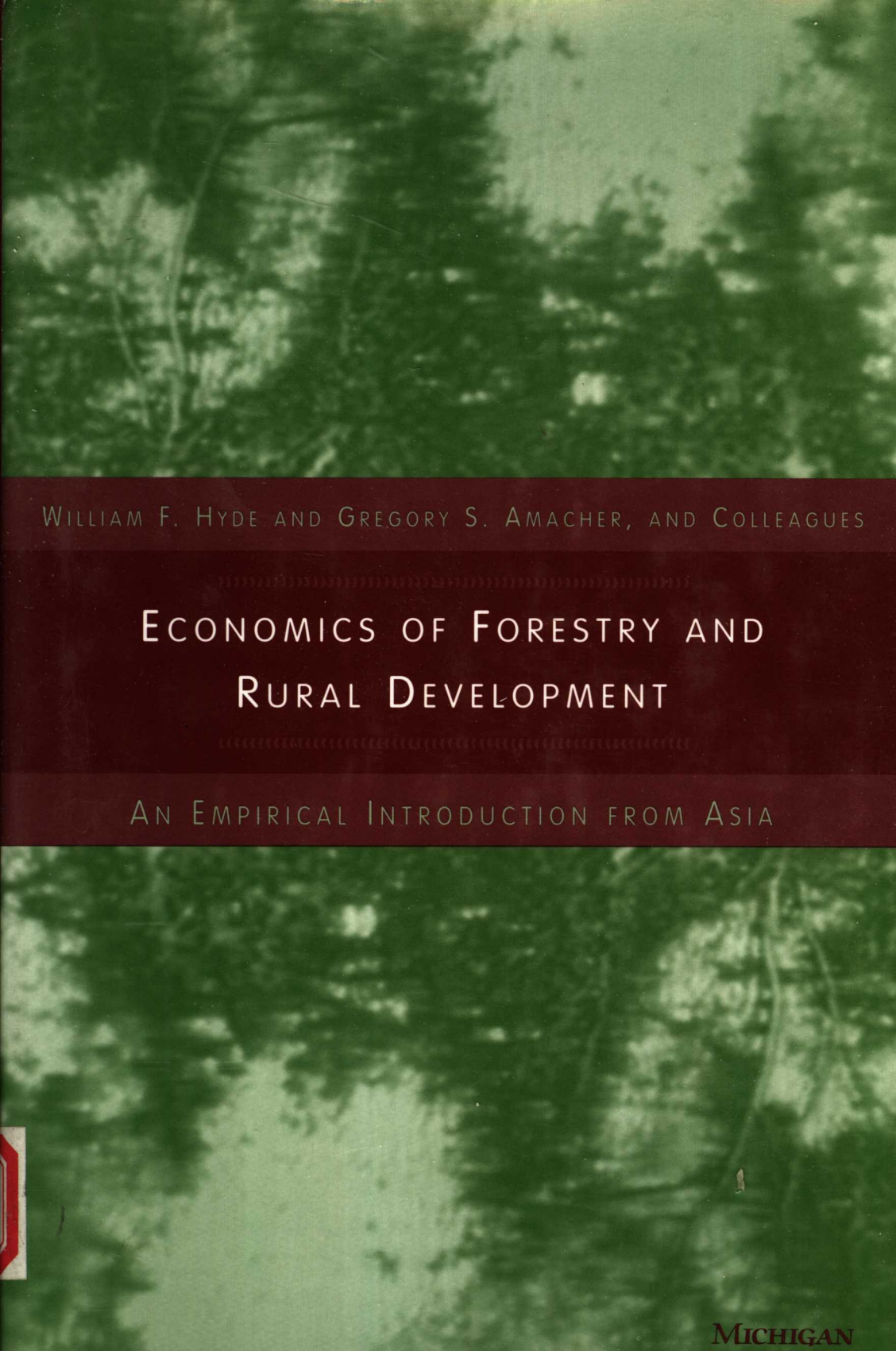

William F. Hyde and Gregory S. Amacher, and Colleagues

Economics of Forestry and Rural Development

An Empirical Introduction from Asia

Michigan

Economics of Forestry and Rural Development

An Empirical Introduction from Asia

William F. Hyde, Gregory S. Amacher, and Colleagues

Ann Arbor

THE UNIVERSITY OF MICHIGAN PRESS

Published in the United States of America by
The University of Michigan Press
Manufactured in the United States of America
♾ Printed on acid-free paper

2003 2002 2001 2000 4 3 2 1

A CIP catalog record for this book is available from the British Library.

