

Out of the forest, out of poverty?

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**Paper presented at
The International Conference on
Rural Livelihoods, Forests and Biodiversity
19-23 May 2003, Bonn, Germany**

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SUMMARY

It is widely accepted that millions of rural people depend on forests for their livelihood, and that forests provide a “safety net” particularly important to the poor. Thus, deforestation and forest degradation are seen as main threats for the future of poor forest people. To assess the actual role and importance of forests to forest people, the Bulungan research forest where Cifor is conducting research since 1999 is a privileged area as it hosts the largest population of Punan hunter-gatherers of Borneo.

The first results of socio-economic surveys launched in the BRF are somehow in contradiction with the general belief. Though the forest plays a major role in providing livelihoods to the Punan, the disappearance of the forest does not always imply an increased poverty. The comparison between Punan communities living in remote upstream villages with others resettled close to the district capital of Malinau tend to prove the contrary. In upstream villages, where forest resources are still plentiful, families barely survive throughout the year, they have no or very reduced monetary income, no access to education and a very high infant mortality rate (35% of the children die before the age of five). In downstream villages, where forest resources are vanishing, families have access to more cash earning opportunities, they enjoy better education and health care facilities. Infant mortality is very low (6% in Respen Sembuak, close to Malinau).

In spite of belonging to the same ethnic group and being closely related, the two communities are living very different lives. Upstream villages envy the city dwellers for their better access to schools, hospitals and leisure facilities. Downstream families regret the lack of wild boar. The trade-off between living in or out of the forest is difficult to assess. From a strict economic point of view, there is a consensus among all Punan: downstream people are generally better off. But when it comes to well-being... opinions diverge.

Would ‘getting out of the forest’ be a way to alleviate poverty among forest people?

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FORESTS AND POVERTY: IMPORTANCE OF THE ISSUE

It is widely accepted that forest people are poor and countless. Some one-fourth of the world's poor are said to depend fully or in part on forest products for subsistence needs (White and Martin, 2002). Tropical forests are under threat and need to be protected. But what about their inhabitants? Forest people depend on the forests for their livelihood. The forest is all they have got. Once the forest is gone, there will be nothing left. The famous motto "save the forest" has evolved into "save the forest people" or rather "save the forest for the forest people".

How to reach this noble goal is still a rather contentious issue. The defenders of indigenous people argue that the latter should be given full control over their ancestral land and forests. The devolution of forests to the people living there would ensure their conservation and their sustainable stewardship.

Since the early 1990s, much hope has been put into the development of non-timber forest products as 'the' solution for saving forests and forest people via extractive reserves, marketing of natural products, certification, eco-labeling, equitable commerce, eco-tourism and even ethno-tourism (Peters *et al.*, 1989; Nepstad and Schwartzman, 1992; Anderson, 1990). More recently, governance issues like empowerment of local communities and decentralization won the favor of international bodies. Environment payments to communities for watershed protection, carbon sinking, fire prevention, biodiversity conservation, forest stewardship... are presently in vogue.

While the rationale behind the necessity to save the forest for the forest people is not exempt from a heavy load of romanticism, quite surprisingly the basic assumptions at the origin of the actions undertaken have seldom been called into question.

SOME QUESTIONABLE BASIC ASSUMPTIONS

Let us take a closer look at the huge numbers of poor forest people and their alleged dependence on forests for their livelihood or at least as safety nets.

Inflated numbers

While the importance of forests and forest products to the quality of life and survival of poor rural people in tropical countries seems indisputable (Perez and Arnold, 1996), the actual number of people involved is somehow lacking precision. Estimates of the numbers of people involved range from: "one million to 250 million (Pimentel *et al.*, 1997), to 12 million people in rain forest areas (Bahuchet, 1993), to "tens or hundreds of millions of people who use forests as a safety net" (Kaimowitz, 2002), to over 500 million (Lynch and Talbott, 1995), to more than one billion (WCFSD, 1997), or to "nearly a quarter of the world's poor" (World Bank, 2000 cited by Fisher *et al.*, 2002). This imprecision only proves the lack of precise definitions of who is poor and of what is meant under poverty and forest-dependent people. Different types of people might either depend on the forest per se or on specific products from the forests. 'Proximity to forests'

should not be confused with 'forest dependence', although clearly the two are related (Byron and Arnold, 1999).

In the last few years, national and international commitments to poverty-alleviation have tremendously increased (Hulme and Shepherd, 2003). Poverty-reduction has become a major buzzword in international audiences and quite logically CG centers are focusing their attention on poverty alleviation and on the promotion of pro-poor policies. However, inflating the figures of forest dependent peoples in order to draw the donors' attention only cultivates fuzziness without adding nobility to the cause. Furthermore, 'the' poor are often considered as one indiscriminate category, misguidedly clustering together chronic and transient poor. As Amartya Sen puts it: "The category of the poor is not merely inadequate for evaluative exercises and a nuisance for causal analysis, it can also have distorting effects on policy matters" (Sen, 1981).

Depending on forests

Rural households living close to forests often combine their agricultural production with the collection of a multitude of forest products, feeds, foods, fuel, materials and medicines. However, the actual dependency of rural households on forests for their consumption or, more generally, to improve their economy is less clear (Ogle, 1996).

Dependency on forests can be defined in different ways: 'relying on' or 'being unable to do without' or 'needing for success' (Byron and Arnold, 1999). Dependency might be absolute or relative, it might also change over time. There are many different types of users, ranging from "those who choose to generate much of their livelihood from forests because it is an attractive, viable option" across a spectrum to "those for whom forest dependency is a livelihood of last resort – a symptom of their limited options and/or poverty- which they will abandon as soon as any plausible better option emerges" (Byron and Arnold, 1999).

Any case-study dealing with forest people will provide you with extensive lists of plants and animals used for food, feed, tools, building material, medicinal purposes, worship, and of course for providing cash. But when it comes to actual dependency the image becomes fuzzier. Forest foods, for instance, seldom provide the staple but limit their contribution to adding variety to the diet. Forests generally contribute more to household consumption than to household income. Furthermore, the relative contribution to household consumption and earnings falls among villages closer to towns (Godoy *et al.*, 2002).

The forest as a safety net

Considering the forest as a safety net for poor households rather than their main livelihood option is all but a new idea. Since the early 1950s scholars have been saying that rainforests provide security to rural people, particularly when they face misfortunes such as crop losses (Falconer and Koppel, 1990; Arnold, 1998; Warner, 2000). The role of forest foods to meet dietary shortfall during particular seasons in the year or during emergency periods such as floods, famines, droughts, and wars is often cited in literature

though seldom documented (Byron and Arnold, 1999). In matters of contribution to household earnings, forest products collection serves more in the way it fills gaps and complements other income. Therefore forests can be considered as an economic buffer for poor households. The rather easy access to the resource and low entry thresholds (Neumann and Hirsch, 2000) enable the poorest households and many women to generate income from forest product activities. However, the poor who would benefit most from drawing on forest products, are often faced with a diminishing resource and a declining capacity to exploit it (Byron and Arnold, 1999). It is often the wealthier households, with more resources to devote to the activity, who are the heaviest users.

