hourly productivity on felling and skidding of both techniques were calculated based on felling and skidding time cycles, and unit costs of production were assessed on hourly basis based on the machine cost and piece rate. Unit cost of pre-harvesting operations was assessed on block basis based upon time used by crew to carry out each activity, cost per day, and estimated production per block. Residues of logging were classified and measured on site when the activity was on. Rapid assessment on damage was made by measuring skid tracks caused by CL and RIL. The results showed that hourly productivity of felling and skidding in RIL was 28% and 30% higher than those of CL. Pre-harvesting cost of RIL 60% higher than that of CL. The overall cost of pre-harvesting, felling, skidding and training of RIL was 12% lower than that of CL. Overall residues occurred in the felling and landing site in proportion to respective felled bole volume in RIL was 12% lower that of CL. Proportion of skid tracks to extracted volume (in m2/m3) in RIL was 53% lower than that of CL.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 39-55. Bogor, Indonesia, CIFOR and ITTO.

86. Research on logging: reduced-impact logging in Indonesian Borneo: some results confirming the need for new silvicultural prescriptions

Sist, P., Sheil, D., Kartawinata, K., Priyadi, H.

Reduced-impact logging (RIL) and conventional techniques (CNV) were compared in a mixed dipterocarp hill forest in Malinau, East Kalimantan. Damage was evaluated using pre- and post-harvesting assessments in 24 one-hectare sample plots. RIL techniques nearly halved the number of trees destroyed (36 vs. 60 trees/ha). RIL's main benefit was in the reduction of skidding damage (9.5% of the original tree population in RIL vs. 25% in CNV). Before logging, mean canopy openness in CNV (three plots only) and RIL (9 plots) was similar

(3.6 and 3.1%) and not significantly different. After logging, the mean canopy openness was significantly higher in CNV with 19.2% than in RIL 13.3%. At a larger scale, the area of skidtrail per unit timber volume extracted was halved in the RIL compartment (15 m2 vs. 27 m2 m-3 for CNV). However, under high felling intensities (>8 trees/ha), both stand damage and canopy disturbance in RIL approached those recorded in CNV. Over this eight tree-felling threshold the effectiveness of RIL in reducing tree damage is limited. In mixed dipterocarp forest where harvestable timber density generally exceeds 10 trees/ha, a minimum diameter-felling limit is insufficient to keep extraction rates below 8 trees/ha. Based on these new results and previous studies in Borneo, we suggest three new rules: (1) to keep a minimum distance between stumps of ca. 40 m, (2) to ensure only single tree gaps using directional felling, (3) to harvest only stems with 60-100 cm dbh. Foresters, policy makers and certifiers should consider these as criteria for sustainable forest management.

In: CIFOR. ITTO project PD 12/97 Rev.1 (F): forest, science and sustainability: the Bulungan model forest: technical report phase 1, 1997-2001. 26-38. Bogor, Indonesia, CIFOR and ITTO.

87. Trading forest carbon to promote the adoption of reduced impact logging

Smith, J., Applegate, G.

The Clean Development Mechanism (CDM) of the Kyoto Protocol raised the hopes of many, that payment for carbon sequestration services would provide a significant incentive for sustainable management practices in industrial forestry in tropical countries. Data to assess how realistic these hopes are, remain scant and high degree of uncertainty about CDM rules make assessment hazardous. The analysis in this paper focuses on the potential for using carbon trading to stimulate adoption of reduced impact logging (RIL)-based sustainable forest management. The result shows that: (i) expectations about the contribution carbon projects could make towards inducing sustainable timber harvesting should be scaled down; (ii) the cost-effectiveness of RIL-based SFM projects is likely

to be highly-specific; (iii) RIL projects should be targeted to areas where timber volumes under RIL are similar to volumes under conventional logging with repeated harvesting at short intervals; (iv) pro-active measures could also be taken to expand the niche for RIL projects and reduce the risk of leakage and project failure; (v) CDM RIL projects should not be perceived as a silver bullet for inducing sustainable management and preventing forest degradation.

In: Enters, T., Durst, P.B., Applegate, G., Kho, P.C.S., Man, G. (eds.). Applying reduced impact logging to advance sustainable forest management. 261-274. Bangkok, Thailand, FAO Regional Office for Asia and the Pacific. RAP Publication, No.2002/14. ISBN: 974-7946-23-8.

88. The value of tropical forest to local communities: complications, caveats, and cautions

Sheil, D., Wunder, S.

The methods used to value tropical forests have the potential to influence how policy makers and others perceive forestlands. A small number of valuation studies achieve real impact. These are generally succinct accounts supporting a specific perception. However, such reports risk being used to justify inappropriate actions. The end users of such results are rarely those who produced them, and misunderstanding of key details is a concern. One defense is to ensure that the ultimate users better appreciate shortcomings and common pitfalls. In this article, the authors aim to reduce such risks by discussing how valuation studies should be assessed and challenged by users. The authors consider two concise, high profile valuation papers here, by Peters and colleagues and by Godoy and colleagues. They illustrate a series of questions that should be asked, not only about the two papers, but also about any landscape valuation study. The article highlighted the many challenges faced in valuing tropical forestlands and in presenting and using results sensibly, and it offers some suggestions for improvement. Attention to complexities and clarity about uncertainties are required. Forest valuation must be pursued and promoted with caution.

Conservation Ecology (online journal) 6(2):22p. [online] URL: http://www.consecol.org/vol6/iss2/art9.

Non-Timber Forest Products

89. Analyse économique de la consommation du bois de feu en régions forestières: leçons des zones urbaines camerounaises
Nkamleu, B., Endamana, D., Gockowski, J., Ndoye, O., Sunderlin, W.D.

This paper aims at analyzing fuel consumption in households of forest zones, and at showing the place of fuelwood as a source of energy in the region. The study was carried out in Cameroon and it was based on a survey done in 1996. A sample of 400 households from Yaounde, Mbalmayo and Ebolowa was used. The results obtained confirm the importance of fuelwood, in its different forms, as a source of energy in urban areas. This importance is higher in less urbanized town, while the spatial repartition of the others sources of energy (kerosne, gas) is reserved. Finally, the econometric analysis, using of Engel's curves allowed the elasticity of income to be assessed, showing a negative link between income levels and fuelwood consumption.

Secheresse 13(2): 81-86.

90. Baobab bark (*Adansonia digitata*)
Romero, C., Grundy, I., Campbell, B.M., Cunningham, A.B.

This chapter provides short description of the plant, its variety of products from its bark, the wood and seed. Further it provides a brief information on the ecology and the impact of bark harvesting by the local people and other stresses. One of the studies reported that harvesting was more prevalent during the dry season when people had available time due to reduced agricultural activities. Despite traditional rules governing over baobab harvesting the practice of over-harvesting has been widespread in the study area. Problems with managing baobab bark are currently being exacerbated by weak institutions and poverty. This chapter concludes

that under present conditions, the potential for certification of baobab bark is low.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 208-214. London, Earthscan Publications. People and Plants Conservation Series.

91. Biophysical characterisation of *Dacryodes edulis* fruits from three markets in Cameroon

Atangana, A.R., Asaah, E., Tchoundjeu, Z., Awono, A., Schreckenberg, K., Leakey, R.R.B.