Library of Congress Cataloging-in-Publication Data

Economics of forestry and rural development : an empirical introduction from Asia / [edited by] William F. Hyde, Gregory S. Amacher, and colleagues.
p. cm.
Includes bibliographical references.
ISBN 0-472-11144-2 (cloth : alk. paper)
1. Forests and forestry —Economic aspects—Asia. 2. Rural development—Asia. I. Hyde, William F. II. Amacher, Gregory S. 1962-

SD219.E36 2000
333.75'15'095—dc21 00-062999

Preface

Forestry, in some form, has always been a component of rural life, and particularly the life of the lowest income citizens of isolated rural communities. Since the early 1970s, forestry and rural development, which in some forms is also known as "social forestry," has also been a source of hope for some and intellectual inquiry for others involved in the activities of international development.

When we began this book a decade ago the economic component was either weak or absent from discussions of forestry and rural development. So was the careful empirical evidence that could support economic intuition—or even opinion. Anthropologists, and perhaps other social scientists, had been up to the task but the practitioners of economics had not.

We saw our task as providing initial empirical economic reasoning for a deserving subject. In the course of ten years we have had a lot of assistance from many colleagues, some of whom became co-authors of chapters in this book. We hope we have accomplished our task. Also in the course of ten years many others have begun to address the same economic questions. The intellectual capital on social forestry or forestry and rural development is much greater than it was a decade ago. Our final chapter surveys the expanding literature and identifies some important contributions—and contributors—as well as some remaining unresolved issues.

We believe our book makes five important contributions:

- We have sharpened the economic definition of some questions about forestry and rural development. Forests are not "good," neither is their degradation "bad"—except in terms of an effect on social welfare. Foresters and economists have understood this point for years but their discussions often feature gross rather than net effects on welfare, and their focus has been on the forests of developed countries. Perhaps we have added clarity to the contributions of forests to net welfare, particularly for subsistence economies and especially in the developing countries of Asia.
- We have introduced the household economics literature to forestry (chapters 4, 5, and 7). The household analytic

approach provides a powerful and rigorous means for examining cases in which households are both producers and consumers of the same good. This condition characterizes many subsistence users of the forest in developing countries. We would suggest that it also characterizes many non-industrial private forest landowners in North America and Europe. The household approach should be useful in assessing the revealed preferences of these landowners as well. Subsistence resource users must be incorporated in the targets of policy decisions. Market consumption and production evidence alone disregard subsistence households and can only lead to egregious errors, especially in rural communities where subsistence activities comprise a large share of the total impacts on the forest.

- There is no shortage of useful data for economic analyses of developing country forestry (chapters 2–5, 7, 10). In fact, to us it often seems like every master's degree student from a developing country has the data to address another interesting social forestry question. On the other hand, we have demonstrated that the standard physical measures of forests are weak proxies for economic measures of the same resources (chapters 3, 4, 6–8, 10). Their uncritical use misleads many discussions of forest policy, and especially many current discussions of global deforestation.
- We have participated in the growing discussion of the impacts of "non-forest" policies on forests (chapters 2, 8, 11). Most researchers and policy analysts are only beginning to understand the effects of the broader policy environment on the forest, but we would venture an argument that the broader policy environment often dominates the effects of all forest policies combined. So, neither deforestation, nor local community uses of the forest can be understood without also understanding the effects of agricultural, macroeconomic, and trade policies on the forest. This can only increase the importance of accurate "targeting," the careful matching of the policy instrument with the policy objective.
- Finally, our summary insights come together in a universal pattern of forest development (chapter 12). This pattern shows that the truly unique features of forestry are its three margins of land use (extensive and intensive margins for plantations plus the margin of natural forest) rather than the

usual two, and the efficient open access condition at the third margin. This book contains the fullest description of this pattern to data (chapters 8 and 12 together). We believe broader recognition of this simple pattern would prevent many policy and programmatic errors in forestry and in protecting forest environments.