Relying on forests to mitigate agricultural risk is trendy topic in the literature. Up to now, the testing of this hypothesis has led to rather contradictory conclusions. Producing in a conservative manner is already a way to reduce risk. In case of crop failure or other misfortunes, forest people rely on many forms of informal insurance like gifts and loans, remittances from urban kin, credit, savings, their own assets, out-migration, wage labor or even theft... and very little on forests (Wong and Godoy, 2003). In fact, forest product collection only appears important to households when other, cheaper forms of consumption smoothing options are not available (Morduch 1995; Godoy *et al.*, 1998; Pattanayak and Sills, 2001). By improving access to cash, with improved economic well-being, low-income households become less dependent on forests (Fisher *et al.*, 2002; Wong and Godoy, 2003).

Indigenous people as conservationists?

The great importance attached to forests and forest products for the livelihood or even the survival of forest people is without doubt linked to one the most persistent and popular myth in the Western civilization: Jean-Jacques Rousseau's concept of the noble savage. Ever regretting the loss of the garden of Eden, the developed Westerner needs to believe in a noble savage living in harmony with nature. In a self-scourging impulse, he views the natives' world as collective, communal, human, respectful of nature, and wise, while the western world is deemed greedy, destructive, individualist, and enemy of nature (Redford, 1990). For the popular press, the Yanomami and Penan, through their heroic fight against governments, loggers, miners, industrial plantations, ranchers, and other evil outsiders, have become the standard-bearer of the primitive ecological wisdom model opposing the materialistic post-industrial West (Ellen, 1993; Sellato, 2000).

The popular press has been abundantly fueled by scientific literature depicting indigenous people as modern 'ecologically noble savages'⁴. Indigenous people are sometimes invested with 'inherited ecological caution' (Lonsdale, 1987), to others they are supposed to have developed institutions and rules whose objective is to conserve plants and animals they rely on for their livelihood, thus maintaining a type of harmony with their environments. Some even argue that native people of Amazonia have an innate 'conservation ethic' (Posey, 1985; Bunyard, 1989). This notion of a primitive, exotic Other has been described as 'sentimental rubbish' by its harshest critics (Leach, 1971).

⁴ From Redford's famous paper (1991).

The myth of primitive environmental wisdom has an incredible tenacity (Ellen, 1986 and 1993). A few classic examples (the Blackwater rivers, the Kayapo' Indians, the hunting taboos, etc.) cited repeatedly to advance this argument had the result that these cases were generalized to all indigenous people (Stearman, 1994). While there is no doubt that indigenous people have an impressive practical knowledge of their environment (Alvard, 1993; Bahuchet *et al.*, 2000), it is clear that they take advantage of this knowledge to procure resources in the most efficient manner possible. Maintaining a balance with nature is not their hobbyhorse (Hames, 1987). In fact, the appearance of balance between traditional native groups and their environment has been misleading. This balance has more to do with low population densities, limited access to the market, and limited technology than with any natural harmonious relationship with nature (Ellen, 1986; Alvard, 1993). As soon as the forest-dwellers gain access to the market economy, the increased need of surpluses for cash generally renders traditional techniques developed to satisfy subsistence needs totally obsolete (Redford, 1990; Stearman, 1994).

Emphasizing effects -the balance between people and forests- rather than actual behavior of forest people (Alvard, 1993) has led numerous international NGOs and other institutions to invest indigenous people with the role of 'keepers' of the rain forest, of stewards of the global forest estate. Considering that governments and public forest management agencies often have not been good stewards of public forests, some NGOs advocate an increasing devolution of public forests to indigenous people. For the promoters of devolution: "There is growing evidence that local community-based entities are as good, and often better, managers of forests than federal, regional and local governments. In addition, biologists and protected area specialists are beginning to change perspectives on human interactions with nature, acknowledging that the traditional management practices of indigenous peoples can be positive for biodiversity conservation and ecosystem maintenance. This positive outcome is best gained by devolving control of forest land to communities" (White and Martin, 2002).

The revival of the myth of the noble savage clearly makes sense if one considers the political issues and ideological purposes at stake. The assertions that governments and public forest management agencies have often not been good stewards of public forests, and that state forestry institutions might become clients of concession-holding industrial interests of the ruling elite are unfortunately true in most third world countries. But what or who will prevent the communities' elites from becoming clients of concession holders? The advocacy group retorts that "forest communities will successfully assert control because they are highly motivated to protect their forest assets when they have opportunities to generate income by marketing forest products and services (White and Martin, 2002). This might be true -though still debatable- as long as communities limit their activities to benign forest product collection. However, in areas where the transition out of subsistence economies is under way, indigenous groups will be more inclined to increase the pressure on forest resources than to protect their environment.

In Amazonia, rural people have been invested with the responsibility of "defending far bigger areas of tropical forest from unfettered deforestation and logging than are parks" (Schwartzman *et al.*, 2000). Indigenous areas and extractive reserves are considered as "the only protected areas that can effectively halt the expansion of forest clearing"

(Schwartzman *et al.*, 2000). Placing such a burden on the shoulders of relatively powerless forest dwellers is a poisoned chalice. Asking them to oppose the economically, politically, and socially powerful forces driving deforestation is at best unfair and at worst dangerous (Redford and Sanderson, 2000). It might also become particularly counter-productive as “increasing awareness that indigenous people do not fit the widely publicized image of Indians as conservationists, might become a convenient excuse to divest them of their homelands” (Stearman, 1994).

Though proven to be false, the concept is still considered as working by some NGOs, as it helps to secure access rights to forests for the poor. The cause being good, the end justifies the means. This might work in the short-term but is dangerous in the long run. Presently, international attention and development aid are shifting away from forests. Efforts in promoting sustainable community based forestry have only been successful on paper. In the field, chainsaws are roaring. Following the donor’s disappointment, governments might as well decide to take back control over the forests they gave to indigenous people if it turns out that they are not the wonderful stewards they were supposed to be.

The tenure issue

The co-authors do not deny indigenous peoples the right to claim secure rights to their homelands. Without secure tenure rights, local communities lack the financial incentives for converting their resources into economically productive assets. We support their legitimate struggle. However, this struggle should not be mixed up with non-relevant considerations, like the wide spread belief that support for indigenous peoples is equivalent to conservation of nature (Redford and Stearman, 1993). Pretending that indigenous peoples’ interests are identical with conservation, biodiversity and parks is fallacious (Redford and Sanderson, 2000). The importance of biodiversity conservation rests upon a broad spectrum of ethical, moral, economic arguments proper to urban elites of the North. The need to conserve Nature for aesthetic or eventual future commercial use does not appeal to, and has little chances to be adopted by indigenous people in the South (Horta, 2000). However, some indigenous groups recognized the power of this concept for gaining support for their cause from international conservation organizations, and cleverly managed to present themselves as “natural conservationists”⁵.

