



Nephentes sp. at Sibulan-bulan, North Sumatra, Indonesia

reserves. Fortunately, jungle rubber system is still commonly practiced in Bungo. Earlier research in Bungo indicates the 'jungle rubber' agroforests are becoming increasingly important as a reservoir of forest diversity and now provide some of the forest 'services' valued in natural forests. As the financial gains from monoculture plantations are much higher than from jungle rubber, land conversion to monocultures is taking place rapidly. A new approach of providing rewards for environmental service of (agro)-biodiversity conservation in rubber agroforest system was proposed as an alternative means by which the opportunity costs from alternative land uses can be off-set. Hence, RABA was developed and tested in the area with summary findings as below:

Summary findings of a Rapid Agro-biodiversity Assessment in Bungo district, Jambi

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| <ul style="list-style-type: none"> Sumatra is one of the hotspots in terms of biodiversity, and little of its lowland forest are protected Jungle rubber is similar to secondary forest in structure and richness Jungle rubber gives good income to farmers Buffer zone for the nearby forest and protected areas | <ul style="list-style-type: none"> People see the benefit from ES in jungle rubber (especially water related) Increasing productivity of jungle rubber through improvement but not losing the ES benefit from it Participatory land use planning |
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| <ul style="list-style-type: none"> Lack of trust between local people and government Local people are willing to negotiate with outsider if there's a benefit for them | <ul style="list-style-type: none"> Conversion to monoculture crops (rubber or oil palm) Top-down attitude in respect to land use change Increasing price of rubber |
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The results of the RABA application in Bungo provided sufficient evidence and confidence to proceed to developing a reward mechanism. The understanding and recognition of environmental services of jungle rubber have increased both among the local villagers and the external stakeholders. Efforts to develop long term benefits through eco-certification of jungle rubber are under way.

References

(<http://www.worldagroforestrycentre.org/sea/Publications/index.asp>)

Kuncoro SA, van Noordwijk M, Martini E, Saipothong P, Areskoug V, Eka Dinata A and O'Connor T. 2006. Rapid Agrobiodiversity Appraisal (RABA) in the Context of Environmental Service Rewards. Bogor, Indonesia. World Agroforestry Centre - ICRAF, SEA Regional Office. 106 p.



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RAPID AGRO-BIODIVERSITY APPRAISAL (RABA)

in the context of Environmental Services Rewards

Trees in Multi-Use Landscape in Southeast Asia (TUL-SEA)
A negotiation support toolbox for Integrated Natural Resource Management

Agrobiodiversity as ecosystem service under threat

With rapid deforestation across the tropics, biodiversity loss is a global concern. Until recently, most biodiversity conservation approaches were based on a spatial segregation of functions and was focused on 'protected areas' plus 'intensive agriculture'. The results of such endeavors, however, remain less than satisfactory. A second approach is based on 'integration' of functions and on maintaining substantial biodiversity *within* productive landscapes. A combination of the two approaches is most likely to achieve the joint goals but it includes 'integrated' systems where the 'conservation' and 'economic development' goals compete. Specific incentives that represent the 'conservation' stakeholders may be needed to keep the 'conservation' aspect of these systems in the land managers' attention.

Environmental service rewards for conserving **agrobiodiversity or biodiversity in agriculture landscapes** need to deal with three important criteria:

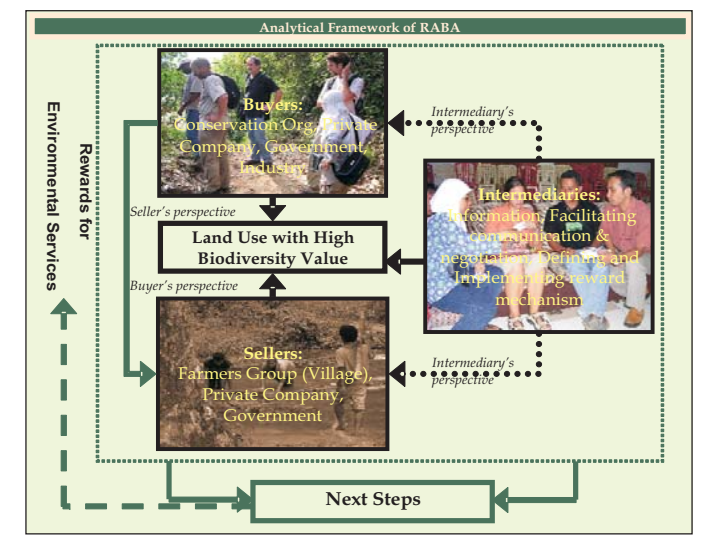
Realistic - interventions need to be based on knowledge of the flora and fauna, its genetic diversity and processes of regeneration and dispersal and the way it depends on the landscape, land use and a changing climate; they also need to align with the tradeoffs between economic benefits from land use change and the consequences for measurable agrobiodiversity

