

Enrique Ibarra

Private forest use decisions and state forest policy effectiveness in Costa Rica

Zugl.: Freiburg, Univ., Diss., 2002

Die Bilder des Umschlags wurden freundlicherweise von "Fundación Cecropia" zur Verfügung gestellt.

© Verlag Dr. Kessel, Eifelweg 37, 53424 Remagen
1. Auflage 2003
Tel./Fax: 02228-493
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Homepage: www.forstbuch.de, www.forestrybooks.com
ISBN: 3-935638-36-1
Druck: www.business-copy.com

Freiburger Schriften zur Forst- und Umweltpolitik
Band 3

**Private forest use decisions and
state forest policy effectiveness in Costa Rica:
The role of institutions, private stakeholders and the state**

Enrique Ibarra

Verlag Dr. Kessel
Remagen-Oberwinter 2003

To my parents, Eduardo and Anita
and,
to María del Mar, in loving memory

Acknowledgements

The persons and circumstances that brought me to walk this 'long and winding road' are too many to be exposed here, and would probably provide material to write a novel. It should suffice for now for the reader to know that this is the result of my own initiative, and of a twist of fate that today still makes me wonder.

To begin with, I wish to express my acknowledgement to the DAAD and to Prof. Dr. Dieter K. Tscheulin, who provided the means that enabled me to set foot in Germany several years ago.

Several persons and organizations have contributed and accompanied me throughout this research, and to them I would like to express my deep thankfulness.

First and foremost my gratitude goes to the Heinrich Böll Stiftung, who supported and financed this research from the very beginning.

I am also deeply grateful to my tutor, Prof. Dr. Michel Becker, whose patience, focused and careful guidance provided the necessary elements for me to conceive this work. His – sometimes skeptical, but always constructive – critique showed me constantly new and enriching points of view, and so, by giving me at the same time the liberty to follow my own thoughts, he contributed decisively to the development of this research study.

I am also thankful to the Forest Faculty and its teaching staff, for their openness and friendliness and for the provision of a most intellectually inspirational academic environment. I am also specially thankful to my colleagues at the 'Institut für Forstpolitik' Dr. Dietmar Stoian (now at CATIE) and Dr. Carol Grossman for reading and commenting on sections of this document, and to Carmen Gottwald, Sergio Ruiz and Dr. Guillermo Navarro (former staff member of the Institut für Forstökonomie) for the lively discussions and insights on several subjects that helped me further elaborate my arguments.

In Costa Rica, I wish to thank Fundación Cecropia for providing logistics during the field research in the Osa peninsula in both of my research visits to the area.

Any errors contained herein are my own responsibility.

Last, but not least, I want to thank all of my very dear friends who stood by me even in my darkest hours. This work would have definitely not been possible without your support. You know who you are. Thank you.