We do not doubt that lack of clarity over tenure rights induces people to obtain the short-term, direct benefits of the rain forest. But will clarity about tenure rights induce people to conserve the forests? By claiming ownership over forest land (but this applies also to any kind of land or water), the claimant first seeks to secure his access to the resources involved, that is to say prevent outsiders from accessing those resources. Decisions by

⁵ Article 42 of the Charter of the Indigenous-Tribal Peoples of the Tropical Forests nicely illustrates this strategy: “The best guarantee of the conservation of biodiversity is that those who promote it should uphold our rights to the use, administration, management and control our territories. We assert that guardianship should be entrusted to us, indigenous people, given that we have inhabited them for thousands of years and our very survival depends on them.” (International Alliance of the Indigenous-Tribal Peoples of the Tropical Forests, 1992. Cited by Horta, 2000).

local communities to restrict outsiders' access to a particular valuable forest product like eaglewood in East-Kalimantan have sometimes been described as "local responses to over-exploitation" and as "being compatible with conservation" (Momberg *et al.*, 2000). In fact, the only underlying motive to this move was the desire to keep for themselves the benefits from eaglewood collection (Vayda, 1997).

There is a general belief that 'local' is better than 'global'. Many international institutions highlight the benefits of decentralization and of improved local governance for the poor. However, empirical proof for this is lacking. On the contrary, there is considerable evidence that local and community level institutions and leaders are as likely or more likely to exploit and manipulate the poor⁶ as are more centralized institutions (Hulme and Shepherd, 2003).

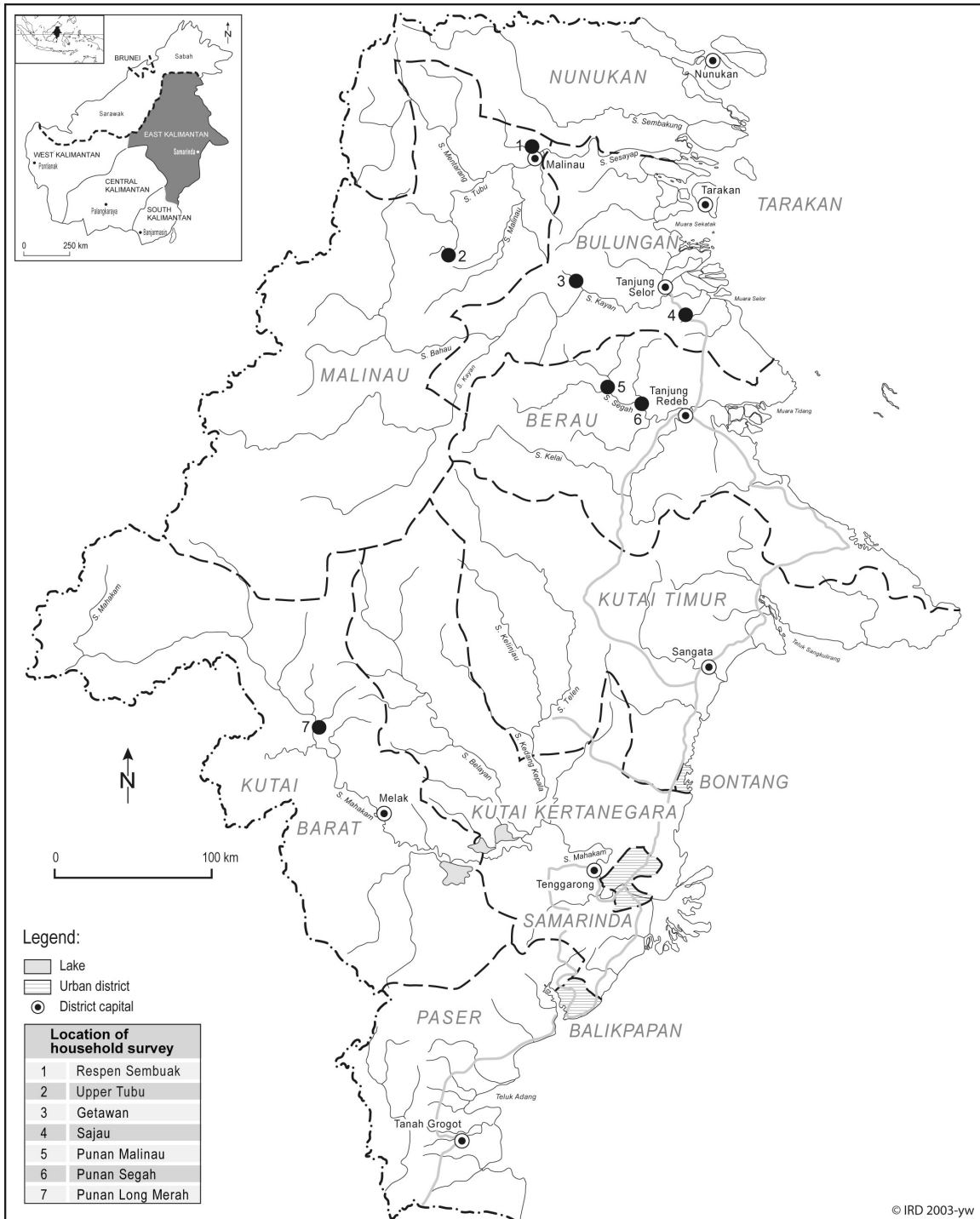
The *tana' ulen* case in Kayan-Mentarang (East-Kalimantan) is also symptomatic of the ingenuousness (or duplicity?) of some NGOs (Sellato, 2000). The *tana' ulen* is an ancient traditional institution used by the Kenyah aristocracy to gain private control over large stretches of land. Actually meaning 'reserved forest' (i.e. reserved to the village elite) the NGO preferred to translate it into 'forest reserve' and to consider it as such, promoting the concept as if it was a traditional conservation institution. Presently, the *tana' ulen* has been re-interpreted by local elites in order to obtain logging concessions for themselves. Hurrying up devolution in response to pressures from donor agencies, NGOs, etc. can lead to the domination of management by local elites (Vayda, 1997). Rapid growth based on the exploitation of natural resources may well weaken governance and thus work against the interests of the poor people (Hulme and Shepherd, 2003).

