

Towards Sustainable Management and Development of Tropical Secondary Forests in Asia

The Samarinda Proposal for Action



CONTENTS

Executive summary	2
Background	4
The Samarinda Workshop	6
What are secondary forests?	7
Stages of forest land use intensification	9
Status, importance and potential of secondary forests	11
The need for action	17
Major issues and recommendations	19
Our vision	24
Asian secondary forest network	25
Acronyms	26

Cover photo by Zhou Zaizhi

The analysis and recommendations summarised in this policy brief emerged from a workshop titled "Tropical Secondary Forests in Asia: Reality and Perspectives", held in Samarinda, Indonesia between April 10-14, 2000.

The workshop organisers would particularly like to express their appreciation for the collaboration and support extended by the Forestry & Estate Crops Research and Development Agency (FORDA), from the Ministry of Forestry and Estate Crops (MOFEC), Indonesia.

Prior to the workshop, scientific experts from different Asian countries prepared country papers on secondary forest status, dynamics, and opportunities.

The workshop was attended by 39 participants from governmental and non-governmental research and development organisations working in Cambodia, India, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, tropical China, and Vietnam. Regional and international organisations participating included APAFRI, CIFOR, EC-LNV, FAO, GTZ, ICRAF, IUCN, SEARCA, and Tropenbos.

A volume comprising the set of papers arising from the workshop is under preparation.

December 2000

EXECUTIVE SUMMARY

SECONDARY FORESTS comprise a large and growing proportion of the forest cover in the tropics and are very important at the local, national, and regional levels for a wide range of products and environmental services. However, knowledge and expertise regarding secondary forests is still limited, and they are inadequately addressed in forest policy, planning, and research. Interest in secondary forests, however, is emerging both at the national and the international levels starting with a 1997 workshop in Latin America and the subsequent formation of a regional coalition to co-ordinate research and other initiatives related to secondary forests. A similar workshop focusing on Asia was held in Samarinda, Indonesia from April 10-14, 2000 to raise awareness about secondary forests, promote their sustainable management, and guide their progression along desirable pathways. The analyses and recommendations presented herein arose from the Samarinda workshop process.

Based on a working definition of secondary forests, five major categories were identified for tropical Asia: 1) post-extraction secondary forests, 2) swidden fallow secondary forests, 3) secondary forest gardens, 4) post-fire secondary forests, and 5) rehabilitated secondary forests. Secondary forests regrow after heavy intervention and have the potential to be managed as a renewable resource. They are very important to local communities, provide many products and environmental services, and may become an even more important source of timber and fibre in the future with the decline in primary forests.

Given the importance and increasing prevalence of tropical secondary forests in Asia, extensive and urgent action is required to manage them sustainably for a wide range of goods and services, and curb their progressive degradation and inappropriate conversion.

As a foundation for such action, participants at the Samarinda workshop developed this vision: "Tropical secondary forests integrated into land use systems at the landscape scale, managed and developed sustainably and equitably for a range of goods and services".

Principal recommendations with regard to tropical secondary forests in Asia were to:

- Integrate secondary forests into land use plans
- Increase knowledge and awareness on all aspects of secondary forests
- Promote policy initiatives favouring sustainable management and use
- Clarify secondary forest tenure among national and local stakeholders
- Develop management strategies based on local needs and knowledge, and
- Ensure better assessment and equitable sharing of costs and benefits related to secondary forest management and use among all stakeholders.

Actions on these recommendations will require collaborative effort by research institutes, development agencies and donors, governments, local communities, non-governmental organisations (NGOs) and the private sector.

So as not to lose the momentum developed at the Samarinda workshop, participants agreed that a top priority should be the development of a coalition of national, regional, and international research and development organisations for moving forward on secondary forest activities in Asia. A side meeting was held at the IUFRO World Congress in August 2000 to initiate the formation of a regional secondary forest network with an identified strategy and action plan to be implemented over the next few years. At this side meeting, it was decided that a steering group headed by Dr. Appanah from FORSPA, Bangkok would be formed to further pursue the network idea.