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Acronyms

ACA-HN: Area de Conservación Huetár Norte

ACTO: Area de Conservación Tortuguero

ACOSA: Area de Conservación Osa

AFE: Administración Forestal del Estado

APREFLOFAS: Asociación Preservacionista de Flora y Fauna

ASCONA: Asociación Costarricense para la Preservación de la Naturaleza

BCCR: Banco Central de Costa Rica

CAF: Certificado de Abono Forestal

CATIE: Centro Agronómico Tropical de Investigación y Enseñanza

CCT: Centro Científico Tropical

CIEDES: Centro de Investigaciones en Desarrollo Sostenible

CEPAL: Comisión Económica para América Latina

CODEFORSA: Comisión de Desarrollo Forestal de San Carlos

COSEFORMA: Cooperación de los Sectores Forestal y Maderero

COVIRENA: Comité de Vigilancia de los Recursos Naturales

CR: Costa Rica

CRA: Consejos Regionales Ambientales

DGF: Dirección General Forestal

FAO: Food and Agriculture Organization

FECON: Federación Costarricense para la Conservación del Ambiente

FONAFIFO: Fondo Nacional de Financiamiento Forestal

FUNDECOR: Fundación para el Desarrollo de la Cordillera Volcánica Central

GTZ: Deutsche Gesellschaft für Technische Zusammenarbeit

IDA: Instituto de Desarrollo Agrario

INBIO: Instituto Nacional de Biodiversidad

ITCO: Instituto de Tierras y Colonizaciones

ITTO: International Tropical Timber Organization

JUNAFORCA: Junta Forestal Nacional Campesina

MAG: Ministerio de Agricultura y Ganadería

MINAE: Ministerio del Ambiente y Energía

NGO: Non-governmental organization

NIE: New Institutional Economics

ODI: Overseas Development Institute

OIT: Organización Internacional del Trabajo

ONF: Oficina Nacional Forestal

PES: Payment of Environmental Services

POA: Plan de Ordenamiento Ambiental

PNUD: Programa de las Naciones Unidas para el Desarrollo

RFGD: Reserva Forestal Golfo Dulce

SINAC: Sistema Nacional de Areas de Conservación

SIPRAICO: Sindicato de Productores Agrarios Independientes de Osa

TUVA: Tierras Unidas Vecinales por el Ambiente

UN: United Nations

UNAM: Universidad Autónoma de México

Überblick über die Dissertation

Die vorliegende Dissertation ist Ergebnis des Forschungsprojektes „**Private forest use decisions and state forest policy effectiveness in Costa Rica: The role of institutions, private stakeholders and the state**“, das aus eigener Initiative entstand und durch die ‚**Heinrich Böll Stiftung**‘ finanziert wurde.

Die Dissertation ist in drei Hauptteile gegliedert.

Teil eins (Kapitel 1) führt in das Forschungsproblem ein. Konventionelle Waldbewirtschaftungsmethoden bestehen trotz jüngster Veränderungen **formaler Institutionen** (Gesetze, Normen, Erlasse), die die private Waldbewirtschaftung regeln, um Nachhaltigkeit und Waldschutz zu erreichen. Konventionelle Waldbewirtschaftung wird als eine schädliche Art der Waldnutzung verstanden. **Informelle Institutionen** (Verhaltensnormen privater Akteure) stehen in Konflikt zu den formalen institutionellen Rahmenbedingungen, da sie die konventionelle Methode unterstützen. Die Kernfrage der Studie ist: ‚**Wie beeinflussen informelle Institutionen die Erreichung formaler forstpolitischer Ziele?**‘

Teil zwei (Kapitel 2-3) beinhaltet den theoretischen Rahmen der Arbeit, der auf der Theorie der neuen **Institutionenökonomie** beruht. Kapitel 2 beginnt mit der Einführung des Konzeptes der ‚Rationalität‘. Danach werden die Konzepte der formalen und informellen Institutionen sowie der Unterschied zwischen Institutionen und Organisationen erklärt. Das Konzept der ‚Geschäftskultur‘ und die Rolle des Vertrauens bei der Gestaltung der wirtschaftlichen Umwelt werden vorgestellt. Danach wird aufgezeigt, in welcher Verbindung Geschäftskultur und Institutionen zueinander stehen.

Der nächste Abschnitt des 2. Kapitels beinhaltet die Theorie der institutionellen Entstehung und des institutionellen Wandels. Besondere Aufmerksamkeit wird hierbei auf die Handlungsmacht verschiedener Akteure des Forstsektors auf die Bestimmung institutioneller Rahmenbedingungen gelegt. Diese Macht wird eingesetzt, um Vorteile bzw. spezifischen Nutzen zu erzielen. Dadurch wird die wirtschaftliche Aktivität strukturiert und der Nutzen auf die Akteure verteilt. Das Konzept der ‚**Pfadabhängigkeit**‘ (path dependence) knüpft an die vorherigen Konzepte durch die These an, dass der institutionelle Wandel pfadabhängig ist. Pfadabhängigkeit wird stark von historischen, sozialen und politischen Zusammenhängen beeinflusst.

Am Ende des 2. Kapitels wird ein Modell der dynamischen Beziehungen zwischen informellen und formalen Institutionen dargestellt. Dieses Modell betont die enge Verzahnung informeller und formaler Institutionen. Es wird die These vertreten, dass die Erreichung der Ziele formaler Institutionen von der ‚Harmonie‘ zwischen den beiden Arten von Institutionen abhängt. Der letzte Abschnitt des 2. Kapitels vermittelt einen Überblick über die Theorie der ‚**Governance**‘, die die Relevanz der Interaktion zwischen den informellen und formalen Institutionen hervorhebt.