Studies were done in order to assess variation in fruit size and weight, nut size and weight and determinate relationships between these characteristics and price using 149 samples of *Dacryodes edulis* fruits from three markets at the peak of season in Cameroon. 50 samples per market in two markets (Mfoundi market [Yaonde] and Makenene centre market) and 49 samples in Makenene East market were bought randomly from traders. The measurement of 10 characteristics of 24 fruits per sample identified significant variation in fruit size and weight and nut weight in each market. Fruit price was found to vary with flesh mass, fruit mass and fruit size in retailers markets while wholesalers don't take into account fruit variability. In contrast, pulp price per kg was negatively correlated with flesh weight in wholesalers' markets. The most frequent skin colour was "georgetown lime" (29A7 in the Methuen colour code) and the most frequent flesh colour was violet (18D6 in the Methuen colour code). From this study, *Dacryodes edulis* fruit ideotype fetching highest price in the retailers markets is characterized by length, flesh and fruit mass and white skin colour.

In: Kengue, J., Kapseu, C., Kayem, G.J. (eds.). Third international workshop on the improvement of safou and other non-conventional oil crops. 106-118. Yaounde, Cameroon, Presses Universitaires d'Afrique.

92. CIFOR research: forest products and people, rattan issues

Belcher, B.

The Forest Products and People programme (FPP) of the Centre for International Forestry Research (CIFOR) undertakes research to better understand the true role of non-timber forest products as tool to achieve development and conservation goals. The programme is undertaking an international comparative analysis of cases of forest product development, and a series of thematic case-based research projects designed to answer specific questions. An example is provided from a case study in East Kalimantan, Indonesia, where a traditional rattan cultivation system has been severely stressed by a combination of policy and economic factors. Government policies designed to encourage the domestic processing industry and monopsonistic manufacturing association have sharply depressed demand and prices. Other factors such as development of roads, industrial plantations, mining, and other economic activities offered alternatives that have led some rattan farmers to shift to new activities. And, recent wide spread of forest fires have destroyed large areas of rattan gardens, effectively forcing some rattan farmers out of business. This set of conditions offers a good opportunity to study people's responses and to analyze whether and under what circumstances this particular intermediate forest product management system is a viable economic option now and in the future. As rattan remains an important commodity in Indonesia and internationally, and as the current farm-gate price for rattan appears to be artificially low, due in large part to the prevailing policy environment, the rattan garden system may remain viable, at least in the medium term.

In: Dransfield, J., Tesoro, F.O., and Manokaran, N. (eds.). Rattan: current research issues and prospects for conservation and sustainable development. 49-61. Rome, FAO. Non-Wood Forest Products, no.14.

93. Conclusions and recommendations

Shanley, P., Laird, S.A., Pierce, A.R., Guillen, A.

Non-timber forest products (NTFPs) are not inherently ideal candidates for certification. They are most commonly consumed at a subsistence level, are traded locally and regionally, and most are not featured in markets open to 'green' or 'fairtrade' messages. However, for some of the NTFP species in trade, certification offers a way to improve market access, to capture a greater share of benefits at a local and community level, and to promote wider conservation objectives. Many of the most valuable NTFPs are also those most poorly managed, and certification offers consumers a chance to buy wisely and responsibly, rewarding companies and producers who seek to purchase and produce sustainable and fairly traded raw and processed materials. This chapter discusses some overarching lessons learned by the NTFP certification project and review potential opportunities and challenges. It concludes with some recommendations for 'next steps' in developing and implementing effective NTFP certification.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 353-365. London, Earthscan Publications. People and Plants Conservation Series.

94. *Dacryodes edulis*, a neglected non-timber forest species for the agroforestry systems of West and Central Africa

Sonwa, D.J., Okafor, J.C., Buyungu, P.M., Weise, S.F., Tchatat, M., Adesina, A.A., Nkongmeneck, A.B., Ndoye, O., Endamana, D.

Dacryodes edulis, or safou, is a fruit tree native to Central Africa and the Gulf of Guinea region. It is usually present in agroforestry systems in the region, particularly in home gardens and cocoa and coffee agroforests. It plays an important role in household consumption and the surplus is sold on the rural and urban market. A lack of attention by research and extension services means that there is neither scientific knowledge nor official recommendations for its

management in agroforestry systems. The attempt to introduce it into forest fallows in Cote d'Ivoire is a good example of industrial involvement in the development of agroforestry and the expansion of tree production in West Africa. Drawing on experience from Cameroon, Nigeria and Cote d'Ivoire, this paper presents indigenous management techniques and emerging opportunities to promote safou in West and Central African agroforestry systems for food security, income generation and rehabilitation of the environment.

Forests, Trees and Livelyhoods 12(1): 41-55.

95. Domestication dans les cacaoycres de la zone de forzt humide du Sud-Cameroun: caractéristiques et préférences des cacaoculteurs pratiquant l'arboriculture de Dacryodes edulis

Sanwa, D.J., Tchatat, M., Adesina, A.A., Weise, S.F., Nkongmeneck, B.A., Ndoye, O., Endamana, D.

The aim of this paper is to determine the characteristics and preferences of cocoa farmers in the humid forest zone of Cameroon who are actively diversifying their cocoa agroforests by planting *Dacryodes edulis*. A survey conducted amongst 300 farmers revealed that about 80 percent of them grow *Dacryodes edulis* in cocoa agroforests. More than half of them have completed primary school, half belong to farmer associations and only 10 percent have contact with extension services. This demonstrates the independent initiative of farmers to grow *Dacryodes edulis* and underlines the importance of capturing their knowledge and experience in integrating this fruit tree into cocoa agroforests. The number of cocoa agroforest per farmer decreases as one moves from a more forested area to one where pressure on land is greater. *Dacryodes edulis* is frequently associated with other planted fruit trees. However, in areas of higher land pressure it is often also planted together with other tree species. Overall, 47 percent of farmers plant at least 4 fruit trees and 38 percent at least 4 other tree species in their cocoa agroforests besides *Dacryodes edulis*. The interest in

Dacryodes edulis does not prevent farmers from diversifying their tree stock within the cocoa agroforests. *Dacryodes edulis* complements other trees in addressing the need of farmers.

In: Kengue, J., Kapseu, C., Kayem, G.J. (eds.). Third international workshop on the improvement of safou and other non-conventional oil crops. 465-482. Yaounde, Cameroon, Presses Universitaires d'Afrique.

96. Ecological issues

Pierce, A.R., Shanley, P.

To manage non-timber forest products (NTFPs) properly, it is imperative to have a basic understanding of the biology and ecology of the target species, the site capabilities of the forest under management and the response of the target species on harvesting and other human and natural disturbances. This chapter explores ecological issues relating to NTFP harvest, including knowledge of species harvested, harvest impacts and the importance of trained harvesters.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 267-282. London, Earthscan Publications. People and Plants Conservation Series.

97. The energy transition in action: domestic fuel choices in a changing Zimbabwe

Campbell, B.M., Vermeulen, S.J., Mangono, J.J., Mabugu, R.

Two questionnaire surveys of fuel use by low-income households in Zimbabwe were conducted in four small towns in 1994, and in these towns plus four larger towns in 1999. An energy transition from wood through kerosene to electricity occurred: (a) with rising household income, (b) with increasing electrification status among towns and (c) over time in the smaller towns, in spite of falling household incomes in two of the towns. Increasing discrepancy in the incomes of higher and lower income groups over time was not associated with greater divergence in their fuel choices. By 1999 electricity was used by almost all households in towns with good electricity supplies, while use of firewood in these towns was infrequent. However, even the wealthiest households

continued to combine electricity with other fuels, usually kerosene. Electricity use by less affluent households is apparently limited to lack of connections in the home and by access to appliances, while fuel prices, which are subject to government subsidies and fell in real terms over 5 years, have been less important. Zimbabwe's urban domestic energy policy has had considerable success in terms of equity, but this is increasingly difficult to maintain given present economic and political uncertainty.

