

# stability of tropical rainforest margins linking ecological economic and social constraints of land use and conservation environmental science and engineering

[#Tropical rainforest margins](#) [#Ecological stability](#) [#Economic constraints](#) [#Social constraints of land use](#) [#Environmental conservation](#)

Understanding the stability of tropical rainforest margins requires a holistic approach linking ecological, economic, and social factors that influence land use and conservation efforts. This encompasses research within environmental science and engineering to develop sustainable solutions that balance resource utilization with long-term environmental protection and community well-being in these vulnerable ecosystems.

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## Stability of Tropical Rainforest Margins

Tropical rainforests are disappearing at an alarming rate, causing unprecedented losses in biodiversity and ecosystem services. This book contributes to an improved understanding of the processes that have destabilizing effects on ecological and socio-economic systems of tropical rain forest margins, as well as striving to integrate environmental, technological and socio-economic issues in their solution.

## Tropical Rainforests and Agroforests under Global Change

not only for land use systems that depend on the regular supply of rain or irrigation water but also for the future development of natural rainforests as drought stress has been shown to affect tree growth and species composition in old-growth forests (Wright 1991, Walsh and Newbery 1999, Engelbrecht et al. 2007). A drought experiment conducted in a cacao agroforestry plantation showed that this plantation was surprisingly resilient to an induced drought of more than a year (Schwendenmann et al. 2009). However, droughts can have a strong impact on household incomes from agriculture, they strongly affect the vulnerability to poverty and thus have to be analyzed as important exogenous shocks to households, forcing them to adjust their behaviour and develop strategies to cope with these problems. The stability of rainforest margins is a critical factor in the protection of tropical rainforests (Tscharntke et al. 2007). At present, however, rainforest margins in many parts of the tropics are far from stable, both in socio-economic and in ecological terms. For example, protected areas may attract, rather than repel, human settlement, which may be due to international donor investment in national conservation programs (Wittemeyer et al. 2008). An alternative hypothesis is that protected areas might be compromised if leakage takes place, that is, if impacts that would take place inside the restricted area are displaced to a nearby, undisturbed area (Ewers and Rodrigues 2008).

## Land Use, Nature Conservation and the Stability of Rainforest Margins in Southeast Asia

The stability of rainforest margins has been identified as a critical factor in the preservation of tropical forests, e.g., in Southeast Asia, one of the world's most extensive rainforest regions. This book

contains a selection of contributions presented at an international symposium on "Land Use, Nature Conservation and the Stability of Rainforest Margins in Southeast Asia," in Bogor, Indonesia, October 2002. It highlights the critical issue of rainforest preservation from an interdisciplinary perspective, comprising input from scientists in socio-economic, biological, geographical, agrarian and forestry disciplines. The contributions are based on recent empirical research, with a special focus on Indonesia - a country with one of the highest and, at the same time, most endangered stocks of rainforest resources on earth.

#### Biogeographic Patterns of South American Anurans

This book analyzes different facets of anuran amphibian distribution in South America. We integrate alternative biological metrics employing cutting-edge methods to understand the dynamic processes underlying species distribution patterns. By using the modern biogeographic toolbox, we explore how richness gradients, phylogenetic diversity, functional diversity, and range size/endemism distribution of amphibians vary along the continent. Moreover, we present a robust proposal for priority areas for conservation of anurans in South America that maximizes representativeness of distinct biodiversity facets.

#### Engineering Earth

This is the first book to examine the actual impact of physical and social engineering projects in more than fifty countries from a multidisciplinary perspective. The book brings together an international team of nearly two hundred authors from over two dozen different countries and more than a dozen different social, environmental, and engineering sciences. Together they document and illustrate with case studies, maps and photographs the scale and impacts of many megaprojects and the importance of studying these projects in historical, contemporary and postmodern perspectives. This pioneering book will stimulate interest in examining a variety of both social and physical engineering projects at local, regional, and global scales and from disciplinary and trans-disciplinary perspectives.