In Kapitel 3 werden verschiedene Aspekte der Forstpolitik präsentiert. Das Konzept der **Forstpolitik**, wie es in akademischen und internationalen Kreisen benutzt wird, analysiert das

forstpolitische Geschehen auf einer breiten Ebene und stellt seine Abhängigkeit von verschiedenen Sektorpolitiken (z.B. Agrarpolitik, Energiepolitik, Siedlungspolitik, etc.) dar. Besondere Aufmerksamkeit wird auf die ‚Agenda 21‘ der Rio Umweltkonferenz gelegt. Der Einfluss von Marktverzerrungen auf die Entwaldung wird dargestellt. Ein Überblick über forstpolitische Anreizinstrumente wird gegeben.

Im **dritten Teil** der Dissertation (Kapitel 4-7) werden die Ergebnisse und die Diskussion präsentiert.

Kapitel 4 stellt mittels einer Literaturrecherche die Ursachen der Entwaldung in Mittelamerika heraus. Es werden Hintergrundinformationen für den Fall Costa Rica (z.B. Entwicklungsstrategie durch Agrarmaßnahmen) geliefert. Regionale forstpolitische Maßnahmen (z.B. Konzessionen oder Waldmanagement-Pläne) sowie Anreizmaßnahmen (z.B. finanzielle Anreize) in einigen mittelamerikanischen Ländern werden vorgestellt.

In Kapitel 5 werden die jüngsten Entwicklungen der Rahmenbedingungen für die formalen Institutionen des Forstsektors in Costa Rica vorgestellt. Ein genereller Überblick über den Forstsektor, dessen Akteure, sowie über die Konflikte, die aufgrund des institutionellen Wandels entstehen, wird gewonnen. Welche Ziele der Staat auf der administrativen, rechtlichen und wirtschaftlichen Ebene anstrebt, wird erklärt und anhand der empirischen Untersuchung analysiert. Die vom Staat gewählten Anreizmaßnahmen werden untersucht. Hierbei liegt der Schwerpunkt auf den neu eingeführten ‚Bezahlungen von Umweltleistungen von Wäldern‘ sowie auf der systembedingten Nutzenverteilung.

Desweiteren wird der Konflikt, der aufgrund der Teilnahme der staatlichen und privaten Akteure an forstwirtschaftlichen Aktivitäten entsteht, beschrieben und analysiert.

Kapitel 6 beschreibt die **Waldnutzung** aus Sicht der privaten Landbesitzer im Untersuchungsgebiet in Costa Rica. Verschiedene informelle Verhaltensnormen sowie soziale Durchführungsmechanismen im privaten und staatlichen Bereich werden dargestellt. Diese Gesamtdarstellung resultiert aus den Daten, die in Kapitel 5 präsentiert und analysiert wurden. Transaktionskosten, die durch konventionelle Waldbewirtschaftung für die Landbesitzer entstehen, werden analysiert. Besondere Aufmerksamkeit wird hierbei auf die Kosten gelegt, die die Landbesitzer durch unvollständige und asymmetrische Informationen (wie z.B. Fehlinformationen bei Vertragsabschluß über Preise, Volumen des Holzes, etc.) tragen.

In Kapitel 7 wird diskutiert wie die Interaktion zwischen informellen und formalen Institutionen die private Nutzung von Wäldern bestimmt, und wie dies die Erreichung von formalen Zielen beeinflusst. Ein Hauptergebnis der Arbeit ist, dass die formalen Ziele der Forstpolitik in Costa Rica nur schwer erreicht werden, da private Akteure einen größeren Nutzen von der Beibehaltung der informellen Regeln haben. Die stärksten Gruppen im Forstsektor (Holzeinschlagunternehmer, Forstingenieure) tragen durch die Nutzung ihrer Handlungsmacht zur Erhaltung ihres ‚*Status quo*‘ bei. Ein Hauptschwerpunkt liegt hierbei auf dem formellen institutionellen Wandel und dessen Pfadabhängigkeit.

Research outline

This dissertation is divided into three main sections.

Section I (Chapter 1) presents the research problem, the research objectives and research questions followed by the methodology and methods for data collection and analysis used throughout the research. The research problem is derived from the observation that despite recent changes of the formal institutional framework to achieve sustainable natural forest management and forest protection, conventional logging persists. Conventional logging is here understood as a particularly destructive method of forest management traditionally used in the country. The central research question is ‘How do informal institutions affect the achievement of formal forest policy ends (sustainable forest management and forest protection)?’.