While conservationists hold the unrealistic expectation that native Amazonians claim land in order to preserve it from encroachers and to keep it in its present state, indigenous peoples expect to be able to use these lands and all their resources⁷ to assure their physical and cultural survival (Redford and Sanderson, 2000). Indigenous peoples are increasingly becoming members of the modern world. Any crop, tool, technique or belief that might 'improve' their lives (i.e. be more like their 'modern' neighbors) is likely to be adopted. This includes the sale of timber and mining rights, commercial exploitation of flora and fauna, and invitations to tourists to observe 'traditional lifestyles' (Redford, 1990; Sellato, 2000). Even cultural barriers, long considered as insurmountable may easily be adjusted if necessary. Forest people have the same needs and wants than other people, and frequently overexploit –unconsciously or not- their environment in order to reach their goals. Findings from the research carried out by our team among the Punan of East-Kalimantan (Indonesia) strongly corroborate these statements.

⁶ For instance, Zerner showed that in the Moluccas the famous *sasi* restrictions on entry into resource areas or on harvests from them, far from being the indigenous conservation institution NGOs dreamed of, were nothing else than the revival of institutions previously used for control of resources by local elites (Zerner, 1994).

⁷ For instance, the Kayapo' of Brazil, one of the most publicized case of indigenous environmentalists, deceived many conservationists when it came out recently that they were receiving substantial royalties from the sale of gold and timber from their reserve (Stearman, 1994).

Figure 1. Localization map



The setting: the Punan hunter-gatherers of East-Kalimantan

The Indonesian province of East-Kalimantan is home to some 10 000 Punan hunter-gatherers. Scattered all over the province in small hamlets numbering 10 to 20 families on average, the Punan, like their Malaysian cousins the Penan of Sabah and Sarawak, are no longer nomads⁸. Mobility, however, is still high, for the individual as well as for the group. Individuals, with or without their family, can move temporarily or definitively from one settlement to another, or migrate to Malaysia for a month or a lifetime. Whole villages can move at once, generally after an outbreak of a deadly epidemic disease. Many small villages were resettled -more or less voluntarily- by the government in the 1970s and regrouped with others in more downstream locations, closer to towns and services (Sellato, 2001; Kaskija, 2002).

The Punan do not form one single ethnic group. 'Punan' is a generic term, which applies to all groups of hunters and gatherers of Borneo, while 'Dayak' applies to groups of shifting cultivators. There is a huge ethnic, linguistic and cultural diversity among the Punan, however they all originate from groups of hunters and gatherers who probably only started to open swiddens for upland rice cultivation by the end of the XIXth century for the earliest, and the middle of the XXth century for the last. Nowadays, only a small minority of Punan do not open a swidden every year.

This decision to settle is largely a response to the changes of the world in which the Punan live. The *pax neerlandica* put an end to an ancient and active headhunting tradition among Borneo peoples and opened the interior of the island to traders. With increased exchanges and less dependence on their Dayak neighbors as trading intermediaries, the Punan got more involved in -and reaped more benefit from- commercial forest product collection, like resins and gums, rattan, bezoar stones, eaglewood... The decision to settle down was inseparable with the adoption of swidden cultivation, which required families to stay in the vicinity of their *ladang*⁹, during the rice cropping season and even longer if the rice is intercropped with cassava. The Punan adopted lifestyles much closer to those of their Dayak neighbors. They adopted many features from their closest neighbors like a more stratified social organization divided into aristocratic families, free men and bondsmen, the payment of a bride price, and the capitalization of prestige goods like Chinese jars, copper gongs and gold jewelry.

Changes did not stop there. Starting in downstream resettlement villages, the Punan could progressively enjoy all the benefits of modern technology: outboard engines, shotguns, rice mills, electricity, radio, television, VCDs... and gain access to health care and formal education. The progressive shift away from subsistence economy and integration into the market economy incited the Punan to draw more heavily on forest resources, especially for cash. With the enforcement of regional autonomy in Indonesia since 2001, district levels enjoy unprecedented levels of wealth. Reduced control of the center on its periphery translates into increased levels of illegal logging (Obidzinsky *et al.*, 2000), and multiple claims by communities for financial compensations from concessionaires

⁸ Among the Malaysian Penan, only 4% of approximately 10,000 people could still be categorized as true nomads in the beginning of the 1990s (Langub, 1993).

⁹ *Ladang* is the Indonesian term generally used for upland rice swiddens.

(loggers, coal miners). The local economy is thriving, mainly drawing on the last stands of natural forests of the province.

If nothing is done quickly to stop this trend, the high forest of Kalimantan will vanish in the coming 5 to 10 years. If this happens, and it is unfortunately very likely to happen, Punan hunter-gatherers will be left without forests, that is to say without resources for household consumption and earnings. Such eventuality is not unknown to most Punan. However, though they pity the fast disappearing of the forest they do nothing to counter that trend. On the contrary, most of them actively participate in the plunder. In nowadays Kalimantan, even NGOs hesitate to label local communities as 'natural conservationists'.

The image of the glorious Punan hunter-gatherer defending his forest against the evil loggers appears blurred. But should we be surprised? A 'conservationist attitude' would require that the net financial benefits that rural people or local users receive from a standing forest exceed the net financial benefits that they might receive from clearing the forest for other uses (Godoy *et al.*, 2002). Angelsen (2001) suggests that in much of the developing world local users receive more benefits from clearing tropical rain forests than from conserving them. Thus it is of utmost importance to know precisely the relative contribution of the rain forest to household consumption and to household income as rural economies modernize (Cavendish, 2000).

By assessing precisely the present state of the Punan's economy we will be able to determine the actual and future level of dependence of Punan's households on forests and on forest products for their consumption and earnings. How is this level going to evolve in the near future? Will the Punan be left without resources or will they be able to shift to other activities? The answer to this last question will be determining for the definition of future action concerning the poverty alleviation of forest people in Kalimantan.

METHODOLOGY

In order to get a clear idea of the diversity of situations faced by the Punan, we carried out a **census** of all Punan settlements of East-Kalimantan. With the help of the Yayasan Adat Punan (Association of Punan Communities) 72 settlements were visited in 2002 and during the first months of 2003 in 7 districts of the province of East-Kalimantan¹⁰. Up to March 2003, we were able to take a census of 1,876 families counting 7,934 souls¹¹. At the settlement level we noted down the presence of facilities like retailers, school, dispensary and market. When the facility was absent we recorded distance and/or time to the nearest facility. At the household level we collected data about the family members still present: age, relationship to the head of household, sex and level of education. For each household we checked the number of children who died in their young age. When young married couples were still living with their parents or in-laws, we considered them as independent households. Elderly people no longer able to make a living on their own, were considered as family members. Quality of housing and sanitation was recorded, as

¹⁰ The province of East-Kalimantan covers 211,140 km². The district of Malinau alone (42,000 km²) is larger than the Netherlands.

¹¹ Some very remote sites have not yet been surveyed.

well as the main assets possessed by families like boat engines (long tail and outboard), chainsaws, generators, televisions, VCDs, refrigerators, and traditional prestige goods like Chinese jars, gongs, strings of pearls, betel-chewing sets, and tools like blowpipes and machetes.