#### Tropical Rainforests and Agroforests Under Global Change

Tropical rainforests are disappearing due to agricultural intensification and climate change, causing irreversible losses in biodiversity and associated ecosystem functioning. Ecosystem properties and human well-being are profoundly influenced by environmental change, which is often not considered during land use intensification. Understanding these processes needs an integrated scientific approach linking ecological, economic and social perspectives at different scales, from the household and village level to landscapes and regions. The chapters in this book cover a broad range of topical research areas, from sustainable agroforestry management, climate change effects on rainforests and agroforests to integrated concepts of land use in tropical landscapes.

#### Coping with Global Environmental Change, Disasters and Security

Coping with Global Environmental Change, Disasters and Security - Threats, Challenges, Vulnerabilities and Risks reviews conceptual debates and case studies focusing on disasters and security threats, challenges, vulnerabilities and risks in Europe, the Mediterranean and other regions. It discusses social science concepts of vulnerability and risks, global, regional and national security challenges, global warming, floods, desertification and drought as environmental security challenges, water and food security challenges and vulnerabilities, vulnerability mapping of environmental security challenges and risks, contributions of remote sensing to the recognition of security risks, mainstreaming early warning of conflicts and hazards and provides conceptual and policy conclusions.

#### Agricultural Expansion and Tropical Deforestation

There is no clear-cut causal relationship between international trade, agricultural expansion and tropical deforestation. Academics, policy-makers and the public are all tempted by simplistic solutions to complex problems. In order to establish the true causal factors involved in this critical area of environmental decline, the authors of this study present case studies ranging over three continents. Utilizing statistics, it is shown that the focus of analysis of deforestation must be applied as much to the misguided policies of national and regional authorities as to the forces of trade and globalization. Further, it demonstrates that we must adopt a critical perspective on the historical context of human use of forest areas, looking at issues such as systems of land tenure. The primary aim of the book

is to highlight the need to seek solutions in far-reaching institutional and policy reforms adapted to specific socio-economic and ecological contexts, if the problem of tropical deforestation is to be tackled effectively.

### Tropical Rainforests and Agroforests Under Global Change

Human-induced land-use intensification and climate change are major global change drivers likely to continue for a long time. This international symposium provides an open platform for all scientists from socio-economic and natural sciences interested in the effects of global change on rainforests and agroforests. Balancing the ecological and socio-economic benefits of different agroforestry systems, comparing patterns and processes in managed agroforest and natural forest, and modeling the dynamics of land-use change and related resource degradation under various policy scenarios are major topics of this symposium.

### Tropical Deforestation

Tropical Deforestation introduces readers to the important concepts for understanding the environmental challenges and consequences of the deforestation. Contributions from scientists and academics in the social sciences and humanities provide readers with an initial 'tool kit' for understanding the concepts central to their disciplinary perspective and the multi-dimensional aspects of deforestation.

### The Causes of Tropical Deforestation

The Causes of Tropical Deforestation (1994) is an analysis of the problem of deforestation, using statistical technique – a form of 'environ-metrics' – to discover the true causes of an issue whose basis is hotly debated, and attributed to causes as varied as poverty, external debt, multinational logging companies, government corruption, the IMF, population growth, and non-sustainable agriculture.

### Tropical Rainforests

Tropical Rainforests takes a broad, fresh perspective on the ecology, environment and people of the world's most vital ecosystem, using case studies from all the major forest areas.

### The Management of Tropical Moist Forest Lands

This book is a comprehensive guide to fundamental ecological principles in tropical moist forest lands. This edition has been revised to encompass our increased knowledge and understandings of the complexities of forest management. It addresses the cross-cutting issues: the effects of government policies, land allocation and infrastructure development in forest lands. An analysis is made regarding various forest uses: forests for wood, forests for agriculture and forests for nature conservation and environmental protection.