BACKGROUND

MUCH TROPICAL PRIMARY FOREST cover decline is accompanied by an increase in the area of tropical secondary forests in Asia, Africa and Latin America. The large-scale transformation of tropical primary forests to secondary forests is largely an undesirable trend that ideally should be averted. However, secondary forests already constitute a large (and growing) proportion of forest cover in the Tropics, and can be very important for a wide range of products and environmental services that could be lost as a result of degradation or inappropriate conversion to agriculture or other land uses. The area covered by secondary forests in the three major tropical regions was estimated in 1990 to be around 532 million hectares, or 29% of the total tropical forest area (compiled from FAO 1990). The area is growing, and at a very fast rate in some countries, as revealed by recent imagery.

Despite their large extent, rapid growth and increasing importance at the local, national, and regional levels for the products and services they provide, tropical secondary forests are inadequately addressed in forest policy, planning, and research activities. There is a general lack of policies regulating their management, use, and conversion; and there is very little ecological, silvicultural, and socio-economic knowledge regarding secondary forests to feed into policy development.

Interest in secondary forests, however, is emerging both at national and international levels. In June 1997, a workshop co-organised by the Amazon Cooperation Treaty (TCA) and the Central American Commission on Forests (CCAB) was held in Pucallpa, Peru to discuss the status of and potential for managing secondary forests in Latin America. The meeting led to

the formation of a now expanding Latin American coalition on secondary forests, whose members include regional organisations, FAO, and other institutions engaged in research and development in the region. A few months later, at the XIth World Forestry Congress in Antalya, Turkey, in October 1997, more than 150 participants from around the world who met in a side meeting organised by the TCA and CCAB adopted a set of recommendations to raise awareness about the importance of tropical secondary forests. Subsequently in November 1997, a workshop co-organised by CIFOR and Cirad-Forêt was held in Bogor, Indonesia, to begin to synthesise information on the management of secondary and logged-over forests.

THE SAMARINDA WORKSHOP

AS A FOLLOW-UP to the processes initiated in 1997, a workshop for Asia was held in Samarinda, Indonesia between April 10-14, 2000. The workshop, titled "Tropical Secondary Forests in Asia: Reality and Perspectives", was organised by the Center for International Forestry Research (CIFOR) in collaboration with the German Agency for Development (GTZ) and the National Reference Center for Nature Management of the Netherlands (EC LNV).

The objectives of the workshop were to:

- Identify research and development opportunities related to tropical secondary forests in Asia.
- Generate proposals to promote the management and progression of secondary forests along desirable pathways to obtain a sustained flow of valuable goods and services, and
- Raise awareness about secondary forests among policy makers and the scientific and development community and explore the importance that should be given to this theme in policies, research, and development.

The analysis and recommendations presented in this briefing paper are a product of the Samarinda workshop process.

WHAT ARE SECONDARY FORESTS?

FOR THE PURPOSES of the Samarinda workshop, secondary forests were defined as

Forests regenerating largely through natural processes after significant human disturbance of the original forest vegetation at a single point in time or over an extended period, and displaying a major change in forest structure and/or canopy species composition.

Key characteristics of this definition:

- The original forest vegetation was significantly disturbed.
- The disturbance to the original forest vegetation was human-initiated.
- The disturbance may have occurred all at once or progressively.
- Most of the regeneration of the area is spontaneous.
- The disturbance and subsequent regeneration has resulted in major changes in forest structure or canopy species composition, or both.

Common types of forests in Asia that would be included under such a definition are:

1. *Post-extraction secondary forests.* Forests regenerating after significant reduction in the original forest vegetation through tree extraction at a single point in time or over an extended period.

Forest → Harvest → Regeneration

2. *Swidden fallow secondary forests.* Forests regenerating in woody fallows of swidden agriculture for the purpose of restoring the land, for cultivation again.

Forest → Clear → Burn → Crop → Fallow
↑

3. *Secondary forest gardens.* Considerably enriched swidden fallows, or less intensively managed smallholder plantations where substantial spontaneous regeneration is tolerated, maintained, or even encouraged.