The theoretical framework is presented in **Section II** (Chapters 2-3), and is based largely on the theory of the New Institutional Economics (NIE).

Chapter 2 begins with a discussion of the concept of rationality and its relation with the theoretical approach used in this research. Thereafter the working concepts of formal and informal institutions will be presented as well as the distinction between institutions and organizations. Following, the concept of business culture will be introduced as well as the role that trust and reputation play in determining the economic environment. Then, the connection between business culture and institutions will be discussed, followed by the relationship between the private use of natural resources and formal and informal institutions.

In the next section of Chapter 2, the theory of institutional emergence and institutional change is presented. Of particular interest is the theory on bargaining power of different groups over institutional rules as a means to obtain an advantage over specific benefits arising from institutional arrangements. Then, it will be discussed how institutions drive collective action through particular enforcement mechanisms, and how they – by structuring economic activity – influence the distribution of benefits between business partners and social groups in the production of collective goods. Next, the concept of path dependence will bring forward the theoretical proposition that institutional emergence and change is subject of a process influenced by historical, social and political circumstances. At the end of the chapter, a model of the interaction between informal and formal institutions will be introduced. This model pays particular attention to the concept of embeddedness of informal institutions in society and thus in formal arrangements, underscoring that formal and informal arrangements act in an intertwined manner rather than separately. This raises again the issue of business culture, and the fact that economic activity embodies not only formal arrangements but informal ones as well. It is posited that economic performance and the achievement of policy goals depends on the ‘harmony’ existing between formal and informal institutions. The final section addresses the issue of governance, which brings forward the relevance of the interaction between informal and formal arrangements in the achievement of forest policy ends.

Chapter 3 presents some concepts from the field of forest policy on which the research is based. The chapter attempts to bridge theoretical and empirical issues. It begins with the

introduction of the concept of forest policy as understood in international and academic circles, which draws on a holistic rather than an isolated forest sector approach. Following, a review of the relationship between policy failures and deforestation and forest degradation is undertaken as well as of some of the measures proposed to attend the problem, which includes an overview of different forest policy instruments (incentives).

In **Section III** (Chapters 4-7) the dissertation's results and discussion are presented. In Chapter 4 a literature review is performed to take a look at the underlying causes of deforestation in Central America, which serves as a background to the case of Costa Rica and the empirical research, followed by the policy issues being addressed in the region as well as the incentive measures used in the forest sector in some Central American Countries.

Chapter 5 focuses on Costa Rica and the recent evolution of formal arrangements in the forest sector and provides an overview of the involved stakeholders and the conflicting issues that arise through recent institutional changes in the forest sector. It explains what is being attempted by the state at the administrative, legal and economic level and a look is taken at the incentive measures that the Costa Rican state has selected to achieve formal forest policy ends. Particular attention is given to the "Payment of Forest Environmental Services", and distributional issues are addressed. The conflict around the participation and performance of governmental organizations and private actors in forestry activities is also presented and discussed.

In Chapter 6 the issue of forest use – from the standpoint of private stakeholders – is addressed. It begins by listing observed informal norms of behavior at the private and public level, and thus it bridges Chapter 6 with the former chapter by highlighting several norms of behavior that in Chapter 5 are observed as interactions between formal and informal arrangements at the governmental and private level. Transaction costs stemming from conventional logging are examined and particular attention is given to the role of information asymmetries and imperfect information as sources of transaction costs.

The discussion in Chapter 7 addresses the research questions and discusses them by contrasting the empirical research with the theoretical framework used throughout this study. A main finding is that despite the changes of the institutional framework, the achievement of formal ends is hampered because private actors receive larger payoffs by complying to informal arrangements that support conventional logging than to formal ones supporting sustainable forest management and forest protection. It is found that the logging industry, by making use of bargaining power is able to maintain the *status quo* of its members despite the formal institutional change. Particularly relevant to this chapter is the discussion of the change of formal arrangements (and the path being followed) related to the model of interaction between informal and formal arrangements in the light of the empirical evidence. It is also discussed how far does this research study complements (or not) the findings of other authors for Costa Rica. Finally it will be discussed how appropriate the theory of the NIE is to address the research questions posed in the study.