### Fragile Lands Of Latin America

This book of selected research papers, originally presented at the "Symposium of Fragile Lands of Latin America—The Search for Sustainable Uses," presents some fresh evidence of the viability of a few "non-conventional" strategies for natural resource development and management.

### At Loggerheads?

The report offers a simple framework for policy analysis by identifying three forest types: frontiers and disputed lands; lands beyond the agricultural frontier; and, mosaic lands where forests and agriculture coexist. It collates geographic and economic information for each type that will help formulate poverty-reducing forest policy.

### Tropical Deforestation

The depletion of the tropical rain forests has attracted considerable attention in recent times, and the serious consequences for the global biosphere are widely acknowledged. Yet deforestation continues apace, and in some areas (for example, southeast Asia) the very existence of the forests is seriously threatened. Contrary to popular belief, evidence suggests that local economic and living conditions are more significant in this than timber exploitation for exports to the Northern countries. Tropical Deforestation - A Socio-Economic Approach offers a new perspective on the economic imperatives

which encourage indigenous populations to encroach upon their own forests, and shows how action against deforestation must form part of a wider movement to improve both the living conditions of the local inhabitants and the durability of their national economies. Part 1 offers an overview of the processes surrounding deforestation, and an assessment of the current situation. Part 2 analyses the land-use issues, and explains the socioeconomic imperatives in the affected regions. In an absorbing conclusion. Part 3 guides the reader through a series of hypothetical policy scenarios, using a specially adapted economic computer model, to predict which combinations of policies and trade arrangements might bring about a more beneficial state of affairs.

#### Extractive Reserves in Brazilian Amazonia

This title was first published in 2003: Despite their growing political significance, the linkages between local resource management and the global political economy are often poorly understood. This book addresses these linkages in a grounded analysis of extractive reserves : areas in Brazil set aside for local populations who depend on natural resources for their livelihood. Extractive reserves are the result of the struggle of the rubber tappers for control over their natural resources and worldwide concern with the conservation of the Amazon Rainforest. The author examines their significance for Brazil as a pioneering legislative and policy initiative to combine conservation with productive use of natural resources, to recognize common property rights to natural resources, and to support traditional populations' modes of production. Extractive Reserves in Brazilian Amazonia examines the formation and institutional sustainability of the reserves, and in so doing provides a valuable insight into the relationship between local institutions and the wider socio-political and economic context with regard to forest management.

#### Agricultural Expansion and Tropical Deforestation

First Published in 2000. Routledge is an imprint of Taylor & Francis, an informa company.

#### Plantations in the Tropics

Based on thorough bibliographic research of a highly controversial topic, this report, jointly sponsored by IUCN, UNEP and WWF, shows the potential of plantations, while also exposing problems which may arise if massive tree plantations proposed for the tropics are to be established. Major issues covered include; species selection, soil and water cycle effects, fires, pests and diseases, effects on biodiversity, carbon dioxide fixation, land tenure and social issues, and plantation economics. Some broad conclusions and guidelines to be considered when establishing large scale plantations in the tropics complete this study.

#### Conservation and Management of Tropical Rainforests

The tropical rainforest ecosystem. Rainforest use: wisdom, folly ambivalence. Sustainable forestry in rainforests. Principles and strategies of sustainability. Sarawak forestry: tortuous road towards sustainability. Natarulistic natural rainforest management in sarawak. Restoration of degraded ecosystems. Short-rotation tree plantations. Forest management guidelines. Failures major obstacles trends and needs.