Forest → Low-intensity smallholder plantation + Natural regeneration

or

Forest → Clear → Burn → Crop → Considerably enriched fallow

These secondary forests have a substantial planted or tended component, but the majority of the vegetation is of spontaneous origin. Where the planted or tended component increases, this type turns into agroforests.

4. *Post-fire secondary forests.* Forests regenerating after significant reduction in the original forest vegetation due to a human-induced fire or succession of fires. Most forest fires in tropical Asia have occurred as a result of some human action.

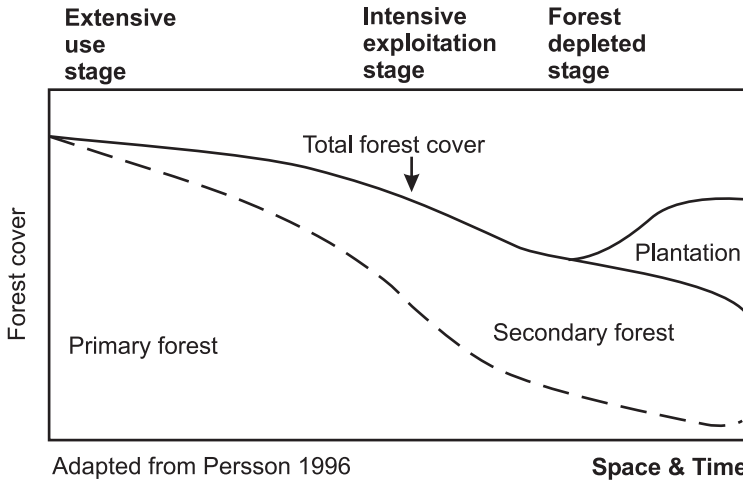
Forest → Fire → Regeneration

5. *Rehabilitated secondary forests.* Forests regenerating on degraded lands*, often aided by rehabilitation efforts, or the facilitation of natural regeneration through measures such as protection from chronic disturbance, site stabilisation, water management and planting.

Forest → Degraded land → Rehabilitation + Regeneration

* Degraded lands: Formerly forested lands severely impacted by repeated or intensive disturbance (such as mining, repeated fires or overgrazing), with consequently inhibited or delayed forest regrowth. These include barren areas, *Imperata* grasslands, brushlands, and scrublands.

STAGES OF FOREST LAND USE INTENSIFICATION



THE THREE STAGES of forest use intensification identified for tropical Asia provide a useful frame of reference for discussing secondary forest dynamics, influencing factors, and opportunities based on a country's or a region's stage of forest land use. The stages can be considered broadly at the national level and more specifically at the local level for planning and policy at both scales. This framework makes it possible to extrapolate from particular country experiences to develop general principles about policies and management strategies required to guide the development of secondary forests along desirable pathways.

1. Extensive Use Stage

Primary forest cover - plentiful

Population density - low

Intensity of forest/land use – low except in pockets

Main actors – indigenous communities

Secondary forests – limited

2. **Intensive Exploitation Stage**

Primary forest cover - decreasing

Population density - increasing

Intensity of forest/land use – intense exploitation of forest resources at frontier, decreasing land availability and resource conflicts, land degradation sets in

Main actors – timber industry, mining industry, plantation companies, governments, migrants, indigenous people

Secondary forests – increasing in absolute and proportional area

3. **Forest Depleted Stage**

Forest cover - low

Population density - high

Intensity of forest/land use – mostly intensive; low land availability and high extraction pressures; extensive degraded land; increasing interest in forest conservation, reforestation, and sustainable management for environmental and local needs

Main actors – governments, local communities, NGOs

Secondary forests – large proportion of forest cover

STATUS, IMPORTANCE AND POTENTIAL OF SECONDARY FORESTS

Status of secondary forests in Asia

IN TROPICAL ASIA, secondary forests are estimated to total 88.3 million ha of land, or 28% of all forest area (compiled from FAO 1990 data). In many countries that are farther along on the continuum of forest use intensification and have low levels of primary forest cover, such as India, Nepal, Sri Lanka, tropical China, the Philippines, Thailand, and Vietnam, most forests are secondary and secondary forests are considered to be a valuable resource. Remaining primary forests are mainly in remote, inaccessible areas and are usually protected. Most forest products are obtained from secondary forests, and high extraction pressures combined with poor regeneration may lead to degradation. In the Philippines, post-extraction secondary forests are the main source of industrial timber. In Nepal, rehabilitated secondary forests are highly valued by local communities for products and environmental services. In parts of China, smallholders provide commercial small-diameter timber from secondary forests.