Voluntary - the mechanisms need to respect existing property and land use rights (compare the RATA or rapid tenure claim appraisal tool) and follow principles of Free and Prior Informed Consent (FPIC); agreements require a shared understanding of the issues and options to deal with them

Conditional - the economic incentives will be 'performance-based' and thus require systems of monitoring changes in agrobiodiversity in the landscape that can be done locally and that relate to real stakeholder interests.

Objectives of RABA

- Assist potential investors in agro-biodiversity conservation to explore the potential benefits
- Assist the managers of agro-biodiversity rich landscape to understand their key 'selling points'
- Provide cost-effective approach to intermediaries



RABA is a tool designed to appraise the perspectives of concerned stakeholders related to biodiversity conservation and the feasibility of a compensation or reward for environmental services (RES) at any area or landscape of interest. RABA uses different techniques and tools from Rapid Rural Appraisal, Stakeholder Analysis and exploration of local ecological knowledge approaches. It captures the perspectives of seller, buyer and intermediaries and generates initial data necessary for sellers, intermediaries and buyers to engage in developing a reward system. RABA is not a stand-alone tool for assessment of detailed biodiversity richness. Selection of an area for potential RES mechanism is normally based on existing credible information about richness or uniqueness of existing biodiversity that may be verified through local consultations. For areas where reliable biodiversity data are unavailable but necessary, the Quick Biodiversity Survey of indicator flora and fauna can be used as a complementary tool.

Steps in RABA

RABA has four stages for sellers and buyers to engage in arranging a RES mechanism, namely scoping, identifying potential partners, negotiating agreements and monitoring and evaluating compliance and outcomes. RABA itself is designed to cover the stages of scoping out the domain and identifying partners who will be engaged in the transactions. As an analytical framework, RABA offers an insight of and guidance on the important elements that should be considered in developing a RES mechanism.

Stage	Rapid Agrodiversity Appraisal	Sellers' perspective Communities that manage or control biodiversity-rich agroecosystems	Buyers' perspective Institutions interested in conserving agrobiodiversity
Scoping		<ul style="list-style-type: none"> ➢ What do we have that is of interest to outside stakeholders? ➢ What are the downsides to us of efforts to conserve? ➢ What are the positive sides to us of maintaining biodiversity? ➢ What 'willingness to pay' can we expect? 	<ul style="list-style-type: none"> ➢ Where are the areas under threat? Where are conservation activities needed? What are species and ecosystems under threat? ➢ Who can effectively influence conservation uses in these areas? ➢ What 'willingness to sell' can we expect?
Identifying potential partners		<ul style="list-style-type: none"> ➢ Who should we talk to? ➢ What documentation do we need? 	<ul style="list-style-type: none"> ➢ Who can effectively and equitably represent all local 'actors'? ➢ Does local government qualify?
Negotiating agreements		<ul style="list-style-type: none"> ➢ How do we balance restrictions imposed on us with substantive rewards? 	<ul style="list-style-type: none"> ➢ How do we know we can trust the 'sellers'? What guarantees are built in?
Monitoring and evaluating compliance and outcomes		<ul style="list-style-type: none"> ➢ How can we deal with defectors & free riders in the community? ➢ How do we know the buyer is satisfied? 	<ul style="list-style-type: none"> ➢ How is 'compliance' (at output level) monitored? ➢ How are 'outcomes' monitored?