#### Technologies to Sustain Tropical Forest Resources

Proceedings of the conference held in Bandar Seri Begawan, April 1993

#### Tropical Rainforest Research — Current Issues

A study of the demands of economic development and ecological conservation on the African island country. Protecting the unique plants and animals that live on Madagascar while fueling economic growth has been a priority for the Malagasy state, international donors, and conservation NGOs since the late 1980s. Forest and Labor in Madagascar shows how poor rural workers who must make a living from the forest balance their needs with the desire of the state to earn foreign revenue from ecotourism and forest-based enterprises. Genese Marie Sodikoff examines how the appreciation and protection of Madagascar's biodiversity depend on manual labor. She exposes the moral dilemmas workers face as both conservation representatives and peasant farmers by pointing to the hidden costs of ecological conservation. "Sodikoff takes us deep into the underbelly of conservation in one of the world's biodiversity "hot-spots." It is a world of timber barons, logging gangs, corrupt state

functionaries, international conservation experts, worker-peasants, and poachers. She paints eastern Madagascar as a frontier of dispossession, exploitation, and violence. The plundering of the Mananara protected area is seen, in a brilliantly original way, from the subaltern vantage point of forest workers and conservation labor. Forest and Labor places present day conservation on the larger canvas of a century of forest-based social relations of labor that have entered into the making of what Sodikoff calls neoliberal conservation. It is a magnificently rich historical and ethnographic accounting of what passes as the making of global biosphere reserves. A tour de force.” —Michael Watts, UC Berkeley “An important and lively contribution to the study of “green neoliberalism.” An obvious choice for undergraduate teaching on ecology, rights, international political economy, development, and a host of other topics.” —David Graeber, University of London “Brings a whole new angle and nuance to the crucial debates over conservation and development. Applicable not just to lush, humid eastern Madagascar, but all around the globe.” —Christian Kull, Monash University “Those interested in conservation, tropical rainforest ecology, international political economy, and sustainable development will find Forest and Labor in Madagascar an insightful case study.” —Choice

### Forest and Labor in Madagascar

Importance of tropical forests; characteristics of tropical forests; classification of tropical forests; deforestation in the tropics; management of tropical forests; plantations and agroforestry systems; approaches for implementing sustainable management techniques.

### Tropical Forest Ecology

Costa Rica was once one of the most deforested countries in the world. Today it is a pioneer in reforestation, forest management, and forest protection policies. The report describes the evolution of these policies since the 1950s, focusing on internal and external influences, particularly those of the World Bank. This case study is one of six evaluations of the implementation of the World Bank's 1991 Forest Strategy

### Costa Rica

'The text is valuable in that it describes tropical small-scale farm forestry and the complex interrelationships between social, economic, and biological issues quite well . . . For readers interested in tropical forestry in a developed nation, the book is a detailed and excellent source of information.' - Matthew Pelkki, Natural Resources Journal There has been an increased awareness of the need to establish and maintain small-scale forestry in tropical countries. This is due to concerns over continued deforestation, as well as the long-term environmental and economic resources these plantations can contribute if managed successfully. This book examines the constraints that limit the development of small-scale forestry in tropical environments and how they can be overcome.

### Nature Conservation in a Tropical Rainforest

Payments for ecosystem services are hoped to encourage and promote sustainable practices in agricultural systems via financial incentives. Through methodological analysis and case studies, this book provides several examples of successful programs and aims to transfer them to other regions of the world.

### Sustainable Farm Forestry in the Tropics

It has proved hard to establish national parks in Africa, Asia, and South and Central America, where inhabitants are resistant to change. This text explores the alternatives of integrated conservation and development projects & related initiatives.

## Ecosystem Services from Agriculture and Agroforestry

Tropical forest conservation is attracting widespread public interest and helping to shape the ways in which environmental scientists and other groups approach global environmental issues. Schelhas and Pfeffer show that globally-driven forest conservation efforts have had different results in different places, ranging from violent protest to the discovery of common ground among conservation programs and the various interests of local peoples. The authors examine the connections between local values, material needs, and environmental management regimes. *Saving Forests, Protecting People?* explores that difficult terrain where culture, the environment, and social policies meet.