Energy Policy 31:553-562.

98. The faint promise of a distant market: a survey of Belem's trade in non-timber forest products

Shanley, P.

Increased trade in non-timber forest products (NTFP) has been promoted as one possible means to slow tropical deforestation by increasing the economic value of intact forest. A market survey of NTFP's occuring in the Capim River basin in eastern Amazonia, Brazil demonstrated that the reality for many smallholder communities in frontier and remote regions includes chronic transportation difficulties, high variability in fruit production, perishable products and lack of market expertise. In some communities, declining abundance of NTFP's due to logging and fire has resulted in a lack of forest products to even meet subsistence needs. In areas close to cities where transportation is assured and where forest clearing has crowded the natural occurence of some valuable native NTFPs, smallholder who manage and successfully market native fruit and medicinal species are overcoming there obstacles. In frontier regions and undergoing rapid transformation, however, decline in locally used and regionally marketed NTFPs currently pose detrimental consequences for communities. Findings suggest that an overemphasis on NTFP marketing has diverted attention from local livelihood, resource access and subsistence issues.

Biodiversity and Conservation (11): 615-636.

99. Fuelwood studies in India: myth and reality

Pandey, D.

This report provides an in-depth review and critical analysis of the fuelwood, wood balance and household energy studies done in India in the last decades, and the developments in the commercial energy sector. The study synthesised the trend in the consumption of domestic energy and also the reliability level of fuelwood statistics. The consumption of fuelwood has been analysed in relation to availability of forests/trees resource, urbanisation and income level. It has been found that the fuelwood consumption and production statistics estimated by most of the studies are often not reliable. Average reliance can be placed on the consumption statistics, because most of the fuelwood studies/household energy surveys have focused on the consumption part but statistics on the supply and source aspect are extremely weak and unreliable. The review of the consumption aspect has found that traditional fuel (fuelwood, crop residue and dung cake) still dominates domestic energy use in rural India and accounts for about 90% of the total. Fuelwood alone accounts for about 60% of the total fuel in rural areas. In urban areas, the consumption pattern is changing due to increased availability of commercial fuel (LPG, kerosene, and electricity). During 1983-1999, the consumption of traditional fuel declined from 49% to 24% and LPG connection to households increased from 10% to 44%. To make fuelwood statistics reliable, it has been suggested that key factors influencing consumption of fuelwood such as, urbanisation, nearness to accessible forest/tree resource, income level and climate should be used to stratify the population and repeated physical measurement should be done estimate per capita consumption precisely. For estimating the production of fuelwood new volume growth models of trees relating to their biomass produced during life cycle should be made. And to determine the actual source of supply of fuelwood, investigators have to observe the flow of wood households and other consumption and distribution centres for a longer period, which would also cover the seasonal variation, instead of depending upon questionnaires.

Bogor, Indonesia, CIFOR. 93p. ISBN: 979-8764-92-7.

100. A gender analysis of forest products markets in Cameroon

*Ruiz Perez, M., Ndoye, O., Eyebe, A., **Ngono, D.L.***

Gender roles and the potential to tap women's experiences are keys for African economic development. The paper illustrates this potential with a gender analysis of forest product markets in the humid forest zone of Cameroon by describing the functioning of the market and analysing male-female differences. The results confirm that gender is the main basis for differentiating size of business, product specialization, and market strategies among traders. Priorities to improve trade also show some male-female differences. At the same time, there are no consistent difference in profit margins between genders, indicating that trading efficiency is similar, and that, given the right conditions, women entrepreneurs can be as successful as men. The results also indicate that the gender gap could be closing among the younger generation entering the market.

Africa Today 49(3): 96-126.

101. Harum madu dan dupa kemenyan di Jawa Tengah

Goloubinoff, M.

In North Sumatra, Batak farmers tap benzoin resin from several species of Styrax. Most of the production is sent to Central Java where it is used for incense and traditional cigarettes manufacture. Consummation of klembak menyan, a traditional cigarette has decreased because of competition of kretek industry. Incense factories are located in the South. They manufacture blocks of incense made of benzoin mixed with other ingredients like damar. Javanese people still often burn benzoin during traditional ceremonies. Incense is actually main end use of the resin either on domestic or international market. Some benzoin is exported to India and Arabic countries via Singapore. Pharmacy and perfume industries in Europe also use small quantities of benzoin.

In: Guillot, C. comp. Lobu tua: sejarah awal barus. 259-273. Jakarta, Yayasan Obor Indonesia.

102. Harvesting and conservation: are both possible for the palm, *Iriartea deltoidea*?

Anderson, P.J., Putz, F.E.

This paper considers the mechanism of certification to encourage sustainable harvesting and best management practices of *Iriartea deltoidea* Ruiz and Pavon, in the context of current land use and agricultural management in Amazonian Ecuador. To understand the demographic variables that are critical for population stability, data from five plots in each of three different types (mature, secondary, and disserted) were collected. Matric models were used to develop harvesting simulations through which biological constraints on sustainable harvesting were explored. Results showed that harvesting *Iriartea* could fit within current land use. Some forest colonists clear pastures to graze cattle, while others devote land to agriculture, including polycultures of annuals and perennials. In either case, palms can be left standing when forests are cleared. Swidden agriculture depends on fallow period during which secondary forest may begin to generate. These secondary forests are ideal locations for extraction of forest products that fit within the cycle of fallow regeneration in areas near human settlements. Sparing *Iriartea* individuals 5-15 m tall could benefit agriculture, encourage the sustainability of future harvests, and help ensure the future of this palm as a part of the Amazonian landscape. Interview with staff of governmental and non-governmental conservation organizations investigated the policy context for certification as a mechanism for conservation. Establishing guidelines for harvesting requires input from all stakeholders in the decision, not simply an ecological analysis.

Forest Ecology and Management 170(1-3): 271-283.

103. The interface of timber and non-timber resources: declining resources for subsistance livelihoods - a southern case study from Brazilian Amazonia

Shanley, P., Luz, L., Cymerys, M.

Given the importance of non-timber forest resources to subsistence livelihoods, the increased rate of logging in Amazonia, and the pronounced overlap of timber and non-timber species, it is important to evaluate the altered composition and abundance of NTFPs. In this changing landscape, it is vital to understand which species are widely utilized for their non-timber value, which NTFPs species are extracted for timber and what their comparative timber and non-timber value is. In answer to these questions, quantitative and qualitative results of a seven-year study are provided on the use of plant and animal forest resources by 30 households residing in an area of *terra firme* (upland dry) forest undergoing selective logging.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 313-321. London, Earthscan Publications. People and Plants Conservation Series.

104. Introduction: section 1: overview

Shanley, P., Laird, S.A., Pierce, A.R., Guillen, A.

Certification is relatively new to forest policy tool that attempts to foster responsible resource stewardship through the labeling of consumer products. While many lessons can be drawn from timber certification, transfer of existing timber-based guidelines and procedures to NTFPs is inappropriate. Non-timber forest resources are a more difficult group of products to certify than timber due to a multitude of factors, including their exceedingly diverse and idiosyncratic nature and social and ecological complexity. However, in spite of these challenges, opportunities exist to promote sound ecological and social practices in NTFP management and trade

through market tools such as certification, and their potential realization in practice is the subject of this manual.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 3-6. London, Earthscan Publications. People and Plants Conservation Series.