RABA Process

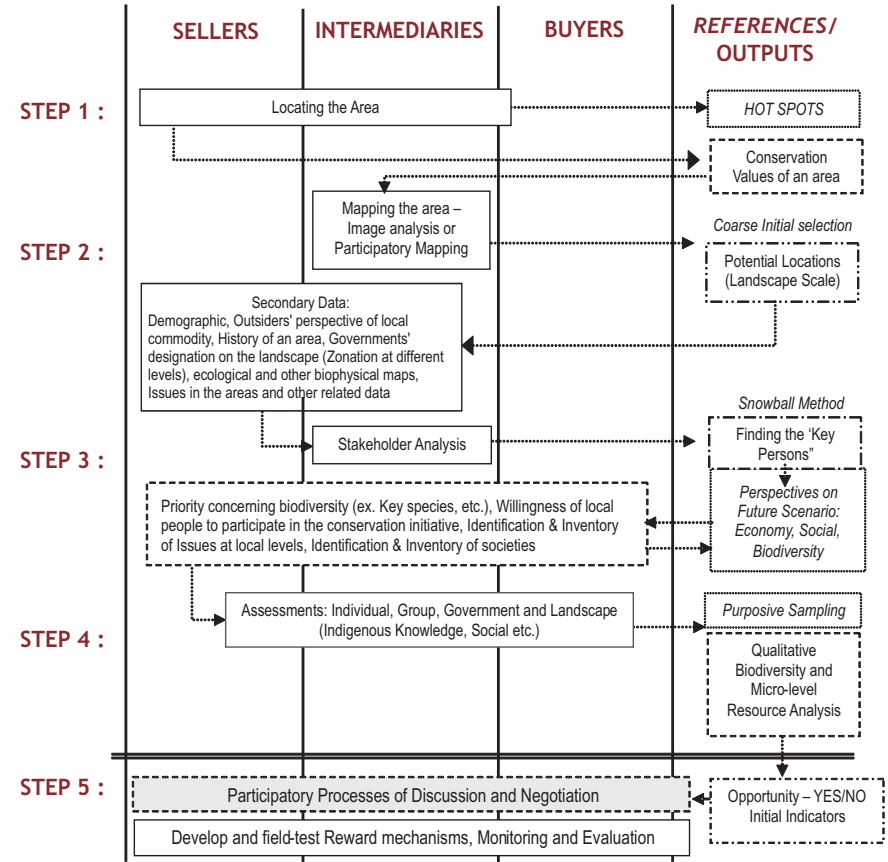
The initial stages consist of acquiring, collating and analyzing secondary data. Selection of location can be based on available data and secondary information. Identification of land-uses and assessing potential threats are also important. Spatial analysis can provide baseline data to be used in the pin-pointing areas potential for conservation. Participatory mapping can be a useful starter, but spatial analysis using satellite imagery and aerial photographs are more objective and can be effective for planning and future monitoring. The next step is to identify threats to biodiversity conservation in the area of interest and opportunities to counter these threats. Both "very small" and "very big" threats can reduce the interest of potential buyers of environmental services. The "optimal threat level" for intervention is difficult to measure and depends on the context. Secondary data (bio-physical, ecological socio-economics, prevailing and future policies) enriches the understanding of past, current and possible future situations.

Stakeholder analysis identifies people and institutions with vested interests in resource management in the area. In essence, stakeholder analysis is a 4-step process: identifying key stakeholders, assessing stakeholders' interest and potential impact, assessing influence and importance and outlining a strategy

for stakeholder participation. Understanding of power relations between and within stakeholder groups and conflicts, current and future, is necessary for developing appropriate strategies including RES. Expectations among stakeholders are also essential.

Assessment of local perception of agrobiodiversity indicates the relative importance local people place on existing biodiversity, hence the potential for conservation. Various aspects such as tenure and rights on land, social strata, economy and livelihoods, local knowledge about environment and agrobiodiversity, institutions, threats and opportunities can be explored using various tools and methods.

Step-wise approach in the implementation of RABA and stakeholder involvement



Case study: Rubber agroforests in Bungo (Jambi, Indonesia)

Bungo is a district in Jambi province that is located in between 3 national parks (Bukit 12 National Park, Bukit Tiga Puluh National Park and Kerinci Seblat National Park) on the island of Sumatra. The area harbors many endemic species and, at the same time, have been significantly impacted and altered by human activities. Like many other districts, Bungo is rapidly losing its forests; previously dominant low-land tropical forests with rich biodiversity have been replaced by monoculture cultivation. Habitat for most flora and fauna is disappearing very fast and now exist only in small "island" national parks and