In other countries that are currently experiencing intense exploitation of their forest resources, such as Indonesia, Malaysia, Cambodia, and Laos, there are large and expanding areas in secondary forest, but these are generally undervalued and susceptible to degradation and inappropriate conversion.

Distinguishing characteristics of secondary forests

1. Forest regeneration occurs after heavy intervention.
2. The resource is renewable; it can be used and regrown.
3. The forests are in developmental stages, with changing structure and/or composition.
4. Secondary forests (particularly more mature ones) are often better providers of environmental benefits such as watershed and soil protection, land stabilisation, and biodiversity values as compared with plantations and simple agroforestry systems that have a lower proportion of natural vegetation and structural complexity.
5. Secondary forests may be very important to local communities. They are often an integral part of production systems, are more accessible than primary forests and may harbour large numbers of desirable species (some deliberately promoted or planted). They can meet a diversity of local needs — for fuelwood, fodder, fruits, edible plants, construction wood and medicines — and help reduce risk in the event of crop failure and other catastrophes.
6. Secondary forests are increasingly important as a source of timber and fibre as primary forest resources decline. They may become a major source in the future, especially given the high cost of establishing and maintaining plantations and the greater vulnerability of plantations to pests and fire.
7. The environmentalists' stigma associated with exploitation of primary forests is not extended so much to use of secondary forests, and secondary forests could be used to serve both conservation and production needs.

Post-extraction secondary forests (PESF)

These forests constitute large areas in most countries throughout tropical Asia and are on the rise in regions in the intensive exploitation stage (such as Borneo) following severe logging of primary forests. In countries farther along on the continuum of forest land use intensification and perhaps in drier regions, local extraction of forest products – rather than commercial logging – is generally the dominant influence. PESF have considerable economic value for wood-based industries in countries such as Indonesia, Malaysia, the Philippines, and tropical China. In all countries, these forests are important for meeting subsistence needs of local people for non-timber forest products and fuelwood, and could be a source of some cash income as well. Illegal logging in PESF may be a source of major but invisible cash income. Known environmental values of PESF include biodiversity conservation, erosion and flood control, and watershed functions.

Most PESF are heavily threatened by excessive extraction pressures, poor management, overlapping land tenure, fires and land degradation, and arbitrary conversion to other land uses. So far in most countries there has been inadequate policy focus and/or implementation on PESF. However recent trends in policies (e.g., clarification of tenure) and market developments (e.g., for small-diameter timber) increase the potential to sustainably manage and guide the progression of secondary forests along desirable pathways.

Swidden fallow secondary forests (SFSF)

Swidden agriculture is widely practised over much of tropical Asia, but the land area in SFSF is unknown. SFSF aid soil-recuperation and weed-suppression, while also providing farmers with fuelwood, construction wood, and non-timber forest products for household consumption and cash income. The environmental benefits of swidden fallow secondary forests for farmers include restoration of soil stability and fertility following crop-related site degradation, and the enhancement of useful biodiversity. On the landscape level, swidden fallow secondary forests provide continuous forest cover as part of a shifting mosaic. Environmental benefits of this overall forest mosaic relative to permanent agriculture or other non-forest land use include watershed and soil protection, flood control, browse for wildlife, and biodiversity values at the landscape level.

In much of tropical Asia, swidden agriculture has been perceived as a degrading practice and a wasteful use of forest resources, and policies have mostly been directed at curbing the practice. However many of these attempts have been largely unsuccessful because of a lack of alternative livelihood options for local people. Areas marked by land scarcity, conflicts over resource use, high extraction pressures, and limited livelihood options are threatened by decreasing fallow lengths and land degradation. In some regions, there has been a trend towards more intensive agroforests and smallholder plantation systems, with supportive policies and market developments.

