Eco-Certified Jungle Rubber: A Safety Net for Disappearing Species?

World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

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Protecting jungle rubber is an investment in biodiversity that pays significant dividends. Jungle rubber is a traditional agroforestry practice that allows jungle plants to grow among the rubber trees. Of the total world rubber production, only about 7% comes from Indonesian jungle rubber.

Studies from the Bungo District of Sumatra show that jungle rubber harbors more than 500 species of trees, mammals and birds, while rubber and oil palm monocultures contain only a handful of species. Bungo's jungle rubber may also provide corridors between Indonesia's giant Kerinci Seblat National Park and smaller protected areas. These areas provide homes to the critically endangered Sumatran Tiger and the world's largest flower, *Rafflesia arnoldii*.

Category	Jungle Rubber Biodiversity Data from Research Studies
Tree Diversity	971 species identified Simpsons index .72 for jungle rubber Compared to .07 for rubber monoculture
Mammal Diversity	37 species identified 9 endangered species
Bat Diversity	10 species for bats identified
Primate Diversity	6 species identified in study area; 2 further species reported by local people
Bird Diversity	167 species identified 28 species are protected by Indonesian law 10 species covered by Cites

Jungle rubber is under threat

As Figure 1 shows jungle rubber in Jambi Province has dwindled significantly, between 1973 and 2002 replaced by low-biodiversity monocultures. The economics of rubber farming under current rubber market conditions suggests that this trend will continue or even accelerate.

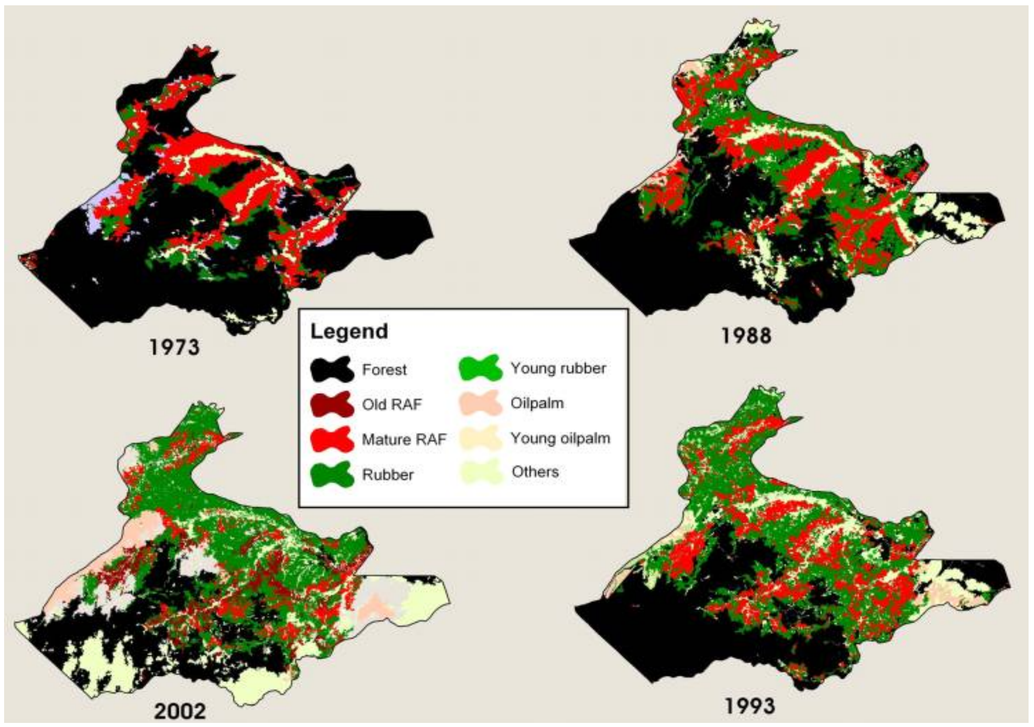

Figure 1. Land use change in Jambi Province 1973-2002

Without a market for environmental services, jungle rubber is economically inferior to monocultures at high rubber prices and low discount rates. In spite of this, jungle rubber has persisted throughout Indonesia at least partly because:

1. It is a low risk strategy for the volatile rubber prices of the last 2 decades (Figure 2a)
2. At discount rates below 20 percent, monoculture rubber is less profitable than jungle rubber (Figure 2b).
3. Jungle rubber provides other products, not necessarily with market value, for household consumption.