We have our own faith in these contributions but we also recognize that the judgment of our readers is the critical test!

Let's consider those readers: Our intention throughout the book was to produce reliable economic assessments. This implies considerable technical detail in many chapters. For this reason, we tried to produce introductory and concluding chapters with sufficient contextual background to introduce the technical chapters. We also included introductory and concluding sections to each chapter that should further ease the reader's way through the more detailed technical material. We hope graduate students in forest economics and policy or in rural development will be able to read the entire manuscript without difficulty, and we hope others will be able to understand our organization and conclusions regardless of the underlying technical justifications.

Many have assisted and encouraged us through the long course of preparing this book. Bob Gregory of the University of Michigan was the first to introduce both of us to many questions of forestry and rural development. Bob, and especially Jeff Romm and the Ford Foundation that supported both of them, were pioneers in our field of inquiry. Bill Bentley and Dave Nygaard, through Winrock International, funded a sabbatical at Kasetsart University in Bangkok that got us started on the book itself. Bill's encouragement has been steadfast throughout. Kasetsart was the source of many good lifelong associations. Of course, our several chapter co-authors are some of those lifelong associates, and we owe them for very many of the insights and much of the quality of this book.

Friends like Ann delos Angeles (first the Philippine Institute of Development Studies, then REECS in Manila), David Griffin (then at ANU), Neil Byron (first at ANU in Canberra, then with CIFOR in Bogor), George Taylor (USAID), Larry Hamilton (then at the East-West Center), Josh Bishop (IIED in London), Frank Convery and Peter Clinch (University College/Dublin), Bruce Larson (then with the Economic Research Service in Washington), Willy and Chona Cruz (first at University of Philippines in Los Banos, now with the World Bank), Juan Seve (IRG, Inc in Washington, Manila, and Jakarta), and Bill Magrath (World Bank) each shared insights that helped us over major hurdles. In fact, Ann's own dissertation could claim to be midwife to many of our initial thoughts. Percy Sajise and Hermi Francisco (UP/Los Banos), Asa Sajise (Cal-Berkeley), Gershon Feder, Luis Constantino, and Ken Chomitz (all three with the World Bank), C. Thangamuthu

(Bharathidasan University), Aimo Juhola (first with Asia Development Bank, then with Jakko Poyry), Virgilio Viana (IMAFLORA and the University of Sao Paolo), Steve Stone (first Cornell, and now the InterAmerican Development Bank), Barin Ganguli (first ADB, then Jakko Poyry), Alemu Mekonnen (Addis Ababa University), Roger Sedjo (Resources for the Future), Arun Malik (George Washington University), Woon Chuen (FRIM in Malaysia), and Will Knowland (then with USAID) each shared a key insight or provided an important critique at a moment when we were particularly alert for it.

And finally, we owe untold debts to seminar participants at universities and research institutions on six continents on whom we tried out many of our arguments and incomplete analyses. Our debt is greatest to these at the University of Alberta's Department of Rural Economy and at Thomas Sterner's Environmental Economics Unit at Goteborg University who sat through several seminars, and who continue to share their own useful insights regardless of the repetition. We would like to compliment those two institutions for the meeting places they provide for many who share global interests in economic assessments of policy and the rural natural environment.

Dolly Tiongco and Darcy Amacher, Big John and Chase, have shared our enthusiastic moments, suffered our dejected moments, and supported us throughout unconditionally. Our wives and sons have given us seven great years in the process. We dedicate this book to the four of them.