105. Introduction: section 2: NTFPs and certification

Shanley, P., Pierce, A.R., Laird, S.A., Guillen, A.

Species profiles were gathered from non-timber forest product (NTFP) researchers around the globe. While not exhaustive, the profiles, taken as a whole, provide a glimpse into the diverse, complex and idiosyncratic universe that is encompassed by the term 'NTFP'. The profiles vary widely in content and style and reflect the views of the individual researchers, the state of information regarding the species and the historic and present use and management of the plant.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 47-48. London, Earthscan Publications. People and Plants Conservation Series.

106. La commercialisation de *Dacryodes edulis* dans la zone forestiére humide du Cameroun

Awono, A., Ndoye, O., Schreckenberg, K.

This paper sheds light on the marketing of *Dacryodes edulis* in the humid forest zone of Cameroon. The results of the study show that the marketing margins are related to the type of fruits, its state (quality), the selling place and the market supply, which also depend on the production period. The value of *Dacryodes* sold in 1999 in 9 markets in the humid forest zone of Cameroon is 1049 million CFA Francs for a volume of 2324 tons. In some of the markets, the weekly marketing margins obtained by traders is more than two times greater than the SMIG (minimum wage) that prevails in Cameroon. The results also show that farmers receive 75 percent of the price paid by consumers. This percentage should not make

us believe that farmers cannot get more from the production and marketing of *Dacryodes edulis*. For this to happen, it is imperative that farmers organise themselves into producer groups, which will allow them not only to get access into the market in a less costly way, using economies of scale but also to gather strategic information, which could permit them identify more profitable markets.

In: Kengue, J., Kapseu, C., Kayem, G.J. (eds.). Third international workshop on the improvement of safou and other non-conventional oil crops. 400-417. Yaounde, Cameroon, Presses Universitaires d'Afrique.

107. Non-timber forest products and trade in eastern Borneo

Sellato, B

A broad range of non-timber forest products of plant and animal origin collected from the Borneo rain forest and subsequently traded are presented. These products include resins, latex, rattans and birds nests. The article discusses their local and regional uses and whether they are or have been targeted for local or international markets. The author also presents for the northern part of the Indonesian province of East Kalimantan a history of trade in these products based on various written (Dutch colonial archives, official Indonesian statistics, local scholarly texts) and oral (interviews with nomadic Punan people, Dayak swidden farmers, Malays in the coastal ports, Chinese and Arab traders, middlemen disseminating in land products on international markets) sources. This historical reconstruction suggests that despite the fact that some of these products have been traded on world markets for almost two millenia their systematic and unsustainable exploitation only began in the 17th century. Since then, the products have been extracted along a front that has gradually progressed from the coastal regions via the rivers towards interior parts of the island. This exploitation ended in the 1990s, with almost complete depletion of these resources. The local forest communities (Dayak and Punan) are neither wise conservationists nor primitive destroyers of the forest, but simply economic stakeholders. Their sensible, pragmatic strategies have enabled their long-term survival in

local forests under any circumstances with respect to world market demand.

Bois et Forets des Tropiques 271(1): 37-49.

108. Pengolahan kemenyan di dataran tinggi Batak: keadaan sekarang

Katz, E.

Abstract not available

In: Guillot, C. Lobu tua: sejarah awal barus. 237-257. Jakarta, Yayasan Obor Indonesia.

109. Planning for woodcarving in the 21st century

CIFOR

This infobrief provides information on the positive and negative impacts, challenges and reformulation policy on woodcarving industry. The positive impacts in many developing countries are: to contribute significant income, provide safety net, and it links to tourism and adds considerable value to wood compared to others. The negative impacts are that it depletes raw materials and can affect biodiversity of indigenous forest and impacts negatively on livelihoods of some non-carver households. This brief than identify the challenges to sustain the woodcarving industry and to sustain the resource. Present policies neglect the significant economic and livelihood contributions of forest products other than timber. It concludes with recommendations to policy makers in Forestry, Tourism and Development sectors on reformulating the present policy.

Bogor, Indonesia, CIFOR. CIFOR Infobrief, no.1. 4p. Online URL: http://www.cifor.cgiar.org/publications/pdf_files/infobrief/001-Infobrief.pdf.

110. The process of drafting and revising guidelines for NTFP certification

Shanley, P., Laird, S.A.

The process of creating the NTFP guidelines involved numerous experts and collaborators across the globe, with a particular emphasis on Latin America. The guidelines were drafted between 1997 and 1998, with input from the NTFP certification advisory committee, certification experts and other forestry and NTFP specialists. Field-testing took place in three countries: Mexico (chicle), Bolivia (Brazil nut and palm heart), during the first half of 1998.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 20-27. London, Earthscan Publications. People and Plants Conservation Series.

111. Production and marketing of safou (*Dacryodes edulis*) in Cameroon and internationally: market development issues

Awono, A., Ndoye, O., Schreckenberg, K., Tabuna, H., Isseri, F., Temple, L.

This paper draws together information from three separate projects on the production of *Dacryodes edulis* (G. Don) H.J. Lam or 'safou' in Cameroon, and its domestic and international trade. The volume of safou fruit commercialised in Cameroon in 1997 was estimated at 11,000 tonnes, equivalent to US$7.5 million. Exports from Central Africa and Nigeria to France, the United Kingdom and Belgium were worth over US$2 million in 1999. A study of nine markets in the humid forest zone of Cameroon revealed that women dominate the retail trade while men concentrate on wholesale. For both, safou trade is an important long-term livelihood option. Depending on the market and volume traded, weekly marketing margins can be double the minimum wage. Far from being exploited by traders, producers were found to receive 75% of the consumer price on average. The main constraint to both the domestic and international trade is the high perishability of safou.

Forests, Trees and Livelihoods 12(1): 125-147.

112. Sumatra benzoin (*Styrax spp.*)

Katz, E., García-Fernandez, C., Goloubinoff, M.

Several species of *Styrax* trees from Sumatra and Indochina produce benzoin resin. This resin is used for incense, perfume and pharmaceutical industries. Formerly, S. benzoin dryand was cultivated in low lands of Palembang and North Sumatra but its importance decreased after 2nd World War. Now, product from S. *parralleloneurum* Perk that grows in North Sumatra highlands is the most valued. Batak farmers manage benzoin trees in agroforest system. Benzoin gardens recover high biodiversity level when abandoned. In some places these gardens are the only forest cover left. Farmers tap S. *parralleloneurum* between June and September and collect the resin three months later. If done properly, benzoin can be extracted for nearly 60 years. It is necessary to dry the resin before transport because it melts and looses quality. Most of the production is used in Central Java in incense and cigarette manufactures. Only small part is exported to other countries via Singapore. In the 70's income from benzoin was good enough to allow Batak children to study in university. Now prices are less attractive for young farmers. Traditional market is stagnant but new niches can appear.

In: Shanley, P., Pierce, A.R., Laird, S.A. and Guillen, A. (eds.). Tapping the green market: certification and management of non-timber forest products. 246-256. London, Earthscan Publications. People and Plants Conservation Series.

113. Tapping the green market: certification and management of non-timber forest products

Shanley, P., Pierce, A.R., Laird, S.A., Guillen, A. (eds.)

Non-timber forest products (NTFPs) are increasingly recognized as providing critical resources across the globe, fulfilling nutritional, medicinal, financial and cultural needs. However, NTFPs have largerly been overlooked in mainstream conservation and forestry politics. This book explains the use and importance of marked-based tools such as certification and eco-labeling for guaranteeing best management practices of NTFPs in the field. Using extensive case studies and global

profiles of NTFPs, this book provides comprehensive understanding of certification processes and NTFPs management, harvesting and marketing. This practical volume includes valuable guidelines on NTFP management assessment and species-specific certification.