I Introduction

1 Problem statement: Conventional logging vs. sustainable forestry. Crisis in the Costa Rican forest sector

This research project aims to contribute to a better understanding of the forest use criteria of private landowners in Costa Rica. Individual – private – forest use decisions are based on economic and personal goals and values such as short-term profit criteria, followed by subsistence, business and personal criteria (Solórzano 1990: 3; Schelhas 1996: 302; Jantzi et al. 1999: 32-33), which are not necessarily short-term.

Throughout the years, the strong support that agriculture and cattle ranching have received from the government as well as from bilateral and multilateral organizations has made forest-based production the less attractive land use alternative from a private point of view (Watson et al. 1998: 57-59), underpinning what has been acknowledged as an “agricultural culture”. Thus, public policies skewed against forest-friendly activities have consistently contributed to an undervaluation of the natural resources harbored by forests (e.g. the long term protection of biodiversity, soil and watershed), and have driven to the performance of ‘conventional logging’ (Solórzano 1990: 3; Peuker 1991: 3; Repetto 1993). Between 1970 and 1990, the country’s agricultural frontier was already exhausted – i.e. all the land considered suitable for agriculture was already in use – and ‘conventional logging’ turned to be the main cause of deforestation (Solórzano 1990: 3; Watson et al. 1998: 37, 57).

Conventional logging is characterized by a passive role of landowners in the process of application for the logging permits and the felling activities, and a corresponding active role of loggers and forest engineers. Due to insufficient financial and technical resources, many landowners cannot harvest their timber on their own, and depend on loggers and forest engineers to exploit their forests commercially (Solórzano 1990: 5; Watson et al. 1998: 22). Conventional logging is also characterized by the use of conventional heavy machinery¹ to construct roads, skid trails and landings, as well as by a lack of pre-harvest procedures like vine-cutting in areas where heavy vines connect tree crowns. The most valuable trees are selectively extracted (creaming), producing severe damages to the total managed area. According to Méndez (no date: 3) between 40-55% of the stand’s area is damaged by conventional logging practices. Besides the degradation of wood resources, the damages comprise the loss of species in the undergrowth and soil compression. Timber extraction takes place without any planning of the extraction activities (felling, hauling, log landings) and lacking

¹ Logging in Costa Rica is a seasonal activity, and takes place mainly during the dry season. During the rest of the year this machinery is used for the construction and repair of roads, houses, buildings, etc. For this reason conventional tractors and trucks are used instead of machinery designed specifically for logging.

forest inventories prior or after the felling activities (see Méndez, no date: 3-4; World Bank 2000).

These three groups of private actors (landowners, loggers and forest engineers) build the core group of private actors directly involved in forest use. Even though some forest use strategies of private landowners are well identified – as well as the role that loggers and forest engineers play during forest use – so far the circumstances under which these private stakeholders negotiate and perform forest use are not adequately understood.

The Costa Rican government has recently introduced several institutional reforms aimed at improving the overall management of natural resources. Among these reforms we find efforts to decentralize government's political and administrative functions towards so called 'Conservation Areas' throughout the country, and the introduction of the Payment for Forest Environmental Services (PES). On the basis of these efforts Costa Rica has reached wide international acknowledgement. At the technical level of natural forest management, to perform logging private actors must comply to requisites like presenting – *ex ante* – forest management plans to forest authorities in order to be awarded logging permits. Forest management plans should include pre-harvest inventories, mapping of individual crop trees, use of appropriate felling and bucking techniques, etc.

Nonetheless, today's logging activities still arise large critique from not only environmental organizations and academicians, but also from landowners themselves (as the field research showed), due to large damages caused to stands despite planning of logging activities (i.e. damages are considered the same as those described for conventional logging).² The criticism on today's logging activities claims that despite compliance to written requisites, observable improvements of natural forest management are more the exception than the rule. Which means that conventional logging persists despite formal arrangements to improve the management of natural forests. The fact that conventional logging persists despite actual governmental efforts to promote sustainable forestry and forest protection (including those undertaken during the last decades) is a key issue underpinning this research project.

Little is known about how informal institutions drive private forest use, how do they contribute – or not – to the achievement of formal ends pursued by the state, and how institutional arrangements (formal and informal) contribute to the allocation of benefits stemming from conventional logging. An analysis of the actual informal institutional arrangements is necessary to understand their influence on the achievement of formal institutional ends related to the private use of forest resources.

