A MODELING APPROACH TO COLLABORATIVE FOREST MANAGEMENT

By

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ABSTRACT

HERRY PURNOMO. A Modeling Approach to Collaborative Forest Management. Under the direction of Rudy C. Tarumingkeng, Endang Suhendang, Dudung Darusman, Mohammad Syamsun and Upik Rosalina.

A successful sustainable development strategy requires that forest management be carried out in a participatory way. This includes the involvement of local communities. The importance of communities' participation has been written into Indonesian Law No. 41 on Forestry (1999). However, how this law can be implemented in areas already allocated to a concession holder is still unclear. The state-owned company, Inhutani II Sub Unit Malinau, has managed a forest area in Malinau District, East Kalimantan for over 10 years. Forest-dependent communities located in the managed area were Long Seturan, Long Loreh and Langap villages. The company managed the area based on plans approved by the local and central] governments. They established permanent sample plots for measuring the stand growth and yield data in their area, and were asked to improve the well-being of local communities. However, the schemes did not give the company sufficient space to manage the area creatively, or provide a systematic way to involve the communities in the management of the forest.

This research was aimed at seeking scenarios of sustainable forest management (SFM) that addressed the above limitations. To reach this aim, two research hypotheses were proposed:

1. Local forest stakeholders can define their own SFM Criteria and Indicators (C&I) for specific sites where they live, or that concern them;
2. Collaborative management of forests by all relevant stakeholders will achieve better forest management outcomes.

An artificial society of primary forest actors was built using a multi-agent system approach, used for developing scenarios to increase the sustainability of forest management. Indicators of forest cover and standing stock, communities' incomes, company revenue and taxes paid to local and central governments measured the sustainability.

The research results showed that local communities that lived in the area of Inhutani II were able to define C&I of SFM. The local C&I are not different from the generic or scientific C&I of SFM. However, these C&I are formulated with different structures and argumentations. The developed knowledge-based system found a way to harmonize this knowledge. Collaboration between concessionaires and the communities appeared to be the most suitable alternative for SFM - particularly for improving communities' incomes without decreasing the quality of the forest. An appropriate decentralization policy is a condition for implementing collaborative forest management.

LETTER OF STATEMENT

I herewith declare that the dissertation entitled “A Modeling Approach to Collaborative Forest Management” is purely my work with the supervision of the advisory committee. This dissertation has never been submitted to other universities to get a similar degree. All data and information sources have been stated clearly in the document and their correctness can be checked.

Bogor, 6 May 2003

Herry Purnomo

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BIOGRAPHY

The researcher was born in Lumajang, East Java, on 21 April 1964 as the third child of Abdul Rasyid and the late Siti Masamah. His undergraduate program was carried out as a Study Program at the Agricultural Meteorology, Faculty of Science and Mathematics, Bogor Agricultural University, completed in 1987. In 1990, the researcher studied Computer Science at a Sandwich Program in a cooperative program between the University of Indonesia and University of Maryland USA for a Master of Science degree, completed in 1990. In 1997, the researcher joined the Forestry Science Study Program, a Postgraduate Program at Bogor Agricultural University, to do a Doctoral degree.

The researcher is a lecturer at the Faculty of Forestry, Bogor Agricultural University. He primarily teaches Systems Analysis. He is also a researcher at the Center for International Forestry Research (CIFOR) in Bogor.

During the doctoral study, he participated in training on Programming in Logic (PROLOG) for Natural Resource and Environmental Management, University of Edinburgh, United Kingdom (1998), and Artificial Society with CORMAS (Common Pool Resources and Multi-agent Systems), Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), Montpellier, France (2000). In 2002, he presented a paper titled “Development of Multi-stakeholder Scenarios of Secondary Forest Management: A Multi-agent System Simulation Approach” in an international seminar on Dipterocarp Reforestation to Restore Environment through Carbon Sequestration, organized by Gadjah Mada University and KANSAI and KANSO Japan in Yogyakarta. In February 2002, he presented another paper entitled “Developing a Collaborative Model for the Management of the Areas Surrounding Lumut Mountain: A Qualitative Systems Analysis Approach” in the Symposium

on Forest Margin Interactions, organized by CIFOR Regional Office, Harare, Zimbabwe. He also visited Beijing, China for presenting criteria and indicators for sustainable forest management and related tools in June 2002

In the year 2002, as a senior author, he submitted five different scientific papers to international journals. Two papers entitled “Multi-agent Simulation of Alternative Scenarios of Collaborative Forest Management” and “Collaborative Modelling to Support Forest Management: Qualitative Systems Analysis at Lumut Mountain, Indonesia” will be published in the Journal of Forest Small Scale Economics, Management and Policy, in the year 2003. The other three papers are in the reviewing processes.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES