

resources, that is understood by both the villagers and the researchers. A village-based survey collected a wide range of data (Table 1). A parallel field survey assessed sample sites. These methods emphasised observations across the wider landscape. Two hundred field plots were established and described including soil, location, vegetation, site use and potential. This is a substantial body of information. For example, 15,430 plants were recorded representing 2,126 distinct species and local informants attached 1,457 specific species-by-use combinations to these plants.

Results for local needs

All sections of the communities consider unlogged forest as the single most important land cover. Communities rate logged-over forest much lower because of diminished resources, reduced physical accessibility and limited access rights. The decline in valued species is a direct result of Indonesian government logging regulations that require concession holders to repeatedly slash all undergrowth and climbers after timber harvesting. This slashing indiscriminately removes a wide variety of valued species such as medicinal plants and even commercial rattan. Even if applied properly, the regulation's benefits for timber production are limited while the impacts on biodiversity and communities are considerable. This policy should be reviewed.

Another valued resource is the forest boar ***Sus barbatus***. These pigs are a highly preferred food and a major source of vital animal fats and proteins. According to the communities, these animals decline in logged areas. With fewer pigs, communities are forced to supplement their diets by eating less-preferred game, including various protected species with global conservation significance.

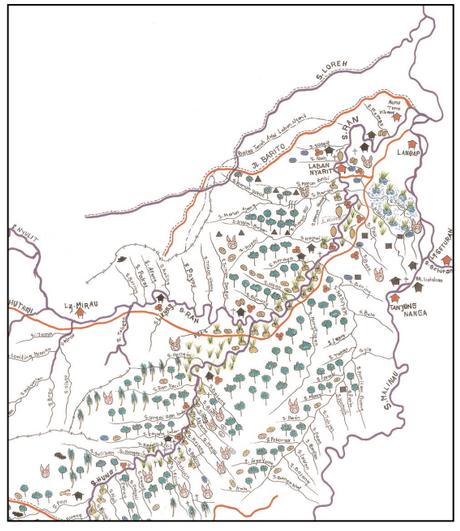
A shortage of preferred construction materials (e.g. 'ulin' or ***Eusideroxylon zwageri***) is being felt in many communities. One community has set aside an area of local forest cover as a carefully regulated community resource, thus creating a *de facto* protected area. Unfortunately, such sites have no official recognition and are threatened by concessions.

Droughts, floods and crop failures are common place in community histories. Many of the more remote Punan people do not maintain large areas under cultivation and depend on wild food resources such as palm starch. In the primary forest, suitable palms are quite common and community management practices protect them. But they are less secure in logged forest. The main local sago (***Eugeissona utilis***) tends to grow on ridge tops, where heavy machinery is used to extract logs from steeply undulating terrain. While this practice is approved under current 'reduced impact logging' guidelines, it can be improved by more flexible skid-trail design to have less impact on sago resources. Certainly the potential to undermine local food security requires close attention.

It may seem unnecessary to use formal methods to elicit such seemingly obvious information. But learning what really matters is often not as straightforward as it may seem. For example, eating sago has become so strongly associated with "backwardness", that communities are embarrassed to discuss it. Outsiders are told sago was "eaten only in the old days", even though this is untrue. By using the survey tools we have developed, we have begun to identify and understand these discrepancies.

There are other instances of hidden values. For example, many outsiders believe the Punan merely "leave their dead in the forest" — a myth the Punan themselves are happy to perpetuate. But many Punan groups traditionally place their dead in large ceramic jars and bury them in the forest. These jars are now very valuable and are often stolen. As a result a "taboo" on discussing such sites has emerged, as this secrecy helps protect the jars from theft. But an unintended consequence is the accidental destruction of gravesites by concession holders, causing resentment, conflict and further mistrust. Identifying and protecting such sites would provide forest refuge areas with conservation significance, and also reduce the conflict and discontent currently threatening community-company relations.

What really matters to the local people is rarely obvious to outsiders. But it can become clearer through various interactive exercises.



