UNITED NATIONS RESEARCH INSTITUTE FOR SOCIAL DEVELOPMENT

DP 34

LAND TENURE AND DEFORESTATION
Interactions and Environmental Implications

by Peter Dorner and William C. Thiesenhusen

April 1992

The **United Nations Research Institute for Social Development (UNRISD)** is an autonomous agency that engages in multi-disciplinary research on the social dimensions of contemporary problems affecting development. Its work is guided by the conviction that, for effective development policies to be formulated, an understanding of the social and political context is crucial. The Institute attempts to provide governments, development agencies, grassroots organizations and scholars with a better understanding of how development policies and processes of economic, social and environmental change affect different social groups. Working through an extensive network of national research centres, UNRISD aims to promote original research and strengthen research capacity in developing countries.

Current research themes include: Crisis, Adjustment and Social Change; Environment, Sustainable Development and Social Change; Ethnic Conflict and Development; Social and Development Indicators; Political Violence and Social Movements; Refugees, Returnees and Local Society; Socio-Economic and Political Consequences of the International Trade in Illicit Drugs; and Participation and Changes in Property Relations in Communist and Post-Communist Societies.

A list of the Institute's free and priced publications can be obtained from the Reference Centre.

United Nations Research Institute
for Social Development
Palais des Nations
1211 Geneva 10
Switzerland

E-mail: info@unrisd.org
World Wide Web Site: www.unrisd.org

ISSN 1012-6511

Preface

The UNRISD research programme on the **Social Dynamics of Deforestation in Developing Countries** is concerned with analysing how deforestation processes are generated in different ecological and socio-economic settings and how they affect the livelihood of different social groups. The programme has included local level case studies in Brazil, Central America, Nepal and Tanzania, as well as eight studies of specific themes which cut across countries and regions. This paper on Land Tenure and Deforestation by Peter Dorner and William Thiesenhusen is one of these thematic studies.

The paper examines the linkages and interactions between land tenure regimes, on the one hand, and population dynamics and human behaviour, on the other, and analyses how these together influence deforestation. It first addresses a number of relevant conceptual and methodological issues and defines land tenure in terms of a "bundle" of rights and obligations, recognized by law and custom, governing the use and control of land and water resources. Tree tenure may be part of land tenure or separate from it.

The authors then analyse linkages between land tenure and deforestation in selected Asian and Latin American countries. They conclude that land tenure problems are often the root cause of – or play an important mediating role in – deforestation both in situations where peasants reside permanently in a given area and where migration has occurred. The ownership of most prime agricultural land by small land-owning élites, for example, contributes to rural poverty and insecurity forcing many peasants to seek livelihoods in forest frontier areas unsuitable for sustainable agriculture and grazing. Peasants with very small plots cannot usually afford to grow tree crops while those with access to sufficient land have few incentives to do so because of their insecurity of tenure and also because of many public policies that provide incentives for mining forest resources. Indigenous peoples and others who traditionally depended on sustained use of forest resources for survival are frequently dispossessed while migrant settlers often lack both incentives and the necessary knowledge to use forests sustainably.

The authors then analyse land tenure and deforestation links in selected African countries where customary land tenure systems are under increasing stress as a result of the commercialization of agriculture and growing population. They emphasize that traditional tenure systems usually embodied both rights and duties of participants that ensured the sustainable use of land and forest resources. Such systems, however, are now breaking down under government, market and demographic pressures. Using a case study of Zaire's Ituri forest area as an example, they show how this comes about. They caution against tenure reform consisting merely of individualization and titling as this often leads to concentration of landholding by a small élite.

The authors conclude that the root problems causing deforestation are often far away from the areas where deforestation occurs. They have to do with land tenure issues, political/economic structures and government policies. In most cases it is the wealthier sectors of society, not poor peasants, that are most destructive of forest resources, but it is the indigenous people who suffer the immediate negative consequences. The key issue, they believe, is to develop incentives through appropriate land tenure regimes and public policies that more adequately take into account the claims of poor peasants and forest users and also those of future generations who cannot be present to protect their interests.

Peter Dorner is Professor Emeritus of the Department of Agricultural Economics of the University of Wisconsin. William Thiesenhusen is Professor of Agricultural Economics at the Land Tenure Center of the same university. The UNRISD project on the Social Dynamics of Deforestation is co-ordinated by Krishna Ghimire with Solon Barraclough as senior consultant.

April 1992

Dharam Ghai
Director

Table of Contents

Acknowledgements

This paper was written for and at the request of the United Nations Research Institute for Social Development (UNRISD). We wish to thank UNRISD and Land Tenure Center for their financial support. We gratefully acknowledge the excellent research and production assistance of Dan Maxwell and Jane Dennis. We also thank our colleagues John Bruce, Mark Freudenberger, and Steven Lawry for their comments on earlier drafts. None of the above, of course, hold any responsibility for things said or left unsaid. Such responsibility rests solely with the authors.

This paper identifies some of the linkages between various aspects of population dynamics and human behaviour and their detrimental consequences on the forestry resource; our primary focus is on how various land tenure régimes interact with population and behavioural variables and how these together influence deforestation. Given space limitations, we cannot treat all these consequences nor the prospective policy alternatives. The issues are extremely complex and intertwined. Reliable data on these various linkages and interactions are often unavailable. Much more field research and primary data collection are required to achieve a thorough understanding of these deforestation phenomena. But some information is at hand; our task is to draw the conclusions that seem warranted based on the existing literature.

I. Introduction: Land Tenure and Deforestation

Land tenure institutions have unique features growing out of historical patterns of settlement or conquest. Such institutions are tied to value systems and are grounded in religious, social, political and cultural antecedents. Land tenure relationships are sub-systems within a broader and complex web of institutions that make up a socio-cultural-political system. "Land tenure" refers to those institutions that are part of an interrelated system which embodies the legal and contractual or customary arrangements whereby people gain access to opportunities on the land. This system constitutes the rules and procedures governing the rights, duties, liberties and exposure of individuals and groups in the use and control over the basic resources of land and water. Trees and minerals may be included in the tenure rights in land, or they may be separate, requiring tenure rights of their own.

A "tenure" is often referred to as a "bundle of rights". "Particular combinations or 'bundles' of rights in resources are recognized by law and custom in particular societies. . . . Tenure comes in a bewildering diversity of forms. Some Third World farmers are using land or trees under 'freehold', 'leasehold' and other tenures from Western law, but many others cultivate under indigenous land tenure systems" (Bruce, 1989:1; see also Dorner, 1972).

Just as tenure is diverse, there are likewise a great variety of forests as well as processes of deforestation. The Food and Agriculture Organization of the United Nations (FAO) uses a five-way classification of different types of forests in its tropical forest-resources assessment (FAO, 1988; see also Barraclough and Ghimire, 1990:5). In the main, our analysis of forest loss will concentrate on the closed forest region which FAO defines as: broad-leaved (hardwood) forests covering a high proportion of ground without a continuous grass layer allowing grazing or spreading of fires. They may be evergreen, semi-deciduous, wet, moist, or dry. For remote sensing purposes the crown coverage is 40 per cent or more.

Deforestation is likewise an ambiguous term. FAO uses the word to mean a complete clearing of trees and their replacement by non-forest land uses. Serious forest damage caused by excessive logging, wood-gathering, fire and livestock grazing is not considered as deforestation unless it results in total conversion of forests to other land uses. However, biologists, ecologists, and conservation agencies tend to consider as deforestation the degradation of entire forest ecosystems involving wildlife species, gene pools, climate and biomass stock (Barraclough and Ghimire, 1990; see also Myers, 1989). This paper accepts the more inclusive conception of deforestation.

Since deforestation can be defined in various ways, there is likewise wide divergence in estimates of areas and rates of deforestation. Estimates of annual rates of deforestation vary

from 0.4 per cent (FAO, 1988) to 1.8 per cent (Myers, 1989) (see Barraclough and Ghimire, 1990:7-8). Projections (made more than ten years ago) of global deforestation by the turn of this century vary from 4 million hectares annually to a high of 18-20 million hectares per year (Clawson, 1981:21). Such wide deviation notwithstanding, it is widely accepted that "most current use of tropical moist forest is unsustainable" (Goodland, 1991).

What are the main environmental consequences of deforestation? Prospective worldwide climate changes and global warming are perhaps most generally recognized as being directly linked to widespread deforestation. Increased desertification in semi-arid environments and increasing water run-off which leads to intensified soil erosion in humid areas are other consequences. This latter results in greater silting of riverbeds, lakes and reservoirs; inadequate replenishment of ground water reserves; and often increasingly devastating floods. In the process, countless species of plants and fauna are threatened with extinction as their forest habitats are destroyed (Barraclough and Ghimire, 1990:10).

The complexity of the issue is captured by Flader (1991): "The Amazon is virtually synonymous with biodiversity and with threats to biodiversity, but we have tended to approach the problem on a species-by-species basis. . . . But if we would preserve the biodiversity of the Amazon, it may not be enough to draw inviolate lines around particular islands of current richness. We need to understand the processes that produced and are producing that richness and then regulate our intrusions so that those natural processes can continue to function" (Flader, 1991:22).

While the number of distinct species of plants, animals and insects in the world is not known, the richness of species existing in the tropical forests is not in question. One estimate suggests 5 million species in the Amazon alone (Feldman, 1990:51). Another report suggests that, while tropical forests cover less than 10 per cent of the Earth's land surface, they contain approximately half of the world's plant and animal species (Wilson, 1988, cited in Southgate and Runge, 1990). The Brundtland Report notes an additional species which is endangered: "It is a terrible irony that, as formal development reaches more deeply into rain forests and deserts, it destroys the only cultures able to thrive in these environments. Their possible cultural extinction means the loss of a global resource" (Lebel and Kane, 1990:14).

What are the causes of deforestation? Land tenure arrangements, explored in this paper, are one causal factor. But land tenure institutions are linked in intricate ways with other factors. A particular system of tenure or property régime may be quite compatible with conservation of the forest resource at one level of population, but it may foster major negative consequences at another level