



Tropentag, September 14-16, 2010, Zurich

“World Food System —
A Contribution from Europe”

Simulating the Decision-making of the Local Farmers in Provisioning Ecosystem Services — the Case of Bungo District, Sumatra Island, Indonesia

GRACE VILLAMOR¹, MEINE VAN NOORDWIJK², RATNA AKIEFNAWATI³

¹*University of Bonn, Centre for Development Research, Germany*

²*World Agroforestry Centre (ICRAF), Southeast Asian Research Program, Indonesia*

³*World Agroforestry Centre, Southeast Asia,*

Abstract

Ecosystem services (ES) trade-offs occur when the provision of the ES is reduced as a consequence of increased use of another ES. The growing demand to meet the human needs particularly for food causes the decline in other ecosystem services such as agro-biodiversity which are both crucial to human wellbeing. This research presents the decision-making and negotiation process of the farmers in three villages of Bungo District (in Jambi Province, Sumatra) in provisioning ecosystem services i.e. rice and rubber latex productions through land use dynamics role-playing games. Participants of the game assumed roles such as palm oil companies and pulp wood and paper industries as agents of land use change in the area that influence the decision-making processes of the villagers. The role playing game tried to capture the social interactions of the main actors in relation to land use change and provision of ecosystem services. Among the main results of the land use dynamic role playing game showed the strong “non-economic motivations” of the farmers and were verified using the focus group discussion. The results of this activity will be incorporated in the on-going development of an agent based modelling (ABM) to simulate and visualise the temporal and spatial scale effects on the tradeoffs between goods and services from the landscape of Bungo District while integrating the values and perceptions of the key actors. This research aims to assess between upland agricultural production (as provisioning service) and measurable ES such as (agro)biodiversity and carbon stocks for the present and future uses and provides experience for other regions.

Keywords: Decision making, ecosystem services, land use cover change, land use dynamic role-playing game, oil palm, rice, rubber latex production