While the rules of 'sustainable forestry' and 'forest protection' are well documented (as they are established and enforced primarily by the State), the set of informal rules driving conventional logging (the behavior codex of private actors and enforcement mechanisms supporting

² See also La Hoja, Volúmen 1, Números 1-9, 1998. Barrantes et. al (1999); Campos, et al. (2001).

conventional logging) has not been yet properly documented and analyzed. It is only recently that researchers in Costa Rica have turned their attention to institutional issues of the forest sector (see Richards et al. 1996; Segura et al. 1997; Lindegaard and Segura 1998; Segura and Johnson 1998; Segura and Vargas 1999; Campos et al. 2001), but even though these authors mention some of the difficulties faced by actual state policy strategies, they focus largely on the ongoing negotiations between the private – entrepreneurial – sector and the government. The standpoint of individual private landowners is only vaguely included.³ Hence, existing research has largely not addressed the relationship between formal and informal arrangements driving private forest use. In general, research on the interaction between informal and formal institutions is acknowledged to be scarce (Nee 1998a: 3; Mummert 1999: 3-4).

Based on these insights this study addresses the issue of how informal institutions in Costa Rica drive private forest use and how they are linked with formal ends (sustainable natural forest management and forest protection).

1.1 Objectives and research questions

The main goal of this research is to contribute to the understanding of how informal institutions influence the achievement of formal forest policy objectives in Costa Rica. Two objectives have been formulated for this matter:

1. Documentation and analysis of informal institutions relevant for the Costa Rican forest sector, and their relationship towards formal ends.
2. Assess the potential of recent formal institutional reforms to successfully promote sustainable forest management and protection.

The main research questions focus on:

1. What are the rules, behavior codex and enforcement mechanisms of stakeholder groups involved in conventional logging?
2. Which are the dominant objectives influencing private landowners' forest use decisions?
3. How do informal arrangements support the stability of conventional logging in opposition to formal arrangements?
4. How do informal arrangements influence the achievement of formal forest policy goals (sustainable forest management and forest protection)?
5. How does the institutional framework (formal and informal) structures benefit distribution among private actors?

³ For example, Campos et al. (2001) performed their research on illegal logging almost without landowner-interviews.

1.2 Methodology and methods

1.2.1 Research design

In this research a qualitative approach is used to answer the research questions, which focus largely on human economic behavior. For this matter a case study is built focusing on how recent institutional changes influence local private forest use. The case study is enriched by including the general discussion at the national level on the recent formal institutional changes. This qualitative approach is combined with quantitative methods that complement and illustrate the issues discussed. The detailed description of the quantitative methods used is found at the beginning of each exercise in Chapters 5 and 6.

This research study aims to fulfill the following criteria of (well done) case studies:⁴

Criteria	Research tactic	Research phase in which the tactic is used
Construct validity	Use of multiple sources of evidence	Data collection
Reliability	Use research protocol	Data collection
	Develop research data base	Data collection
Internal validity	Do pattern matching	Data analysis
	Do explanation building	Data analysis
External validity	Use replication logic	Research design

Source: Adapted from Yin (1994: 33)

Construct validity relates to the extent to which inferences can be made from the empirical research to the theoretical constructs on which the analysis is based (Yin, R., 1994: 33-34; Kvale, S. 1996: 240; Trochim 2000). In this regard, multiple sources of evidence are used throughout the research study. Reliability refers to the characteristic inherent to a scientific research that if the operations of the study – like the data collection procedures, and the same theoretical framework is used – are repeated, similar results shall be obtained (Yin 1994). Internal validity refers to the establishment of causal relationships that show that certain conditions guide to certain outcomes (Yin, 1994, Trochim 2000). External validity refers to the degree to which the conclusions obtained in the research study can be generalized to other persons and places (Trochim 2000).

This study departs from the example of the Central American region where, following Segura et al. (1997), efforts are being undertaken to improve private forest use by means of institutional arrangements that seek to enhance the different values of forest resources. The research study is performed in Costa Rica, a country that regionally plays a pioneering role in the reform of the institutional framework of the forest sector.

⁴ See also Kvale (1996: 237).