London, Earthscan Publications. People and Plants Conservation Series. 456p. ISBN: 1-85383-810-1.

Plantations and Rehabilitation of Degraded Forests

114. Carbon sequestration of man-made forests: sequestration estimate and its bearings on CDM

Morikawa, Y., Ohta, S., Hiratsuka, M., Toma, T.

This study estimates that sequestrated carbon by industrial tree plantations is at about 10 tC/ha/yr in good sites. The carbon accumulated by rehabilitation forests is not always less than that of industrial plantations. Selecting the suitable species could be one of the essential factors to succeed and preserving forests. Rehabilitation forests in Lombok and Benakat in South Sumatra sites are regarded as the successful cases. While annual carbon accumulation by naturally regenerated vegetation at baselines in Lombok site amounts to 2.9-3.2 tC/ha/yr, the net carbon accumulation of this site ranges from 2.9 to 5.7 tC/ha/yr. Establishing forests has markedly increased the carbon accumulation in this area. The carbon accumulation at baseline at Benakat site is 1.6-2.8 tC/ha/yr. It is almost the same as that of Lombok site. The above ground carbon dry weight of 20-year-old *S. macrophylla* planted for rehabilitation purposes is 6.6 tC/ha/yr. These results suggest that, in short rotation, the carbon accumulation of rehabilitation forests is not markedly different from that of industrial plantations. Conserving the rehabilitation forests for a long time would therefore, be one of the most rational practices for storing carbon on degraded lands sustainable.

In: Kuo-chuan Lin, Jiun-cheng Lin, Hsing-yin Huang (eds.). Proceedings of International Symposium on Forest Carbon Sequestration and Monitoring, November 11-15, 2002 Taipei, Taiwan. 171-178. 19-24. Taipei, Taiwan Forestry Research Institute. TFRI Extension Series, No.153. ISBN: 579-01-2475-X.

115. Carbon stocks of fast growing tree species and baselines after forest fire in east Kalimantan, Indonesia

Diana, R., Hadriyanto, D., Hiratsuka, M., Toma, T., Morikawa, Y.

In terms of sink activities in the Clean Development Mechanism (CDM) there is little information about carbon accumulation. This paper deals with case studies in natural young secondary forests and man made forests in East Kalimantan, Indonesia. East Kalimantan has high possibility of CDM activity, because of degraded lands extend widely in 1998. The annual carbon accumulation of pioneer secondary forest in Bukit Soeharto Educational Forest (BSEF) ranged from 1.3 to 2.9 t C/ha/yr in 2000. However, the rate decreased in 2001 except for *Macaranga gigantea* dominated stands. These figures were higher than those of regenerated vegetation in degraded land with herbs, shrubs and *Imperata cylindrica* grassland. On the other hand, annual carbon accumulation of *Acacia mangium*, *eucalyptus pelitta* and *Gmelia arborea* were 5.9-9.9, 7.1-7.2, and 8.3-12.3 t C/ha/yr respectively. Highly degraded vegetations would be the target sites for CDM projects. Naturally regenerated forests are not suitable for CDM project because of their high baseline.

In: Kuo-chuan Lin, Jiun-cheng Lin, Hsing-yin Huang (eds.). Proceedings of International Symposium on Forest Carbon Sequestration and Monitoring, November 11-15, 2002 Taipei, Taiwan. Taipei, Taiwan Forestry Research Institute. TFRI Extension Series, no.153. ISBN: 579-01-2475-X.

116. ITTO guidelines for the restoration, management and rehabilitation of degraded and secondary tropical forests

ITTO

This guidelines are intended to provide knowledge base on key policy, legal, institutional, ecological and silvicultural issues that need to be taken account in the planning and implementation of strategies and options for the restoration of degraded primary forests, the management of secondary forests, and the rehabilitation of degraded forest land, and they constitute an international reference standard. The guidelines are a checklist of prime objectives, principles and

recommended actions. Most of the 49 principles and 160 recommended actions are relevant to all forest types in tropical countries. Annex 6 provides additional guidance on the management, restoration and rehabilitation of degraded and secondary forests in the dry tropics.

Yokohama, Japan, ITTO, CIFOR, FAO, IUCN, WWF International. ITTO Policy Development Series, no.13. 84p. ISBN: 4-902045-01-X.

117. The political economy of Indonesia's oil palm subsector

Casson, A.

The Indonesian oil palm subsector expanded rapidly after 1967. Much of this growth has occured in the last decade and posed a significant threat to Indonesia's existing forest cover. It has also displaced local communities and increased social conflict. This chapter attempted to determine where the growth has already occured, what effect this growth has had on forest cover, and the implications of further growth on Indonesia's forests. Over the last decade, oil palm development has primarily occured within Sumatra and increasingly in Kalimantan. Plantations development has been directed to Eastern Indonesia primarily in Kalimantan and Irian Jaya but industry was more interested in developing plantations in Sumatra because it has necessary infrastructure required to process palm oil and labours. This has increased the potential for further expansion to be located within production forest, limited production forest, and, increasingly, protected forest areas. However, companies continue to apply for concessions in Kalimantan and Irian Jaya so that they can gain access to timber readily available in these outher islands. This explains why many oil palm developments are occuring on production forestlands in Kalimantan and Irian Jaya. The allocation of production forestland to oil palm developer has accelerated conversion and environmental degradation.

In: Colfer, C.J.P., Resosudarmo, I.A.P. (eds.). Which way forward?: people, forests, and policymaking in Indonesia. 221-245. Washington, DC, Resources for the Future and Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

Policy and Extrasectoral Issues

118. Amazon deforestation revisited

Kaimowitz, D.

This paper reviews the shifts in thinking as reflected in eight recent books that discuss deforestation in the Amazon. It looks first at whether the land uses that replace forests are profitable and sustainable without subsidies and then examines how technology, tenure, credit, and roads affect deforestation and the role of large and small landowners. It then analyses the potential of sustainable land-use alternatives for reducing deforestation. The following sections look at logging and forest fires. Drawing on the previous discussion, it then becomes possible to assess who will benefit from clearing forests or conserving them and who may pay the costs. Subsequent sections discuss indigenous territories and protected areas, macroeconomic issues, decentralization, and urban-rural interactions. Several other books under review examine other issues in addition to deforestation and consider regions outside the Amazon. This review concentrates only on the parts of these books that focus on Amazon deforestation. Most of the discussion focuses on Brazil, Bolivia, and Ecuador.

Latin American Research Review 37(2): 221-235.

119. Bosques secundarios y manejo integrado de recursos en la agricultura migratoria por colonos en Latinoamérica

Smith, J., Finegan, B., Sabogal, C., Ferreira, M.S.G., Siles, G., van de Kop, P., Diaz, A.

This paper discusses the socioeconomic, policy and ecological opportunities and constraints to the regeneration and management of secondary forests (SF) on small-scale colonist farms in three Latin American countries. So far there has been little recognition of SF as a forest resource. Survey data show that SF occupy around 20% of farm area and are the only forest resource accessible to the rural poor in older settlement areas. Most SFs are secondary forest fallows. Although SFs make an important contribution to agricultural productivity, their contribution to cash income is low relative

to agriculture. Econometric analysis identifies threats to the existence of SF at different stages of the frontier development process. Multi-resource forest inventories interpreted in the context of frontier development identify potential management strategies for increasing their contribution to incomes. Results show that different strategies are required for different frontier development stages and that at each stage management needs to be complemented by policies to reduce threats to the existence of SF. In early phases of frontier development, policies to prevent further conversion of residual forest to agriculture are required to maintain productivity of SF at later phases. Management for high timber productivity shows potential at early phases. At later phases, policies for reducing pressures for shorter fallows are indicated, while management focuses on multiple use management. Payments for carbon stock protection at both phases may induce farmers to maintain some areas of SF on a permanent basis.