William F. Hyde
Centre for International Forestry Research and
Forest Economics and Policy Analysis Research
Centre, University of British Columbia

and

Gregory S. Amacher
Department of Forestry, Virginia Polytechnic
Institute and State University

Contents

Part 1
Introduction

CHAPTER 1

A General Statement: Nineteen Hypotheses about Forestry and Rural Development

William F. Hyde and Gregory S. Amacher[1]

The successful pursuit of forestry for economic development once suggested large scale timber and fiber operations. More recently, we have come to understand that another variety of forestry contributes in important ways to the economic well-being of some of the world's poorest populations. This second variety, sometimes known as "social forestry," has to do with the local use of trees and forests for domestic consumption. These local household uses of forest resources are the topic of this book.

The local uses of forest resources is an exciting topic of both intellectual inquiry and public action for both foresters and those with more general interests in rural development. The poor, often subsistence, economies associated with forests attract our sensitivities for rural poverty and for social welfare in general. The marginal, often fragile, physical environments associated with forests attract our concerns for resource conservation. The attraction is all the greater because the topic extends beyond national, and even continental, boundaries. It includes local indigenous initiative as well as activities sponsored by domestic forestry and rural development agencies and by international donor agencies.

The term "social forestry" was originally associated with this experience as it was applied to the Indian subcontinent—but its use has expanded. Contemporary discussions of forestry and local rural development reach beyond the communal orientation of "social forestry" and they certainly extend beyond South Asia. Contemporary discussions include a spectrum of institutional arrangements for the rights to trees and forestlands, and for the substitutes that would reduce the local demands on trees and forests. While these discussions typically feature the developing countries of Africa and Asia, the more heavily forested regions of Latin America and even some farm forestry applications in the developed countries of North America and Northern Europe also find their way into the literature.

Forestry traditionally focused on commercial production of timber and fiber. Traditional training in forestry still features either forest protection or production of these two outputs. Commercial production and traditional training contrast with a focus on local rural development, however, in that they often compete with many of the forest products consumed in rural societies: i.e., fuelwood, fodder, forage, fruits, and other domestically consumed non-wood forest crops.

This diversity of products is an indication of the range of interests that attract our attention and also of the multiple of possible responses to local consumer demands. The diversity of human institutions, particularly the many customs and conventions for property rights in trees and in forest land, is another. Diversity is an indication of the adaptability of forest-related activities to a broad cross-section of development situations.

Forest products have always been important to indigenous human populations, but social forestry has only been a topic of serious inquiry by foresters and rural developers for, perhaps, the last thirty years. It is still in its earliest and most formative years. The term "social forestry" first appeared in Gujarat in the mid-1960s. Jack Westoby gave the term broader recognition in his address to the Ninth Commonwealth Forestry Conference in 1968. The Ford Foundation in the early 1970s—with the special insights of Jeff Romm, Marshall Robinson, and their Asian colleagues—provided further discussion and organized financial support. Other individual observers and other development agencies have extended these Gujarat, Westoby, and Ford observations and there is now a broad literature composed of many casual observations and a few informal hypotheses.[2] The next steps in the intellectual development of the topic require data analysis and the rigorous empirical and quantitative examinations of formally-stated hypotheses. Our objective in this volume is to begin these next steps.

We cannot be comprehensive. The topic is too broad, its geographic and climatic range too extensive, and the affected human populations and interests too diverse. Our alternative is to present a series of case studies which cut across a spectrum of regional and conceptual characteristics. Our region of inquiry is Asia—from the Philippines and China in the east through Indonesia, India, and Nepal to Pakistan in the west. This region—and our cases—includes tropical and temperate, sparse and dense, upland and lowland forests; arid and wet climates; and the full range of human population densities.[3]

Our case studies occur in sets. Most are local and specific but each set of cases intends to be sufficiently diverse to suggest generalizations. The first set furnishes examples of the broad and general importance of trees and the forest to local households and to potential immigrants from more distant populations as well. The second set more precisely examines the allocation of household resources to forest production and household consumption, as well

as the demographic and social characteristics that explain the local acceptance of new social forestry activities.