It appeared clearly from the first results of the census, that accessibility was the main differentiating factor among villages. Therefore we determined 7 locations for the **household survey** covering the whole range of accessibility, from settlements close to the towns of Tanjung Redeb, Tanjung Selor and Malinau to the remotest villages of the upper Tubu watershed. Altogether 254 households were interviewed with the help of the Yayasan Adat Punan (in Punan Tubu language or in Indonesian for other Punan groups). Data was collected concerning: family size and composition, agricultural activities (size of the swidden and last yield), contribution of forest products to the staple food, main sources of income during year 2002 and volume of earnings for forest products collection, off-farm work (regular or incidental), remittances, fees from concessionaires... In order to evaluate the contribution of forest products to the household's subsistence we initiated a longer term spot-check survey which will last approximately for two complete years. This data is not yet available.

In order to better understand how the Punan were perceiving undergoing changes we conducted an **opinion poll** in two locations, Respen Sembuak close to the town of Malinau and in the remotest villages of the upper Tubu. In each location, a representative panel of villagers (young, middle-aged, old, male and female) was asked to determine what they considered as advantages and disadvantages of living in their present location. Respen Sembuak is a resettlement area of villages originating from the upper and middle Tubu. Families of both areas are related and visit each other more or less frequently; at least, all know about the living conditions prevailing in the other location. Once the set of pros and cons was fixed, 116 villagers in Respen and 81 in the upper Tubu were individually asked: 1) if they agreed to the list of pros and cons, 2) to pick the three pros and the three cons which they considered most important to them.

RESULTS

The 2002-2003 Punan census

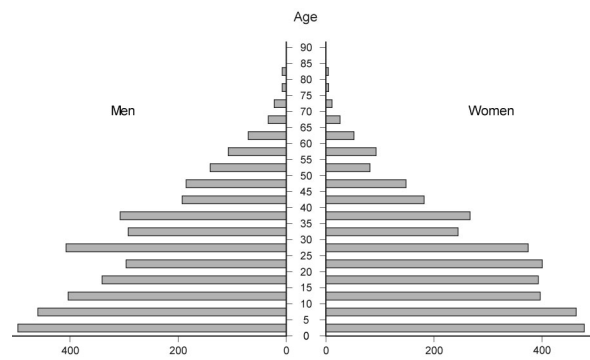
Up to March 2003, we took a census of 72 settlements in the province of East-Kalimantan. The size of a settlement or village¹² ranges from 5 to 96 families with an average of 26 families per settlement. Total population amounts to 1,876 families and 7,934 souls, 4,085 males and 3,849 females, that is to say a sex ratio of 1.06. The population per settlement ranges from 22 to 447 with an average of 110 souls. The average family size stands at 4.2 people, which might look small but makes sense as we opted for counting nuclear families.

¹² Many settlements do not enjoy the official status of village. All settlements located at a distance from the village they depended on were considered as independent entities. Where villages were regrouped in one resettlement location but kept their status, we considered each village independently.

Pyramid of age

Punan are not on the verge of extinction. For the last 30 years they experience an appreciable growth, especially in resettlement areas closer to towns. However, the population under the age of 15 only amounts to 36.6% of all men and 37.1% of all women. Considering the low impact –or quasi absence- of family planning among Punan, these figures are good indicators of a high infant and child mortality. The population over the age of 65 only counts 2.0% of the men and 1.2% of the women. Again, these figures are proof of the very short life expectancy of the Punan.

Figure 2. Pyramid of age



Source: 2002-2003 Punan census (Cifor-YAP)

The sex ratio is even or slightly in favor of women for classes under 25. Over 25 all classes count more men than women. This inversion is probably due to the greater rate of out-marriages for Punan women compared to Punan men. Maternal mortality might also be at issue, as the shorter life expectancy of women hints.

Housing and sanitation

About three out of four Punan families (77.2%) own their own house. One fourth either lives in huts on their swiddens or, more often, share a house with a relative. As usual in Kalimantan, houses are made of wood and built on stilts. According to the Punan themselves, poor housing means wooden bark floor and walls, and a thatch roof. About 15.1% of all households live in such conditions. Only three families own houses made of bricks, and only 3.1% of families have access to toilets and 3.5% have a bathroom. All others depend on the near-by river for sanitation.

Assets

Soon after the start of the census we had to drop all questions related to the ownership of traditional prestige goods and firearms as these subjects were too sensitive. Generally, villagers shamelessly denied the possession of Chinese jars or guns, as they were afraid

of getting either robbed or reported to authorities¹³. Data about other assets proved more reliable as they were less sensitive and easier to check (Cf. table 1).

Table 1. Assets owned by Punan families

Asset	Number of owners	Percentage of total families
Long tail engine	773	43.2
Outboard engine	96	5.4
Chainsaw	268	15.0
Generator	106	5.9
Television	210	11.8
VCD	164	9.2
Refrigerator	29	1.6

Source: 2002-2003 Punan census (Cifor-YAP)

Nearly half of the families own at least one engine (long tail or outboard). In some villages everybody owns a motorboat, while in others like in the upper Tubu there is sometimes only one boat for the whole village. Chainsaws enjoy a better distribution among settlements, items like televisions and VCDs are rather common in villages close to towns benefiting from electricity.

Access to services

As foreseen, access to services proves very diverse among settlements according to their location. Only very few settlements enjoy an easy access to all facilities: school, dispensary, retailers, and market (Cf. table 2).

Table 2. Access to services

Access to	Number of settlements	Percentage of settlements	Number of families	Percentage of families
Retailer	48	66.7	1243	66.3
School	56	78.8	1544	82.3
Dispensary	24	33.3	647	34.5
Market	14	19.4	382	20.4
All four services	9	12.5	215	11.5
No services at all	11	15.3	218	11.6

Source: 2002-2003 Punan census (Cifor-YAP)

Access to **formal education** is improving -79% of the Punan settlements now have a school- but still lagging far behind Dayak villages. Though access to education is

¹³ The possession of firearms is restricted to police and army personnel in Indonesia. However, numerous Punan hunters own home-made shotguns.

improving, illiteracy rates are still very high among Punan. On average, 42% of the population over the age of 10 are illiterate. According to settlements, illiteracy figures range from 0% to 100% with an average of 34% for men; from 10% to 100% with an average of 51% for women. This diversity is sometimes due to socio-cultural factors. The Punan Bengalun, for instance, who were still true nomads by the end of the 1990s, settled down in a rather accessible area. All, men and women, are illiterate and none of their children attend school. In Getawan, where most people are bondsmen of Kenyah traders, whole families roam the forests searching for eaglewood. Heads of households consider sending their children to school as a waste of time. On good days, the three teachers of the village school count three pupils in their class.