Secondary forest gardens (SFG)

SFG are found over much of tropical Asia but are particularly common in Sumatra, Borneo, and parts of mainland Southeast Asia. Examples include the more-extensive damar and rubber gardens, and tembawang or fruit-forest gardens from Indonesia. They are also often in the form of sacred forests. They provide forest products for cash income and subsistence to their owners, and also play an important role in cultural relations that groups have with their environment. They often contain biodiversity useful to the owners, and contribute to carbon storage, water regulation and soil conservation. The cultivated component of SFG may also allow for quicker forest development with associated environmental benefits.

SFG may occur as considerably enriched swidden fallows, or they may be established independently. They may evolve into agroforests, often as a result of higher land pressure or increased commercial exchange with the larger community by owners. Although often they have a secured tenure status because of the respect for tree planting activities, increased commercialisation may lead to privatisation and subsequent sub-division of kinship-held SFG. This threatens the survival of these forests because the constraints to conversion are further reduced. Also, the natural forest appearance of SFG often results in outside agents in search of new land not recognising their tenure status.

Post-fire secondary forests (PFSF)

The extent of PFSF in tropical Asia is unknown, but large areas of such forests potentially exist in Indonesia, Malaysia, and Vietnam, used largely for commercial timber extraction by industry and local communities, and for non-timber resource extraction by local communities. PFSF are relatively poor in species diversity compared with the original forest vegetation, and are threatened by repeated fires and land degradation. There have been limited rehabilitation efforts, as well as limited success in fire prevention (with the exception of some community initiatives). No clear policy or land use planning in regard to PFSF exists at this time.

Rehabilitated secondary forests (RSF)

Current extent, status and importance of RSF in tropical Asia are relatively unknown. However RSF constitute a potential new and emerging resource with changes in policy favoring rehabilitation/reforestation of the large and expanding area of degraded land in tropical Asia. Driving forces for such rehabilitation efforts include wood production, environmental amelioration, fulfilling local livelihood needs, and reducing pressures on remaining primary forests. Until now, most rehabilitation efforts have not succeeded in establishing RSF because of low seedling survival, lack of natural regeneration, inadequate silvicultural knowledge, persistence of chronic disturbance, limited monitoring or follow up activity, and lack of funds for protection. Nonetheless, there have been some successful cases in India, Nepal and Thailand. Changes in policy towards assisted natural regeneration and community protection and management; as also increasing availability of funds and silvicultural knowledge enhance the opportunities for successful development, management, and use of RSF.

THE NEED FOR ACTION

Key problems

- Local communities and commercial enterprises increasingly rely on secondary forests for a wide range of forest products and services given the extensive and accessible nature of this resource base. However, current policy, planning, research, and management activities for secondary forests are inadequate and unable to ensure a sustained flow of desirable goods and services.
- Existing secondary forests are threatened by high extraction pressures and repeated disturbance with poor regeneration, leading to progressive degradation. Factors contributing to secondary forest degradation include large-scale development activities, high population densities, land scarcity and tenure insecurity, and continuing dependence by local people on forest resources.
- There is often little recognition of the economic, social, and environmental values of secondary forests because most of the products and services such forests provide may bypass the cash economy, being used to satisfy subsistence needs or being carried out illegally. Inadequate recognition in turn leads to inadequate policy and planning focus, and informal and arbitrary resource use and transformation.
- Regardless of their condition and existing or potential value, developing secondary forests are often viewed as degraded vegetation and readily converted to plantations or non-forest land use in countries in the intensive exploitation stage without appropriate cost-benefit analysis. This is especially true of swidden fallow secondary forests that have a negative image irrespective of their functionality and importance to local communities.

- When secondary forests are prevented from meeting the demands being made on them because of poor management or high extraction pressures, the pressures on remaining primary forests may increase.

There is thus urgent need to:

- Rationalise and recognise the role and importance of tropical secondary forests in Asia, and all potential stakeholders
- Meet the increasing demands made on them through more sustainable management and use
- Prevent degradation and inappropriate conversion of secondary forests to plantations and non-forest land use
- Develop guidelines and criteria for when conversion would be appropriate and along which pathway, and
- Evaluate the potential of secondary forests to increase or continue providing valuable goods and services in the face of dwindling primary forest cover.