## Socio-economic Effects and Constraints in Tropical Forest Management

Large regions of the planet have been transformed from their natural composition into different human-made landscapes (farmlands, forest plantations, pastures, etc.). Such process, called land use change, is one of the major components of the current global change, which has brought the planet into a new geological era: the Anthropocene. Land use change is particularly important in tropical forests, as this ecosystem type is still heavily affected by deforestation for timber extraction, agricultural land creation or urban expansion. Changing land use has important implications for the services that tropical forests provide: production of goods such as timber, food or water; regulation of process such as nutrient cycling, carbon sequestration, local weather or climate extremes; generating the framework for economic and cultural activity, etc. Therefore, keeping ecosystem services when changing the use of the tropical lands is a major challenge in tropical regions. This brief book, by showcasing different research work done in tropical countries, provides a first introduction on this topic, discussing issues such as biodiversity loss, changes in local weather or nutrient cycling patterns, and economic activities around tropical forests, and tools to detect and quantify the importance of land use change.

## Tropical Forest Conservation

At the meeting of the International Tropical Timber Organization held in Bali in 1990, ITTO adopted the target of ensuring that all tropical timber marketed internationally should, by the year 2000, come from forests that are managed sustainably. This study is an attempt to determine whether the member countries of the ITTO have a legal and administrative basis for managing their production forests in ways which will allow these forests to contribute to biological diversity conservation. It also attempts to assess the extent to which such management is already applied on the ground through member country studies. A set of guidelines on ways in which management of production forests could be improved is included.

## Saving Forests, Protecting People?

Research site and sample characteristics; Multivariate analysis; A farm-level bioeconomic model.

## Tropical Forests

Timber production is often the most economic form of land use in areas of tropical forest: forest preservation is rarely so. The area of tropical forest reserved for timber production exceeds that of National Parks and other preserved areas by a ratio of at least 8:1. Although often poorly managed to date, production forests have the potential to support a high percentage of natural forest biodiversity. They have a vital role to play in conservation strategies. This book attempts to bridge the current gap between conservation requirements and commercial interests, indicating the possibilities for integrated management of tropical forests. The aim is to develop a justification and practical approach for the management of production forest as a supplement to totally-protected forest in the conservation of tropical biodiversity.

## Understanding Relationships Between Biodiversity, Carbon, Forests and People

Views on the dynamics of tropical forests are changing rapidly with the recognition that their environment is variable on the decadal to century scale. Fluctuating climatic conditions partly determine tropical forest structure, species composition and dynamics. Tropical communities are also highly contingent in space and time with respect to site and historical factors. Tropical forests have experienced to some degree this disturbance regime in the past, but climatologists are now predicting increasingly frequent extreme events in the new century. The combination of increasing deforestation and land-use

conversion by man plus an increasingly variable environment means a situation that could be very difficult to manage.

### Conserving Biological Diversity in Managed Tropical Forests

Experts from both the natural and social sciences provide vital information for understanding the interactions of forest peoples and forest resources in the lowland tropics of Central and South America. They investigate patterns of traditional resource use, evaluate existing research, and explore new directions for furthering the conservationist agenda.

### Agricultural Intensification by Smallholders in the Western Brazilian Amazon

Much of the world's tropical timber is still supplied from natural forest, but under current systems of management the forests are rapidly becoming exhausted. Unless management practices change to become genuinely sustainable, neither the forests nor the essential contribution of the timber industry to many economies will survive. Duncan Poore reviews the extent to which natural forests are already being sustainably managed for timber production, and looks at how these practices can be enlarged. He places management for timber in the wider context of tropical forest conservation and outlines a strategy for further action. Thoroughly researched and accessibly written, this book will be useful for everyone working or interested in the subject of tropical forests. Foreword by Dato Dr B.C.Y. Freezailah  
Originally published in 1989

### Timber Production and Biodiversity Conservation in Tropical Rain Forests

The Rainforest Harvest