The third set moves beyond the household and local levels of analysis and begins to inquire about regional demand and supply. Regional evidence of the relative importance of standing forests, the reliability of existing markets, and the opportunities for substitution will help identify the geographic targets for policies and technologies that can make a difference.

This would be a comprehensive collection of cases if land tenure were not such a critical issue. Forests and trees are dispersed and generally low-valued resources that tend to grow at the margin of economically productive land. The rights to these resources are often ill-defined. But these rights are critical for the poorest people and for sustainable management of the resource. The rights become more clearly defined with resource depletion, rising prices, and the passage of time. Our fourth set of cases examines these issues. We will find that establishing secure tenure is important but that its impact can be limited by exogenous factors such as the stability of national policies. The policy environment can have unintended spillover effects that destroy well-designed direct forestry sector incentives.

The final two cases raise two remaining and unsettled issues: the impacts of these forest-related development activities on poor and especially landless households, and their impacts on the environment. The former is unknown, while the latter seems settled in the favor of environmental improvement but little evidence aside from controlled research plots supports this contention. Finally, our book closes with a chapter that summarizes, contemplates generalizations arising from the previous chapters and from other recent literature, and suggests topics for further inquiry.

We will find that forestry's impact on local consumption in poor communities is both greater and different than often anticipated. For example, the availability of unclaimed forest land has attracted an upland migrant population that is eighteen times greater than the 1980 estimate of the Philippine Bureau of Forest Development. Fuelwood scarcity, however, may be less a problem in its own right—even in Nepal's hills where the standing forest inventory may be sparse and some farm households plant their own trees. Yet it may be more of a problem if it diverts increasing quantities of scarce household labor from essential agricultural and food preparation activities. Will the labor diversions be an increasing burden on women—as many suspect? Finally, we might argue that neither fuelwood scarcity nor the associated diversions of household and agricultural labor for fuelwood collection will become problems where rights to property like trees and forest land are clear and secure. On the other hand, we will argue that the transactions costs for establishing these rights will always exceed their value on some land and, therefore, some forests and forestry activities will never be sustainable.

We will find substance behind the idea that forestry activities can provide important basic support for carefully selected poor rural populations early in the development process. Numerous factors will affect the success of these activities. We will hypothesize that success often depends more importantly on a) economic scarcity, b) the opportunities for substitution, c) secure resource tenure, d) the rate of acceptance by local leaders who, while poor, are certainly are not the poorest of the poor, e) local respect for the forestry or development agency's advisors, and f) exogenous policies with unintended impacts on social forestry—than on some of the more usual concerns of forest policy and management.

Background and Definition

The remainder of this chapter is a more detailed introduction to social forestry. It begins with a definition of social forestry that suits the purpose of this book, and follows with a discussion of social forestry's broadest objectives. Local initiative is often the medium for accomplishing these objectives. Local initiative, however, often finds support from economic development projects funded by domestic resource management agencies or external donor. Therefore, this discussion continues with a brief review of reasonable expectations for such projects. These expectations are an introduction to the behavior of households and local markets observed in many of our case studies. Finally, local property rights and resource tenure, as well as the long-term reliability of these policies and also exogenous policies designed for altogether different target sectors, can frustrate the greatest financial incentives of the most carefully designed development project. Therefore, our background discussion finishes with an introduction to the topics of secure resource tenure and general economic policies that can unintentionally and indirectly affect social forestry in a substantial way. In sum, this background section intends to motivate our subsequent case studies.

Numerous terms are associated with forestry for local use in rural development and various definitions are associated with each of these terms.[4] The most common terms are "social forestry," "community forestry" and "agroforestry." Their definitions have been diverse and exclusive in order to satisfy the specific purposes of the many different users. Perhaps we can best satisfy our purposes with a comprehensive definition which features the exclusions. That is, "forestry for local use in rural development," which we abbreviate as "social forestry," is any forestry except large scale commercial plantations so long as it emphasizes the responses of local consumers to forest-based goods and services: usually fuelwood, fodder, and forage, sometimes water, soil protection, and other tree and interplanted non-wood crops.