Maps created with the community provide a shared basis for understanding the local landscape and planning field assessment

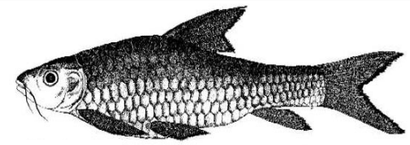
Local priorities and biodiversity in tropical forest

Results for outsiders

Much has been written about community empowerment, but in many ways we are the ones empowered. Our methods have allowed us to understand and utilize the extensive knowledge local communities possess. By knowing what really matters at the grass-roots level, we are empowered to facilitate positive change.

During our work, we were faced with a rugged area of about 2,000 km^2. Local people helped us develop simple maps showing major rivers, roads, villages, mountain ridges, sources of sago and rattan, abandoned villages, hunting locations, caves and others special sites and resources. Ecologically the maps reveal the localised nature of many natural resources and their site associations.

In studying the range of sites and habitats, local advice proved invaluable. But we wanted to go further. We suspected that rare sites often have special significance for local people and contain restricted habitats and species. For example, the limited areas of limestone outcrops provide a habitat not only for valuable birds-nests (made by cave swiftlets and prized for Chinese soups), but also for many other restricted species. We specifically sought out such sites using local assistance. Generally these sites, especially those in natural habitats, added more unique species per sample to the overall survey than did the more typical sites.



Our approach allows us to ask what species and habitats occur where, if they matter very much to any local stakeholders, and if so how much and why. This allows us to clarify priorities, to assess how these values might be threatened and, what might be required to maintain them. For example a study of local fishes by Ike Rachmatika, from LIPI, undertaken with CIFOR determined that the most preferred for local consumption are ***Tor*** spp. These fish are not only seen as good food but also have cultural significance. The adults live in deep clear pools in the forest while the juveniles live in shallower tributaries. They are fruit eaters and are believed to be associated with the presence of ***Dipterocarpus*** or ***Ficus*** growing along the bank. These fish should be viewed as vulnerable as they require clear water, are dependent on forest vegetation, are easily caught, have a relatively low reproductive rate and are keenly sought. Indeed these fish are not found in areas affected by the siltation of rivers caused by forest cutting or road building, and in more open areas generally. Recognising that such species are vulnerable to forest change is part of the wider information that can influence how possible changes are assessed or controlled.

Example of a scoring exercise of importance of different landscape units (by older women in Long Jalan)

	Village	Old village site	Garden	River/lake	Swamp	Cultivation	Young fallow	Old fallow	Forest
Overall (all values)	20	7	13	5	10	9	9	5	22
Food	9	7	10	9	7	9	9	9	31
Medicines	46	-	-	-	-	-	-	-	54
Light construction	-	-	-	-	-	-	-	45	55
Heavy construction	-	-	-	-	-	-	-	-	100
Boats	-	-	-	-	-	-	-	-	100
Tools	17	-	-	-	-	-	-	20	63
Firewood	-	-	-	31	-	28	-	20	21
Basketry/cordage	-	-	-	-	-	-	39	-	61
Ornamentation/ritual	-	-	-	46	-	-	-	-	54
Marketable items	18	-	19	11	-	20	-	-	32
Hunting function	40	-	-	-	-	-	-	-	60
Hunting place	-	-	-	39	-	-	-	-	61
Recreation	37	-	-	29	-	34	-	-	-
Future	22	-	8	12	9	9	-	11	29

The importance of different landscape units for different uses is shown. Higher numbers imply greater importance. Forest is by far the most important landscape for the specified uses.



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Table 1. The community based exercises, indicating the breadth of information gathered

Emphasis	Method
Village description/perspective of land use	Interview with village head only
Cultural background of land use	Interview with traditional leader only
Demography	Household survey (Census) and documentation from village head
Price of traded goods	Interview of shop keepers
Household survey (includes questionnaire of problems and aspirations, with comments on needs and solutions)	Head of household of at least 30 households
Traditional knowledge on land use	3-5 key informants
Forest product collection and sale	3-5 key informants
Settlement history and land use	Interview with village head and traditional leader
Disasters and important events	Interview with village head and traditional leader
Identification of land and forest types	Community meeting (with mapping exercise)
Identification of forest products	Community meeting
Scoring the importance of landscape units	Focus group discussion. Women/men, old/young separately
Scoring changes in importance of landscape units and natural resources over time	Focus group discussion. Women/men, old/young separately
Scoring how distance of landscape units influences importance	Focus group discussion. Women/men, old/young separately
Scoring the importance of different sources of products	Focus group discussion. Women/men, old/young separately
Scoring the most important species per use category	Focus group discussion. Women/men, old/young separately

Note: a complementary series of methods was applied in various sample sites through the region.