But in most cases, accessibility is the main cause for diversity in illiteracy rates among settlements. In table 3, we ranked settlements into three classes according to their accessibility. “Very remote” regroups settlements located at more than three days by boat and on foot, “good accessibility” concerns villages at a half-day’s travel distance of a district capital, while all others are clustered in the category “intermediate”.

Table 3. Illiteracy rates according to accessibility

Category	Very remote settlement	Intermediate accessibility	Good accessibility	All settlements
Illiteracy men	45%	35%	18%	34%
Illiteracy women	65%	52%	30%	51%
Illiteracy all	55%	43%	24%	42%

Source: 2002-2003 Punan census (Cifor-YAP)

Illiteracy in remote settlements is twice as high as in villages close to the district capitals. In all categories, women illiteracy is 50% higher than men illiteracy. These results do not really come as a surprise but they imply that, by choosing to live in remote settlements in the middle of the forest, heads of households prevent their children from accessing formal education.

Access to **health care** is still very limited as only 33% of Punan settlements are located close to a dispensary or hospital. On average, sanitary conditions are very bad and hygiene especially among children proves problematic more often than not. In remote settlements it is not unusual to see children sleeping and sharing parasites with the family’s dogs, or even eating out of the same plates. While the nutritional state of adults is generally good, malnutrition is common among children. Anæmia and stunting are frequent and child mortality remains high, especially in remote settlements. If we use as proxy for child mortality the ratio between the number of children who died and the total number of children born¹⁴, we obtain quite worrying figures (Cf. table 4).

¹⁴ Most of the dead children reported by the heads of households died before the age of 5. However, our figures include also children who died in their teens.

Table 4. Child mortality according to accessibility

Category	Very remote settlement	Intermediate accessibility	Good accessibility	All settlements
Average child mortality	32%	26%	12%	25%

Source: 2002-2003 Punan census (Cifor-YAP)

On average child mortality is 2.7 times higher in remote settlements than in villages close to town. Is this higher mortality due to unhealthier life conditions in the forest or to a bad access to health care? Probably both. However the respective contribution of each factor is still under investigation. On one hand side, the hot and humid environment of the tropical forest favors the development of pathogens, and child mortality is generally caused by a combination of factors, mainly debilitating parasitical diseases where intestinal worms play a major role (Bahuchet *et al.*, 2000). On the other hand side, giving adequate medication and putting the children on an IV are life saving moves, well in the capacity of small dispensaries. During the last five months of 2002, in the neighboring villages of Long Tami and Long Titi¹⁵, 26 children and 2 adults died, probably from a malaria outbreak. The closest dispensary is at two days walk plus one day by river. Had these villages been located closer to the city, most of these children would still be alive.

Despite romantic notions of ‘affluent subsistence’ life is typically tough and short in the forest. By choosing to settle down in a remote location in the middle of the forest, a Punan head of household combines an increased exposure to malaria and contagious diseases with a limited access to dispensaries. Thus, he faces the probability to lose one child out of three.

The household survey

The household survey gives an account of the diversity of situations faced by the Punan in the province of East-Kalimantan. Diversity is extreme among settlements and among households of the same village. Heterogeneity is such that average incomes at village level are generally of little significance. Quite often the richest household in a village earns 50 to 100 times more than the poorest. Livelihood opportunities are numerous and the family’s income is generally a combination of earnings from agriculture, forest products and off-farm work. For two years now, in some areas, a new, sometimes major, source of income surfaced: fees and compensations paid by concessionaires.

Three major types of Punan settlements emerge from the census and the household survey:

- The diversified type: these settlements are located close to towns and along roads or major waterways. They benefit from a good access to services and households have multiple opportunities at hand to make a living.

¹⁵ The villages of Long Tami and Long Titi respectively number 17 and 23 families.

- The gaharu collectors: these settlements are located in more remote areas than the former. Heads of households are clients (bondsmen would be more adequate) of traders from other ethnic groups. They are trapped in debts and totally dependent on their patrons. Eaglewood collection is their main activity apart from farming small swiddens for food security.
- The subsistence economy type: these settlements are located in the remotest areas of the province. Isolation is such that even traders rarely make it to the villages. Households totally depend on agriculture and on forest products for their consumption. Opportunities for cash earnings are rare.

Anyone of these three types can benefit from additional income from fees paid by concessionaires if 'by chance' loggers or miners are active in their area.

Agricultural activities

The introduction of crops like rice and cassava has made the traditional emergency food like sago virtually obsolete. Upland rice -and in some cases lowland rice- cultivation has become the most common activity in all settlements, with 92.1% of practitioners. Rice is set aside for the family's consumption, surpluses might be bartered for other goods or for services, but rarely sold. The total rice production of our sample covers 110% of its subsistence needs¹⁶, and even 131% if we limit our sample to rice producers. However, there is a huge heterogeneity between settlements and families, and only 51% of the households prove self-sufficient. Though the quality of the diet varies over the year, food security is not a critical factor anywhere in the study area. Cassava, corn, taro and other food crops are often intercropped with upland rice for subsistence needs, and rarely commercialized. Rice as the main staple food contributes to 81.6% of the meals. Cassava, taro and other cultivated tubers contribute to 14.0%, and sago only to 4.3% of the meals on average. Sago's contribution to the households' diet is nil in villages well connected to the market, but reaches 12.1% on average¹⁷ in the remotest villages of the upper Tubu.

Table 5 presents -for the three types of settlements- the percentage of families drawing an income from the main agricultural activities in the surveyed areas. Apart from rice, self-consumption is not considered, as no reliable data is available yet. For greater convenience the household's rice production is hereafter considered as a cash income. Rice production appears remarkably similar in all three types of settlements with a rather low standard error.

Other subsistence food crops like cassava, corn and taro are not included in table 5. Harvested day after day in small quantities, the total production of such crops is too problematic to assess. Thus, the contribution of agricultural activities to the total income is underestimated. However, this does not preclude from comparing the different types of

¹⁶ According to an average annual rice consumption of 150 kg per capita (Indonesian national average in 1997).

¹⁷ Sago makes a contribution to the diet of 54% of the households in the upper Tubu. To these households the contribution is of 22.2% of the total staple.

settlements, as secondary food crops are always intercropped with rice in similar ways and quantities.

Table 5. Income from agriculture: cash earnings and rice for subsistence (2002)

Type of settlement	Rice (subsistence)	Plantation crops	Secondary food crops	Animal husbandry	Agricultural income (cash + rice)
Diversified type (120 HH)					
HH concerned (%)	91.7%	16.7%	21.7%	16.7%	92.5%
Mean (x 1000 Rp.) *	1811	1166	359	915	2254
Std. Error *	129	964	88	187	243
Contribution to income **	15.0%	1.8%	0.7%	1.4%	18.9%
Gaharu collectors' type (99 HH)					
HH concerned (%)	93.9%	23.2%	32.3%	22.2%	93.9%
Mean (x 1000 Rp.)*	1806	788	327	749	2291
Std. Error*	152	303	69	281	214
Contribution to income**	19.9%	2.1%	1.2%	2.0%	25.3%
Subsistence economy type (35 HH)					
HH concerned (%)	88.6%	11.4%		82.9%	100.0%
Mean (x 1000 Rp.)*	1739	183		134	1673
Std. Error*	441	108		19	406
Contribution to income**	34.8%	0.5%		2.5%	37.8%

* Average income¹⁸ and SE for households concerned by the activity only. Total of line does not sum up.