Turrialba, Costa Rica, CIFOR, CATIE. Serie Técnica. Informe Técnico/CATIE, no. 332. 33p.

120. Crossing spatial analyses and livestock economics to understand deforestation processes in the Brazilian Amazon: the case of Sao Felix do Xingu in South Para

Mertens, B., ***Poccard-Chapuis, R.***, ***Piketty, M.G.***, ***Lacques, A.E.***, ***Venturieri, A.***

The Amazon is the largest tropical forest area on earth, and has been undergoing rapid deforestation for the last four decades. In the Brazilian Amazon, large-scale pasture for cattle ranching and soybean production are the main land uses, leading to a yearly deforestation rate of 0.5%. These conversions are mostly located in frontier areas distributed along the so-called “arc of deforestation”. Within this large zone, various land use change processes are interacting through several modes of land valuation and organisation. From several case studies in the State of Pari (Brazil), the current project aims at analysing how landscape dynamics are related to infrastructure development, ecological conditions, zoning policies and to the evolution and the

organisation of the production, consumption and marketing chains of livestock products. This paper presents the results for one test site, the region of Sao Félix do Xingu, South of Pari. This region is the focus of land speculation, cattle expansion, and deforestation. Road construction, investments in electrical energy, financial credit for cattle, and the land reform policies have all fuelled this process. All these factors make this region one of the most dynamic agricultural frontiers in the Brazilian Amazon. The main objective of the paper is to improve our understanding of deforestation processes by crossing spatial analyses and livestock economics studies, and to characterise the role and impact of various natural and anthropic factors in the location and development of the main types of farmers, and their policy implications.

Agricultural Economics 27(3): 269-294.

121. Deforestation and forest degradation in lowland Bolivia

Pacheco, P.

This chapter analyses the causes of deforestation and forest degradation in the Bolivian Amazon. The study predicated on the assumption that the factors involved have less to do with the forest sector itself than with events that take place within the country's political, economic, and social arenas. This paper reviews the situation of land tenure in the Bolivian lowlands and summarises the information about the magnitudes of deforestation and forest degradation until 1985 and followed by the evaluation on the changes in forest cover associated with structural adjustment policies. It concludes that deforestation rates in lowland Bolivia have been relatively low compared to those observed in other countries where tropical forests are found. Recent policies to stimulate the export of soybeans and wood products have had important positive effects. However, long-term benefits could have been greater, and environmental costs could have been lower, if development policies had been linked to initiatives that led to a more equal distribution of land and forest resources.

In: Wood, C.H and Porro, R. (eds.). Deforestation and land use in the Amazon. 66-94. Gainesville, University of Florida Press.

122. The dynamic of deforestation and economic growth in the Brazilian Amazon

Andersen, L.E., Granger, C.W.J., Reis, E.J., Weinhold, D., Wunder, S.

This book presents an empirical analysis of the development processes and the economic of Brazilian Amazon deforestation using a large data set of ecological and economic variables. It presents summary statistics and analyse trends for a number of important variables as well as developing econometric models to analyse policies and compare outcomes under different scenarios. The analyses based on municipality level data for the entire region at several points in time between 1970 and 1996. Throughout the book the models and analyses pay due respect to the dramatic spatial differences in vegetation, soil, rainfall, market access, population density, and many other important factors. By observing the dynamics of land-use change over such a long period this book provides quantitative estimates of the long-term economic costs and benefits of both land clearing and government policies such as road building.

Cambridge, Cambridge University Press. 259p. ISBN: 0-521-81197-X.

123. Economic crisis and forest cover change in Cameroon: the role of migration, crop diversification, and gender division labor

Sunderlin, W.D., Pokam, J.

Dating from 1986 when a devastating economic crisis began, the rate of deforestation has increased significantly in the humid forest zone of Cameroon. Research was conducted in 1997-98 to know how the crisis has affected socioeconomic conditions, and how these changes have in turn affected forest cover. A survey of 4,078 households in 38 villages tested three hypotheses concerning the effects of the crisis on migration, cropping patterns, and the gender division of labor. Among the key findings are that: (1) on average, population in the villages has grown considerably in response to

immigration, slowed rural to urban migration, and recent net "return" migration; (2) there has been a massive turn to production of food crops; (3) new food crop production tended to be at the expense of forest cover because many farmers retained their cocoa and coffee plots; (4) men are now highly involved in the production of food crops; and (5) the amount of forest clearing in 1996 was largely a function of increased food crop production and distance from the capital city. Policy efforts aimed at controlling inappropriate deforestation must recognize that macroeconomic conditions can have an important role in influencing migration, food crop choices, and gender division of labor, which in turn influence forest cover change.

Economic Development and Cultural Change 50(3): 581-606.

124. Evolution of land policies and legislation in Malawi and Zimbabwe: implications for forestry development

Mataya, C., Gondo, P., *Kowero, G.S.*

This paper describes the effects of the colonial and post-colonial land policies and legislation on the management and utilisation of natural woodlands in Malawi and Zimbabwe. The two countries share similar patterns of land ownership; customary or tribal trust land designated by colonial governments for settlement and cultivation by the indigenous populations; private land mostly alienated from local communities for commercial farming and ranching; initially by white settlers and later officially sanctioned by post-colonial governments; and public land appropriated by governments for purposes of establishing national parks and forest reserves. The private and public land tenure, did not only reduce the size of land available to indigenous communities for agricultural and non-agricultural activities, but also compromised the roles and power of traditional authorities in controlling and managing natural resources including Miombo woodlands. The major factors, which appear to have contributed to rapid deforestation and land degradation, include increases in population pressure, poverty

and failure by governments to urgently provide effective policy guidelines on land management and administration regarding the utilisation of forests and natural resources.

Zimbabwe Science News 36(1+2): 18-27. ISSN: 1016-1503.

125. Forest carbon and local livelihoods: assessment of opportunities and policy recommendations

Smith, J., Scherr, S.J.

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of mitigating greenhouse gas emissions and contributing to sustainable development. Basic agreement on core elements was reached in 2001, including the decision to allow afforestation and reforestation projects. However, it is not yet clear what rules will address social concerns. Many types of projects could potentially contribute to local livelihoods and ecosystem restoration, as well as to carbon emission offsets, including those using natural forest regeneration, agroforests, improved forest fallows and agroforestry. Averted deforestation projects with multiple-use forestry, though not eligible in the first CDM period, could be reconsidered in the future. Such projects can be designed to rigorously meet CDM criteria for carbon impact, additionality, leakage and duration. If suitably targeted, they can be cost-effective for investors in terms of production costs. Some, however, may have higher transaction costs. Proactive efforts are needed to enable community-based CDM forestry projects and local land uses to compete effectively in carbon trading markets with projects managed by large-scale operators. The CDM should require mandatory social impact assessments, harmonise the CDM with social principles of other global conventions, promote measures to reduce transaction costs and explicitly include assisted natural regeneration and forest rehabilitation in the definition of afforestation and reforestation. Most developing countries will require policy action to establish the enabling conditions for forest carbon projects to contribute on a large scale to local livelihoods, integrate CDM projects within national

development frameworks, attract investors, establish social criteria, secure local rights and promote support services for local people. Cost-effective project design requires attention to local participation, transparency, suitable compensation mechanisms, strategies to reduce transaction costs and risks and extend the scale of projects, and to enhance profitability of land uses.