Due to increasing demand from China, rubber prices are expected to remain strong for the next 20 years, undercutting the past logic for maintaining jungle rubber.

Can eco-certification preserve jungle rubber and the jungle rubber species?

Eco-certification of jungle rubber could make it a competitive land-use choice, if eco-certification produces price premiums. Limited research to date suggests that such premiums have not materialized for certified timber. (Gullison 2003)

Separating the commodity value chain from the biodiversity value chain could resolve these two drawbacks. A value chain is the series of successive intermediaries that take the product from the initial producer to the consumer, by transforming it in someway that adds value and generates profits. (Kaplinsky and Haris 2003; Talbot 1997) Rubber has a very complex value chain, with many intermediaries that add no biodiversity value.

Contracts could guarantee a price premium if executed directly between biodiversity producers and end-product manufacturers who transform the biodiversity into marketable products. (Taylor 2005)

These contracts could also base price premiums on biodiversity indicators, ending the potential for perverse incentives. Perverse incentives can occur when a scheme designed to foster one result bases payment on a different result. This could happen with jungle rubber if farmers were paid an increased price for rubber to try and encourage increased biodiversity. Research in Bungo identified the following indicators of habitat that reasonably approaches the character of natural forest.

- Number of tree species with trees beyond a certain size per land area.
- Relative rubber basal area, measured as a percentage of the total basal area which is the sum of the diameters of all trees in a sample area.
- Number of large trees per land area
- Number of saplings per land area. Saplings indicate the regenerative ability of the site.