MAJOR ISSUES AND RECOMMENDATIONS

MAJOR ISSUES that limit sustainable and equitable management and use of secondary forests and make them more susceptible to degradation or inappropriate conversion are outlined below, along with recommendations for further action.

Major Issue No. 1

Secondary forests should be viewed as an integrated part of the landscape. Although secondary forests can provide numerous benefits and services to society, it is important to recognise that sustainably managed secondary forests are only one of the optional pathways of development. In some situations benefits to society might be increased if some secondary forests were converted to other uses as part of an overall land use plan.

Recommendations

- Incorporate secondary forests into land use planning at the micro and macro scale using a participatory and equitable approach. Optimise the area, distribution and functionality of secondary forests on the landscape.
- Develop guidelines for when and how to allow the conversion of secondary forests to other land use so that benefits are maximised and equitable over the long term and negative impacts are reduced.

Key actors – research institutes, governments of all levels, and development agencies in participation with local communities, NGOs, and the private sector

Major Issue No. 2

There is inadequate policy focus on secondary forests at the local, national and international levels to promote their sustainable and equitable management and use, prevent degradation and inappropriate conversion, and guide their development along appropriate pathways.

Recommendations

- Recognise secondary forests as a legitimate land cover type with its own distinctive dynamics and related opportunities and threats for policy focus.
- Develop appropriate policies, legal and institutional frameworks at the local, national and international levels specifically to promote the sustainable management and use of different types of secondary forests and guide their progression along desired pathways. For example, logging policies created with primary forests in mind need to be re-evaluated for their relevance to post-extraction secondary forests and modified as necessary. Policies related to catastrophic fires need to consider the development and value of post-fire secondary forests, and how the different secondary forest types affect the occurrence of fire on the landscape as compared with other kinds of land cover.

Key actors – governments, private sector, the proposed Asian secondary forest network, development agencies and UNFF

Major Issue No. 3

There is inadequate data, knowledge and expertise on all secondary forest types throughout the region, including information on ecological, silvicultural, socio-economic, environmental and institutional aspects. The lack of knowledge and expertise affects and influences perceptions

about secondary forests, masks their importance and potential, and often results in poor management or degradation and inappropriate conversion.

Recommendations

- Promote research on and create a knowledge base on all aspects of secondary forests, including an understanding of what sustainability would mean in changing secondary forest systems and how to monitor and manage for it.

Key actors – Research institutes and the proposed Asian secondary forest network

- Develop awareness about the characteristics, importance, and management options for secondary forests among people at the local, national, and international level.

Key actors – The proposed Asian secondary forest network, education and training institutions, NGOs and extension agencies, development agencies

Major Issue No. 4

Most secondary forests have overlapping tenure claims involving the state, the private sector and local communities.

As a result, conflicts over access rights are common, often resulting in unsustainable use and degradation of the resource.

Recommendations

- Clarify secondary forest tenure among national and local stakeholders.
- Clarify use rights of local communities and enhance legal recognition of the same.

Key actors – research institutes, NGOs, and governments

Major Issue No. 5

Lack of cost-benefit assessment and transfer payment mechanisms for secondary forest products and services.

Inadequate assessment and sharing of costs and benefits related to secondary forest management and use could result in resource degradation and inappropriate conversion.

Recommendations

- Determine the beneficiaries, and environmental and economic costs and benefits (including hidden ones and long term ones) associated with management of secondary forests.
- Ensure equitable sharing of such costs and benefits through national and international transfer payment mechanisms.

Key actors – research institutes, NGOs, extension agencies, and governments

Major Issue No. 6

Most planning concentrates on national needs and particular attention needs to be paid to local needs, given the strong involvement of local communities in the management, use and transformation of secondary forests.

Inadequate participation of local stakeholders in policy and planning processes and inadequate consideration of local needs, site conditions, and land use practices may result in degradation and inappropriate conversion of secondary forest resources.

Recommendations

- Consider local needs and demands when managing secondary forests and adapt management strategies to be in tune with local socio-cultural and economic conditions.