Consider this definition carefully. It includes domestic consumption of household-produced forest products and it includes market exchange. It incorporates the original concept of social forestry as well as the concepts of community forestry and agroforestry. Social forestry has always referred to local use and rural development, but it also has a strong, and sometimes restrictive, association with South Asia. Community forestry usually refers to commonly owned or controlled forests and agroforestry refers to the farming systems involved in growing trees as a crop or growing intermixed trees and agricultural crops. In the context of this book, however, and from the perspective of opportunities for economic development, our use of the term social forestry extends past the Indian subcontinent to include, for example, the rural migration and new upland settlement and land tenure issues common to Laos, Thailand, and the Philippines, as well as any other contemporary forestry issue of importance to local people and rural development.[5]

Our view of social forestry is not restricted to subsistence economies and communal activities, and market exchange does not hinder our definition. Production for household consumption is a fact but very few, if any, poor farm families exist solely on their own domestic production. Most households offer some labor or agricultural products in the local market, receive some currency in exchange, and purchase some share of their total consumption with it. Therefore, some fuelwood and fodder production may be consumed by producer families but we should not be surprised, and we will not alter our definition of social forestry, if some also exchanges for currency in local markets.[6]

Neither local institutional distinctions nor the distinctions between community forestry and agroforestry affect our definition of social forestry. Both social forestry and local development suggest increasing market diversity and shifting incentives for resource management. New incentive structures in turn suggest changing institutions, particularly the institutions explaining local property right arrangements for the relevant resources: trees, land, fodder, and forage. Therefore, shifts from established common ownership and management arrangements to more individual and private property arrangements often accompany economic development. The task of designing successful forestry development programs assumes new difficulties as a result of these dynamic events. There are important opportunities for both community forestry and agroforestry but successful community forestry activities are more difficult to design than successful agroforestry activities because agroforestry most often involves small private landholdings where the incentives and the target population are clearer. Moreover, we might anticipate that the ambitious subset of all landowners who willingly accept the risks and who can afford the costs associated with initiating new forestry investments are more promptly responsive to market changes, while decision makers with more complex

communal responsibilities require longer adjustment periods to organize communal responses. Altogether, this suggests integral roles for property rights and common access in any assessment of social forestry, as well as the categorization of both community forestry and agroforestry as special applications of our rural development interests.

The Objectives of Social Forestry

If our primary objective is to use forest resources to assist local community development, then we can probably say that the responsiveness of local consumers to any forest development activity largely defines its limits. The communities in question tend to be rural and poor. Therefore, helping the rural poor is a complementary objective of many social forestry activities. The first objective is an efficiency objective and the second is an income distributive objective. We must judge the quality of any social forestry activity by its success in achieving these two objectives. Therefore, our case studies must provide insight to the design and location of activities which would satisfy these two basic objectives.

Efficiency implies a concern for economic growth with, in this case, social forestry as the means. It means that the marginal social benefits exceed the marginal social costs of acceptable activities, and that they promote economic growth. For example, public participation and improved seedlings are useful inputs and halting deforestation and controlling erosion are useful outputs only if, in the final social account, the foregone marginal resource opportunities associated with these and other inputs are less than the marginal gains associated with the resulting outputs. For example, we can justify diverting land and labor from agriculture to forestry if the value of the new forest products is greater that the value of the foregone agricultural opportunity.

Efficiency means that the inputs and outputs of social forestry or of any other physical resource project are justified only by satisfying this rigorous test. Locally initiated activities necessarily pass this test--or else the local participants would discontinue the activity. The test must be more formal for resource management ministries and international donor agencies who have greater resources, less local contact, and greater opportunity to absorb and overlook their own local failures.

The distributive objective invites more extensive discussion beginning with two questions and continuing with some thought about the diffusion of new ideas among poor populations. First, do we care whether the benefits of social forestry activities reach all the poor or is it acceptable if they reach only some groups of the poor? Must some benefits accrue to poorest of the poor? Must they accrue immediately? Second, do we care whether beneficial