** Concerns all households of the type. Total of line sums up.

The column 'plantation crops' groups the sale of cocoa and coffee, sometimes fruits. The category 'secondary food crops' groups mainly peanuts and vegetables for sale, while animal husbandry mainly concerns chicken and pigs. These three categories only concern small numbers of families with a rather big heterogeneity, mainly in settlements close to an urban market. The average incomes provided depend clearly on the accessibility of the settlements. In the remotest settlements a large percentage of households (82.9%) sells chicken to visiting traders. For their protein intake they mainly rely on bushmeat.

Forest products collection

Forest products collection concerns a large percentage of households especially in the remotest areas. The main income providing forest products are listed in table 6. Self-consumption has not been included as no reliable data is available yet. Thus, the contribution of forest products to the total income of households is also underestimated.

¹⁸ One US \$ equals 9000 Indonesian Rupiah.

However, with the notable exception of wild boar hunting, this contribution is not likely to be very different among settlements.

Birds' nests collection provides rather high earnings but only concerns a very limited number of families. Birds' nests have been very disputed resources for centuries in Borneo (Sellato, 2001) and the Punan generally lost control over the caves to the benefit of their more powerful Dayak neighbors. Fish and bushmeat have always been the main sources of proteins for the Punan. Recently, in all settlements close to markets, these forest products became commercial items and important sources of earnings to some households. Unfortunately, poison fishing¹⁹ and shotgun hunting often replaced the less damaging traditional techniques. Honey gathering as a regular earning has been reported in one area only, the sub-district of Segah in the district of Berau.

Table 6. Cash income from forest products gathering (2002)

Type of settlement	Fish	Gaharu	Birds' nests	Timber	Honey	Bush meat	Others	Total
Diversified type (120 HH)								
HH concerned (%)	19.2%	22.5%	4.2%	22.5%		12.5%	2.5%	60.0%
Mean (x 1000 Rp.)*	799	2207	10190	4731		1847	1525	4013
Std. Error*	278	1119	8726	932		507	894	820
Contribution to income**	1.4%	4.5%	3.8%	9.6%		2.1%	0.3%	21.8%
Gaharu collectors' type (99 HH)								
HH concerned (%)	13.1%	70.7%	5.1%	8.1%	14.1%	6.1%		79.8%
Mean (x 1000 Rp.)*	251	4132	4280	4075	667	733		4560
Std. Error*	79	1662	3062	2850	147	501		1573
Contribution to income**	0.4%	34.3%	2.5%	3.9%	1.1%	0.5%		42.7%
Subsistence economy type (35 HH)								
HH concerned (%)		85.7%	5.7%			17.1%	11.4%	94.3%
Mean (x 1000 Rp.)*		1564	480			255	1798	1715
Std. Error*		484	180			59	710	482
Contribution to income**		30.3%	0.6%			1.0%	4.6%	36.5%

* Average income and SE for households concerned by the activity only. Total of line does not sum up.

** Concerns all households of the type. Total of line sums up.

*Gaharu*²⁰ collection is still the Punan's major cash earning forest product. Collection involves 71 to 86% of households in remote and very remote settlements, and makes up about one third of the families' total cash income. Though the species is not on the verge

¹⁹ Poison fishing and use of electric gear is a common technique among Dayak and migrants in areas close to markets. However, most Punan seem reluctant to use pesticides for fishing.

²⁰ *Gaharu* is the Indonesian name for eaglewood or agarwood (*Aquilaria malaccensis*). *A. malaccensis* and related species produce a fragrant and highly valuable resin as a result of pathological wounding.

of extinction, *gaharu* is becoming increasingly difficult to find and its collection requires to set up rather costly expeditions. Collectors are seldom in a position to fund their own expeditions. They depend heavily on traders who advance the cash necessary and provide credit to the family members remaining in the village. On average, a collector heads back to the village with finds worth Rp. 300,000 to Rp. 600,000. Less experienced gatherers may come back empty-handed, while lucky ones may hit the jackpot (Levang, 2002). Finds of up to Rp. 60 millions at once have been recorded in the household survey. One household totaled a Rp. 112 million annual earning from *gaharu* alone. Such lucky finds contribute to maintaining a high motivation among collectors. But on average, once debts are repaid to the trader, surpluses are hastily spent on luxury items, boat engines, electronic goods and whole wardrobes, not forgetting whole crates of alcoholic drinks. After a week's rest in the village, food stocks quickly come to an end, the collector reaches his lending limit at the local store and soon a new expedition to the forest becomes unavoidable.

Gaharu collecting households generally depend on the traders to make a living. In some settlements, the bond between patron and clients is such that the households could be categorized as bondsmen. In very remote settlements, where traders rarely show up, *gaharu* collection is nearly at a halt though the resource is still rather plentiful. These observations lead us to the conclusion that collectors depend more on traders than on the resource itself. Specialized *gaharu* collectors generally stay poor because their priority is to minimize vulnerability, and this is best achieved within a patron-client relationship that in turn limits possible exit routes from poverty (Hulme and Shepherd, 2003). Presently, because of the high level of risk²¹ incurred and the increasing difficulty to find good quality product, many traders are no longer interested in the *gaharu* trade. Most are considering investing in the flourishing timber trade. Their privileged relations with the Punan controlling huge areas of often not yet logged forests could easily be put to profit (Kurniawan, 2003). Collecting timber rather than *gaharu* would be much more profitable and less risky for the trader as well as for the collector. Eaglewood collection, as many forest products activities is time consuming, tedious and arduous, and generates very low returns. Consequently, such activity is very likely to be abandoned once a more lucrative alternative becomes available (Byron and Arnold, 1999).

Negotiations have already started in many villages and the only drawback to a quick implementation of logging is generally the absence of an easy access by road or by river. But road building has been listed as the top priority in all districts in order to open up the remotest villages. There is no doubt that as soon as the forests will become accessible by road, the 'investors'²² will flock in by the dozens.

Timber harvesting by individual households is an increasingly important source of income in villages well connected to the market. With the quick development of the new district and sub-district capitals, the demand for timber (planks and beams) generally for local consumption has increased tremendously. Any chainsaw owner can earn at least Rp

²¹ Much of the traders' capital is at the hand of numerous collectors, while repayments are often problematic.

²² 'Investor' is the local name for timber barons involved in logging (both legal and illegal).