CIFOR Occasional Paper, no.37. 45p.

126. Forestry research, innovation and impact in developing countries - from economic efficiency to the broader public good

Spilsbury, M.J., Kaimowitz, D.

This paper applies a broad-brush perspective to forestry research, innovation and research capacity in developing countries and the impacts linked to it. The authors reflect upon successes and failures in the hope of improving the focus and relevance of future efforts and highlight emerging research approaches aimed at ameliorating some of the deficiencies. They begin by examining the role of informal research and the emergence of formal research in developing countries. They note that for most of the last century, forestry research was predominantly focused on achieving "efficiency gains" in forest production systems, and that this focus was shared by both private enterprise and prevailing approaches to broader "development" in developing countries. They assert that there has been difficulty in realising research-induced efficiency gains in the developing tropics and suggest that the underlying reasons often relate to insecure land tenure, resource, conflicts, lack of access to capital, large power imbalances and corruption within society. Changing research priorities are increasingly directed towards improvement of rural livelihoods in the context of sustainable resource management. They observe that forestry-related research capacity in developing countries is weak and under-resourced and there is commonly a mismatch between the skills available in the "installed capacity" of public sector research institutions and those required for the topics

that have the highest potential to generate public goods. The authors propose that the focus should place a greater emphasis on policy research to relieve the constraints highlighted above and believe that impact can be enhanced through integrated "action research" across disciplines, scales and stakeholders.

Forestry Chronicle 78(1): 103-107.

127. Forests and the Kyoto protocol: implications for Asia's forestry agenda

Smith, J.

Economists have long argued that payment for the environmental services of forests could contribute to forest conservation and sustainable use. The Clean Development Mechanism (CDM) of the Kyoto Protocol could make this concept a reality by allowing carbon-emitting industries in developed countries to meet a part of their emission reduction commitments by financing forestry projects that sequester carbon or protect carbon stocks in developing countries. The author argues that the CDM should not be seen as yet another silver bullet for saving tropical forests. However, there are ways to implement the CDM that could enhance the effectiveness of more conventional approaches and leverage support from stakeholders with conservation and development agendas. Implementing the CDM purely as a tool for carbon farming could derail the new forestry agenda. Proactive efforts will be needed in crafting CDM rules and designing projects such as embed CDM projects in an integrated program for sustainable forest management, prevent perverse incentives, use the CDM to leverage financial support for other environmental services and livelihood benefits.

In: Wikramanayake, E. (et al.). Terrestrial ecoregions of the Indo-Pacific: a conservation assessment. 182-185. Washington, DC, Island Press.

128. A goal programming model for planning management of Miombo woodlands

Guveya, E., Sukume, C.

This study used a Goal Programming approach to investigate the effects of changes in agricultural policies and labour supply due to deaths in farming households, on use of woodlands under two regimes; namely one where utilization of forest resources was restricted to within sustainable levels and under another where this restriction was relaxed, i.e. an open access situation. The study sites for this work were Mutangi in Chivi district and Mafungutsi in Gokwe districts. The results from the study indicate that households in communal areas are highly differentiated with regards to ability to satisfying family sustenance goals; relatively poor households depend on woodlands for a significant part of their income needs but richer families are more efficient in harvesting woodlands; increase in agricultural product prices or increase in crops yield tend to increase harvesting of woodland products among the better off and reduce woodland harvests by the poorer households; and loss of a member of a household increases the degree of poverty especially among the relatively poor with the greatest impacts being felt with loss of female members of households.

Zimbabwe Science News 36(1+2): 42-51. ISSN: 1016-1503.

129. Illegal logging in Indonesia: a disturbing legalization trend

Obidzinzki, K., Suramenggala, I., Levang, P.

This article points to the importance of systems and praxis-oriented approach in understanding the problem of illegal logging in Indonesia. In recent years there has been a tendency on the part of industry analysts and forestry sector observers to view the seemingly irremediable spread of illegal logging in the country in isolation as a result of disassociated and premeditated criminal acts. This paper proposes a different view of the problem. It suggests that illegal logging is not a simple criminal offense, but a complex system with multiple stakeholders at its base. It further argues that illegal

logging is also away for local people to get a share of the profits from logging profits denied by the central government for the last thirty years. Recent developments, like the possibility for local governments to grant small-scale concessions to communities, have had a tremendous impact on illegal logging. Such small concessions now enable illegal timber operators to conduct their business legally. As a result local communities are courted by so-called investors who covet their forests. With the implementation of regional autonomy in Indonesia, local politicians also find it in their interest to support small concessions. Recent attempts by the central government to control this new rush on forests have failed. Local governments are no longer willing to comply with the injunctions of the central government. The only way for the Ministry of Forestry to regain control (or at least to minimize unsustainable logging practices) would be to acknowledge this new paradigm and find a place for it within the overall forest policy. Long-term solutions to the problem will probably involve a combination of community-based logging and joint-venture arrangements with industrial concessionaires.

Bois et Forets des Tropiques 270(4): 85-96.

130. Impact of crop producer price changes on quantities of woodland products collected by communal households in Chivi, Zimbabwe

Mutamba, M.

The Zimbabwe woodlands are an important part of the rural households' livelihood system as they meet requirements for food, energy, construction materials and cash. This study uses linear programming approaches to understand how households best allocate scarce resources in meeting their requirements for food, energy, construction materials and cash, from woodland resources and agricultural production. Based on these relationships further analysis is done to understand how changes in output prices of different commodities produced by these households will affect quantities of woodland products that are harvested. The data

used for this study was mainly collected in a questionnaire survey that covered ten villages in the Romwe community in Chivi Districts, southern Zimbabwe.

Zimbabwe Science News 36(1+2): 37-41.

131. Macroeconomic policies and forestry in Zimbabwe

Mabugu, R., Kowero, G.S.

This paper discusses the potential impacts of macroeconomic policies on forestry in Zimbabwe. Over the period 1980-2001, macroeconomic policies have swung from a centrally controlled economy to a liberalized economy. In general, Zimbabwe's experience suggests tha macroeconomic policies have had negative effects on forestry development. Macroeconomic policies have been implemented in a way that has led to widespread de industrialization of core manufacturing and to the stagnation of agriculture. In addition tensions have grown in the agricultural sector when implementing land reforms. The lay-offs in the manufacturing sector have led people to seek livelihoods in the informal sector or in agriculture that has led to migration of populations to rural areas. This has placed a heavier burden on the fragile ecosystems and the already scarce natural resources in communal areas. There is therefore need to implement sound microeconomic policies together with complimentary measures in order to address difficulties in the forestry sector.

Zimbabwe Science News 36(1+2): 28-36. ISSN: 1016-1503.

132. Making forest carbon markets work for low-income producers

CIFOR

Forest carbon projects could potentially enhance the incomes and environment of hundreds of thousands, if not millions, of some of the world's poorest people, while providing real, climate-significant carbon offsets. But this opportunity will only be realised by adopting suitable rules for the CDM, applying innovations by business and social entrepreneurs to

lower transaction costs, and taking public action to reduce risks to both investors and communities. This infobrief provides key points for making forest carbon markets work for low-income producers, and recommendations for the Clean Development Mechanism.