- Empower and build the capacity of local people, NGOs, extension agencies, governments, and other local institutions for planning and implementing sustainable and adaptive secondary forest management as part of a local land use strategy.

Key actors – governments and NGOs

OUR VISION

Tropical secondary forests integrated into land use systems at the landscape scale, managed and developed sustainably and equitably for a range of goods and services.

This vision

- identifies secondary forests as a legitimate land cover type for policy and implementation focus
- views secondary forests as an integrated part of land use and production systems at the landscape level
- recognises that a range of goods and services (whether products, environmental services or social benefits) can be obtained through secondary forest management
- calls for sustainability of management, which in the secondary forest context could refer to sustainable production cycles (such as in swidden systems) or to sustaining a stream of benefits that could change as the forest develops, rather than sustaining a particular forest structure or composition in these dynamic changing systems
- notes the need for equity, which could be both inter-generational and intra-generational, in management and benefit sharing, and
- provides a foundation for further understanding and better use of secondary forests, and to guide their development along desirable pathways.

ASIAN SECONDARY FOREST NETWORK

AS A FOLLOW-UP to the initiative that began with the Latin American workshop and the resulting "Pucallpa Declaration", participants at the Samarinda workshop saw the meeting as the start of a process for building up a coalition of national, regional, and international research and development organisations for moving forward with a common vision for tropical secondary forests in Asia.

In order not to lose the momentum on the objectives of the Samarinda workshop and on the importance of secondary forests, participants identified as a priority the formation of a regional secondary forest network with an identified strategy and action plan to be implemented over the next few years. All interested organisations including National Research Institutes (NARS), APAFRI, CIFOR, EC LNV, FAO, GTZ, IUCN, and SEARCA to name a few could form part of this network.

In order to identify the appropriate regional body for co-ordinating the regional network and develop an action plan, CIFOR, APAFRI and FAO convened a side meeting at the IUFRO World Congress in August 2000. At this side meeting, it was decided that a steering group headed by Dr. Appanah from FORSPA, Bangkok would be formed to further pursue the network idea.

ACRONYMS

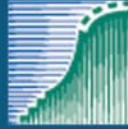
APAFRI	Asia Pacific Association of Forestry Research Institutions
CCAB	Central American Commission on Forests
CIFOR	Center for International Forestry Research
EC LNV	National Reference Center for Nature Management of the Netherlands (formerly IKC)
FAO	Food and Agriculture Organisation of the United Nations
FORDA	Forestry & Estate Crops Research and Development Agency, MOFEC, Indonesia
FORSPA	Forestry Research Support Program for Asia and the Pacific, FAO
GTZ	German Agency for Development
ICRAF	International Centre for Research in Agroforestry
IUCN	The World Conservation Union
IUFRO	International Union of Forestry Research Organisations
MOFEC	Ministry of Forestry and Estate Crops, Indonesia
SEARCA	The SEAMEO Regional Centre for Graduate Study and Research in Agriculture
TCA	Amazon Cooperation Treaty
UNFF	United Nations Forum on Forests

Coordinators:

Unna Chokkalingam, Joyotee Smith,
Wil de Jong, and Cesar Sabogal
Center for International Forestry Research (CIFOR)
Office address: Jalan CIFOR, Situ Gede, Sindangbarang,
Bogor Barat 16680, Indonesia
Mailing address: P.O. Box 6596 JKPWB, Jakarta 10065, Indonesia
Tel: +62 (251) 622 622; Fax: +62 (251) 622 100
E-mail: cifor@cgiar.org
Website: <http://www.cifor.cgiar.org>

Helmut Dotzauer
Integrated Forest Fire Management Project (IFFM)
Ministry of Forestry and Estate Crops-GTZ
Kotak Pos 1202, Samarinda 75001
Kalimantan Timur, Indonesia
Tel: +62 541 732626; Fax: +62 541 733519

Herman Savenije
Expertisecentrum LNV
National Reference Center for Nature Management
POB 30, 6700 AA Wageningen,
The Netherlands
Tel: +31 317 474884; Fax: + 31 317 474930



landbouw, natuurbeheer
en visserij