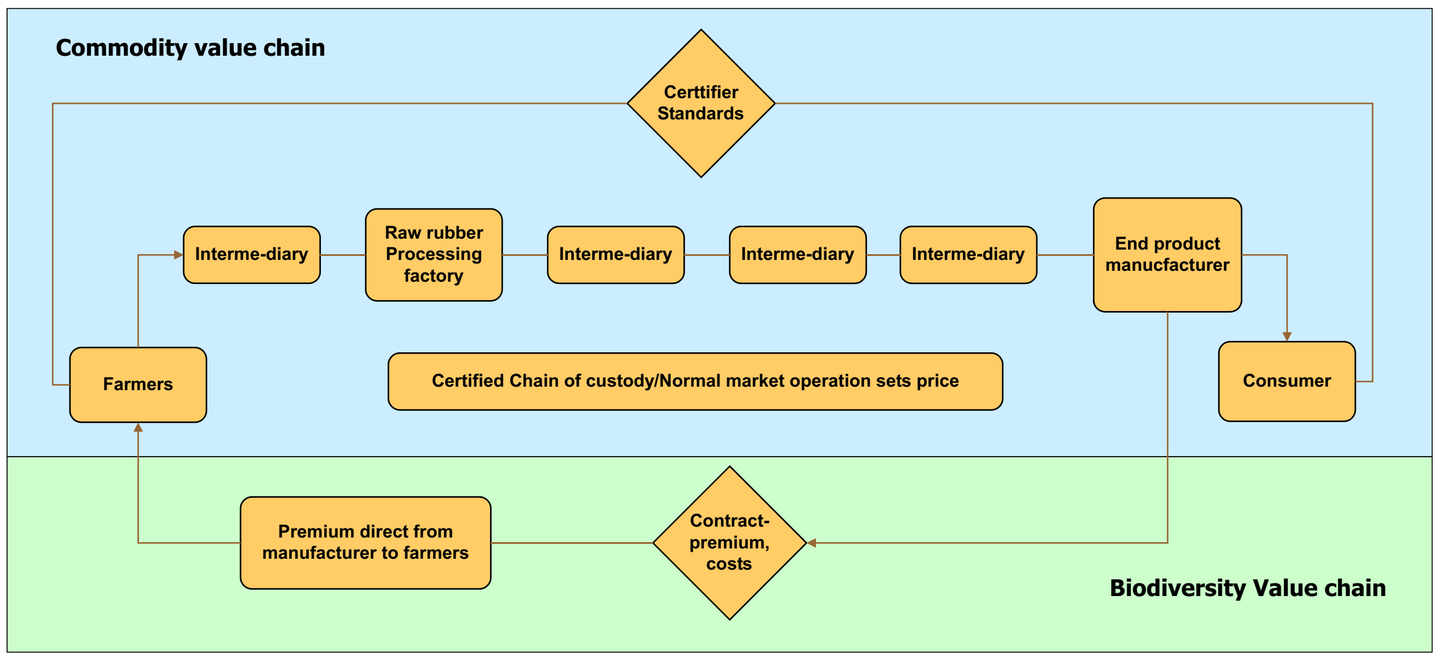

Figure 3. For wood, both the biodiversity value and payments travel through the commodity value chain depicted on the top of this generic diagram. Using contracts can create the shortened biodiversity value chain in the bottom of the diagram, making it more likely that any price premiums will reach producers.

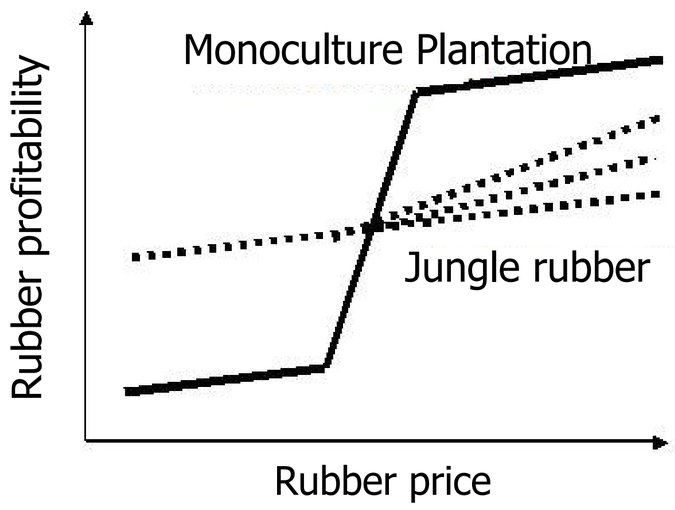

Figure 2a. Buffering property of jungle rubber. Profitability of monoculture rubber falls rapidly as the rubber price goes down. Jungle rubber system is less sensitive to rubber price and can remain feasible even at low price of rubber.

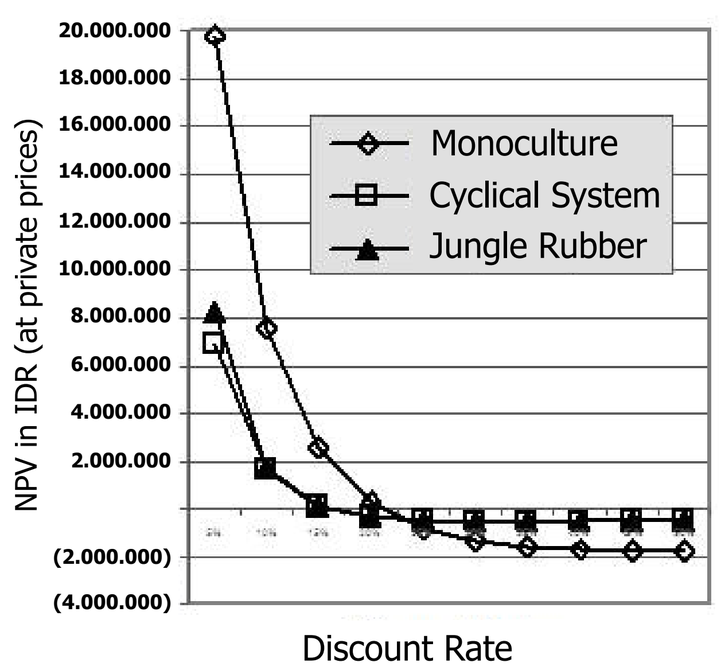

Figure 2b. Profitability under a range of discount rates - At high discount rates, jungle rubber provides better returns than monoculture rubber (Budidarsono et. al 2005)

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