Bogor, Indonesia, CIFOR. CIFOR Infobrief, no.2. 4p.

133. Making markets work for forest communities

Scherr, S.J., White, A., Kaimowitz, D.

This policy brief lays out strategies to improve the contribution of forest markets to local livelihoods. It is offered as a first step in a longer-term effort to promote forest markets that enhance the livelihoods of poor people while conserving forest resources. While forests are providing critical safety nets and subsistence for the poor there are specific niches where large numbers of low-income producers have-or could develop-competitive advantage. It is vital to alter the policies that hinder forest producers' income opportunities, and to engage the private sector in forging successful community business partnerships.

Washington, DC, Forest Trends and CIFOR. 22p. Policy brief
ISBN: 0-9713606-1-8.

134. Making the law of the jungle: the reform of forest legislation in Bolivia, Cameroon, and Indonesia

Silva, E., Kaimowitz, D., Bojanic, A., Ekoko, F., Manurung, T., Pavez, I.

The debates over sustainable development put environmental issues squarely on the policy agendas of nations around the world. Throughout, the fate of the forest occupied center stage, and domestic and international pressure induced many developing nations to reform their forest policy, which frequently culminated in new forest legislation. Yet the process that generated those new forest laws has not received much attention and a number of questions remain unanswered. What factors determine whether governments reform forest laws

in the first place? What conditions influence the direction of reform? What role does expert advice play in the process? This paper applies a political economy framework that focuses on the interplay between international structure, domestic structure and ideas to answer those questions. It argues that this approach offers the best tools for analyzing the actors and interests involved in the policy process and their power resources. Among the most significant findings are that the World Bank is not as influential in the end as is commonly perceived. Moreover, in democratic developing countries organizations that focus almost exclusively on cultivating their relationship with state ministries to influence forest policy reform usually see their efforts flounder because the legislature, especially legislative committees, is a more significant policy making arena than had been considered here before.

Global Environmental Politics 2(3):63-97.

135. Pobreza y bosques en America Latina: una agenda de accion

Kaimowitz, D.

Approximately 25 millon people live in the main forested regions of Latin America. The forestry sector there directly provides two or three million jobs and perhaps another three or four million people work in related activities. Many poor households use fuelwood, hunt wild animals, and benefit from the environmental services forests provide. A pro-poor forest agenda for the region should include greater tenure rights over forests for small farmers, indigenous people, and local communities, fewer and simpler forestry regulations, programs that provide credit and information about markets and technology, better working conditions for forestry workers, and efforts to bring peace to forested regions.

2nd Congreso Forestal LatinoAmericano, Guatemala, agosto de 2002: memoria. 29-33. Ciudad Guatemala, Plan de Accion Forestal para Guatemala (PAFG). ISBN: 99922-794-0-0.

136. The role of forests in addressing global problems: what economic valuation methods won't tell us

Kaimowitz, D.

Early forest valuation studies let many people to believe these methods would produce results that convinced policymakers of the economic value of forests. More recent studies suggest the only environmental service that forests provide with high economic value is carbon sequestration. Thus one is forced to conclude that either traditional economic methods do not provide an appropriate way of valuing forests or that timber and carbon are the only forest products and services that are really valuable. This paper supports the former view. It notes that: 1) forests provide important safety nets to power people, 2) good forest governance can reduce violent conflict, and 3) forests contribute many environmental services that we still do not fully understand.

In: Verweij, P. Understanding and capturing the multiple values of tropical forests. Proceedings of international seminar on valuation and innovative financing mechanisms in support of conservation and sustainable management of tropical forests, The Hague, 20-21 March 2002. 1-5. Wageningen, Netherlands, Tropenbos International.

137. Social, environmental and economic dimensions of forest policy reforms in Bolivia

Contreras-Hermosilla, A., Rios, M.

This paper looks at the experience of designing and implementing policy reforms in the Bolivian forestry sector. It does not attempt to evaluate the process of reform itself but rather to examine the main obstacles faced in its planning and implementation and how the lessons of the Bolivian experience could be transferred to other countries attempting similar changes. Given the drastic nature of reform, it is not surprising that problems along the way were numerous. However, despite difficulties, progress has been significant. This, largerly was due to a successful alliance between committed Bolivian reformers and a very effective effort by international assistance agencies. Much remains to be done. However, the Bolivian experience shows that a dedicated

government can do much to modify the management of the national forest resources.

Washington, DC, Forest Trends and CIFOR. 39p. ISBN: 0-9713606-5-0.

138. Spatial regression analysis of deforestation in Santa Cruz, Bolivia

Kaimowitz, D., ***Mendez, P.***, *Puntodewo, A.*, *Vanclay, J. K.*

This paper applies a spatial economic regression model to analyze the relation between deforestation in the period from 1989 to 1994 and access to roads and markets, ecological conditions, land tenure, and zoning policies in Santa Cruz, Bolivia. The data come from a Geographic Information System (GIS) database compiled by the Natural Resources Department of the Santa Cruz Government. Locations closer to roads and the City of Santa Cruz and that have more fertile soils have a greater probability of being deforested. The same applies to colonization areas. National parks and forest concessions seem to protect forests. Areas with rainfall levels optimal for soybeans have higher deforestation than drier or wetter areas.

In: Wood, C.H. and Porro, R. (eds.). Land use and deforestation in the Amazon. 41-65. Gainesville, University Press of Florida.

139. Toward a pro-poor forest science

Kaimowitz, D.

Two distinct visions of tropical forests co-exist in the scientific literature. One is more neo-Malthusian. The other is more pro-poor. The evidence increasingly favours the latter, although many uncertainties remain. The pro-poor literature emphasises that poor families create and manage forests as well as destroy them, that the forests and the communities have evolved together, and that many forestry regulations and conservation initiatives hurt the poor without helping the forest. For those that support a more pro-poor vision, the challenge is to find ways to reach broader audiences with their message. That will require communicating in ways

people can relate to and convincing them that they and the rural poor share many common interests.

IDS Bulletin 33(1):123-126.

140. Transaction costs of forest carbon projects

Milne, M.

This report provides some preliminary estimates of transaction costs, especially to project developers and investors and outlines the steps involved in establishing and implementing a number of forest-carbon projects. In order to provide more comprehensive policy recommendations on how to minimise transaction costs, more analysis is required on the distribution of transaction costs between the stakeholders. Currently, this type of study is constrained by the lack of an international carbon market, the early stages at which most projects are, and the limited number of forest-carbon projects in operation. As the carbon market develops, more operational entities are likely to enter, resulting in reduced transaction costs for individual projects. In terms of the size of transaction costs in the carbon market, this will depend on the institutional capacity and policy environment of both project type (annex 1) and host countries, and the establishment of new institutions to provide services currently implemented by individual projects and their partners.

Notes: Report submitted to the University of New England, as part of the ACIAR Project ASEM/1999/93, The role of carbon sequestration credits in influencing the economic performance of farm forestry system.
Full text available at: http://www.une.edu.au/febl/Econ/carbon/wpapers.htm
Armidale, NSW, University of New England. 77p.

141. Who cares about forests?

Sayer, J. A.

Abstract not available

In: Brown, A.G. (ed.). Pathways to sustainable forest management. Proceedings of the Second Hermon Slade International Workshop, Ubud, Bali, 5-8 June, 2001. 6-10. Parkville, Vic., Australia, ATSE Crawford Fund. I
SBN: 1-875618-72-4.

Author Index

Keyword Index

D

CIFOR is one of the 16 Future Harvest centres of
the Consultative Group on International Agricultural Research (CGIAR)