Follow up and impacts

Local communities have complex relationships with their environment that need to be taken into account when making decisions and defining policies. This requires a paradigm shift for all institutions and processes related to forest management.

Decentralisation in Indonesia provides many opportunities to local stakeholders. Numerous local institutions are seeking ways to integrate the needs of local communities with broader development strategies and conservation plans. In this era where payments for biodiversity services are being considered for peopled landscapes, understanding the landscape and its values is an essential first step. Local communities are genuinely pleased outsiders now seek their opinions. They recognise the benefits of learning to express their views to outsiders and of openly discussing topics previously taken for granted but given little explicit attention. But there will always be difficulties in integrating local perspectives with real change unless the process is iterative. The key point is to develop a well informed dialogue.

Acknowledgements

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The main reports covering this work can be downloaded from CIFOR's web site at: http://www.cifor.cgiar.org/publications/index.htm. *More general information is available at the CIFOR website* www.cifor.cgiar.org *or by contacting* i.susilanasari@cgiar.org

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Local priorities and biodiversity in tropical forest landscapes: Asking people what really matters

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Summary

Decision-makers require knowledge on how to address the needs and interests of local communities and biodiversity. Some important information is easily obtained by merely talking to people, but some is not. At CIFOR we have developed a suite of survey methods to systematically assess 'what really matters' to communities living in tropical forest landscapes by linking conventional biophysical descriptions of the landscape with local needs and perceptions. This knowledge encourages deeper discussion between development practitioners, policy makers and forest communities. The result is more informed decisions on policy, land use, and payments for biodiversity services — decisions that will improve forest conservation, protect the needs of local people and advance the wiser management of tropical forests.

The Challenge

Much of the global concern about tropical rainforests focuses on the alarming loss of biodiversity. There is also considerable concern about the poverty and marginal status of many forest dependent communities. What has attracted less attention is the degree to which these issues are linked.

While biodiversity assessment is now the focus of considerable research, the information generated often has little impact. Faced with the demands of various commercial interests and development programs, decision-makers — from local politicians to concession managers and international policy makers — still have difficulty dealing with lists of species and other biological survey data. The significance of these data with respect to other concerns is rarely obvious.

The interests of many stakeholders, especially commercial enterprises, are relatively clear and easily communicated. But the same cannot be said of remote communities. Often their needs and perceptions remain hidden to outsiders unless special efforts are made to uncover them. Where external decisions have local impacts, the concerns of communities are often overlooked and outcomes negative, though common, are rarely foreseen. What is needed is greater understanding of local needs and greater input from local communities in the decision-making process.

In 1993, the Indonesian Government provided a forest area in East Kalimantan where CIFOR could conduct long-term research. The lightly populated and rugged forested landscape with its numerous rare plants and animals is a site of global conservation significance. However, much of the region has been allocated to timber concessions, with large tracts of the more accessible areas already or about to be logged. Local communities, including the Merap, Punan and Kenyah ethnic groups, feel their concerns were not considered when previous governments granted these concessions.

In the early 1990s, large-scale coal mining began in the area, with considerable local impact. The economic crisis, the depreciation of the Indonesian currency and an increase in the export value of palm oil and coal, have led to a rapid expansion of prospecting by private investors. The recent devolution of power from the central government to the district level is also having major effects, with local authorities now controlling logging and land-clearing permits.

Our approach

Our study asked, "How can we find out what we need to know to make better decisions about tropical forest landscapes?" Our multidisciplinary approach, employing a diverse set of methods, was developed during a study with seven communities in the forest-rich upper portion of the Malinau watershed (for details refer: Sheil *et al*. 2002). Many of our methods provide a framework, for discussing the significance of local sites and

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