200,000 for a day's work. For the time being, at village level, illegal logging has become the easiest and most profitable way to make money. Investing in a chainsaw will provide any head of household with the quickest possible return for very little risk. As a consequence, chain saws are relentlessly roaring along rivers and trails all over Kalimantan.

Off-farm activities, fees and compensations

The opening up of the forest areas by concessionaires in Kalimantan since the beginning of the 1970s had a tremendous impact on the development of forest people. At first, local people benefited little from the new labor opportunities as the concessionaires privileged the more skilled labor force originating from Java, Sumatra or Sulawesi. The benefit was rather indirect, with the opening of roads, of local markets, of schools and dispensaries. Among local people, the Punan, being the most marginalized, were the last to be able to reap the benefits from development. Table 7 lists the various off-farm activities the Punan households are involved in.

Table 7. Cash income from off-farm activities and fees (2002)

Type of settlement	Salaried worker	Civil servant	Honorarium	Agric. daily labor	Non-agric. daily labor	Retailer	Gold panning	Handicraft	Remittance	Incidental	Fees	Total off-farm
Diversified type (120 HH)												
HH concerned (%)	4.2%	4.2%	26.7%	26.7%	18.3%	0.8%	1.7%	3.3%	5.8%	5.8%	70.8%	97.5%
Mean (x 1000 Rp.)*	10920	14280	2507	243	5779	4000	400	671	1694	6575	4464	6718
Std. Error*	2183	7776	734	57	2250		100	362	1260	4097	720	853
Contrib. to income**	4.1%	5.4%	6.1%	0.6%	9.6%	0.3%	0.1%	0.2%	0.9%	3.5%	28.6%	59.3%
Gaharu collector type (99 HH)												
HH concerned (%)	1.0%	1.0%	13.1%	11.1%	2.0%	3.0%	29.3%	1.0%	8.1%	7.1%	54.5%	82.8%
Mean (x 1000 Rp.)*	6000	18000	3513	175	4200	13933	1539	1550	658	2404	1478	3291
Std. Error*			670	64	3900	11088	303		405	1036	264	563
Contrib. to income**	0.7%	2.1%	5.4%	0.2%	1.0%	5.0%	5.3%	0.2%	0.6%	2.0%	9.5%	32.0%

Subsistence economy type (35 HH)											
HH concerned (%)			28.6%	8.6%	2.9%			11.4%	2.9%	8.6%	51.4%
Mean (x 1000 Rp.)*			2510	53	150			145	12000	583	2208
Std. Error*			170	3				64		433	659
Contrib. to income**			16.2%	0.1%	0.1%			0.4%	7.7%	1.1%	25.7%

* Average income and SE for households concerned by the activity only. Total of line does not sum up.

** Concerns all households of the type. Total of line sums up.

The category “salaried worker” concerns regular jobs with concessionaires, it touches only 4.2% of the households in the most accessible settlements. Concessionaires are not fond of hiring Punan, or even Dayak, as regular employees. Their technical skill and educational level is generally too low, and work discipline is something totally strange to them²³. Logging companies however recognize the botanical skills of local people and hire them for short term surveys and reconnaissance trips. Such activity is considered in the category “non-agricultural daily labor”.

For the same reasons as mentioned above, the category “civil servant” is not very accessible to Punan. Up to now, the large majority of Punan civil servants are teachers at primary schools in Punan villages. Other jobs in the civil service being attributed according to an opaque system mixing connections and bribes, Punan are not in position to compete²⁴.

“Honorarium” is an important category as it touches one out of four families. Since the implementation of regional autonomy, honorariums for heads of village, village secretaries and other notables benefit to village authorities. No need to say that elites benefit most from that manna. Settlements without proper village status do not have access to that kind of earning. This is often the case of gaharu collectors’ settlements officially depending on villages run by other ethnic groups.

“Agricultural daily labor” is an earning mainly remunerating clearing operations (felling and slashing) while opening new swiddens, and rice harvesting in upland and lowland rice fields. “Non-agricultural daily labor” is a category regrouping craftsmen (carpenters, shippers, etc.) working on a daily or fixed rate, and people occasionally hired by concessionaires or NGOs and research institutes. Both categories are important sources of income in settlements close to the market. Numbers of people concerned and earning levels are closely linked to accessibility.

²³ After a few days work, they might well leave the camp in order to join a hunting party and only show up again weeks later.

²⁴ In fact, the same system prevails at the Ministry of Education. But as non-Punan teachers refuse to be posted in a Punan village, the Punan are offered an opportunity.

Only very few families are involved in the retailing business. Traders are generally outsiders to the community or in-laws. Punan show little ability in trading activities. Their only potential clients being close relatives, this does not ease the recollection of debts, and most attempts to open retailing shops end up in bankruptcy. Gold panning is a major activity in one settlement of our household survey. “Handicraft” concerns earnings from the sale of Punan rattan basketwork (*anjat* and mats) and some other traditional items like blowpipes for instance. The category “incidental” covers occasional earnings from migration. “Remittances” from kin represent an important earning to some families.

Fees and compensations paid by concessionaires in return for the right to exploit natural resources (timber and coal) in areas claimed by local communities make up 28.6% of the total income and affects 70.8% of the population in the most accessible areas. Such earnings are new to local people as they did not exist during the Suharto era. With the implementation of regional autonomy and the loss of control of forest management by the central government, this new opportunity is seen by most local people as the best way to catch up with their more modern neighbors. The sharing out of the fees collected from the concessionaires is unequal. Elites responsible for negotiating with the companies management usually get the lion’s share. In some areas these elites are the Dayak patrons of the Punan, rightful owners of the land. In the village of Sajau close to Tanjung Selor, for example, the Kenyah –who are recent immigrants on lands formerly controlled by the Punan- divided up the fees from the logging company in three equal shares: one for the Kenyah villagers, one for the Kenyah youth organization, and one for the Punan villagers. Take it or leave it.

Contribution of the different sectors to the total income

Figure 3 summarizes the contribution of the different sectors –agriculture, forest products and off-farm activities to the average total yearly²⁵ income of the Punan households according to the type of settlement.

The contribution of the agricultural sector appears remarkably similar across types. From the most accessible to the remotest settlements, agriculture clearly serves as a safety net, an insurance against bad luck during the search for more remunerating activities. Considering total incomes, the farther away from the forest the better the performance of the settlements. The differences between types are mainly due to the availability or not of interesting cash earning opportunities: forest products, off-farm activities and fees. What is at stake is not the access to natural resources but the access to the market. The poorest type of settlement (i.e. the subsistence economy type) has the best access to natural resources but no access to the market and to services. The households of this type did not deliberately opt for subsistence economy, they just had no better choice. Thus, in order to alleviate poverty, securing access to the market is as important than securing access to the resources.

²⁵ Year of reference is 2002 for all income data.

Figure 3. Sectoral contribution to household income according to settlement type

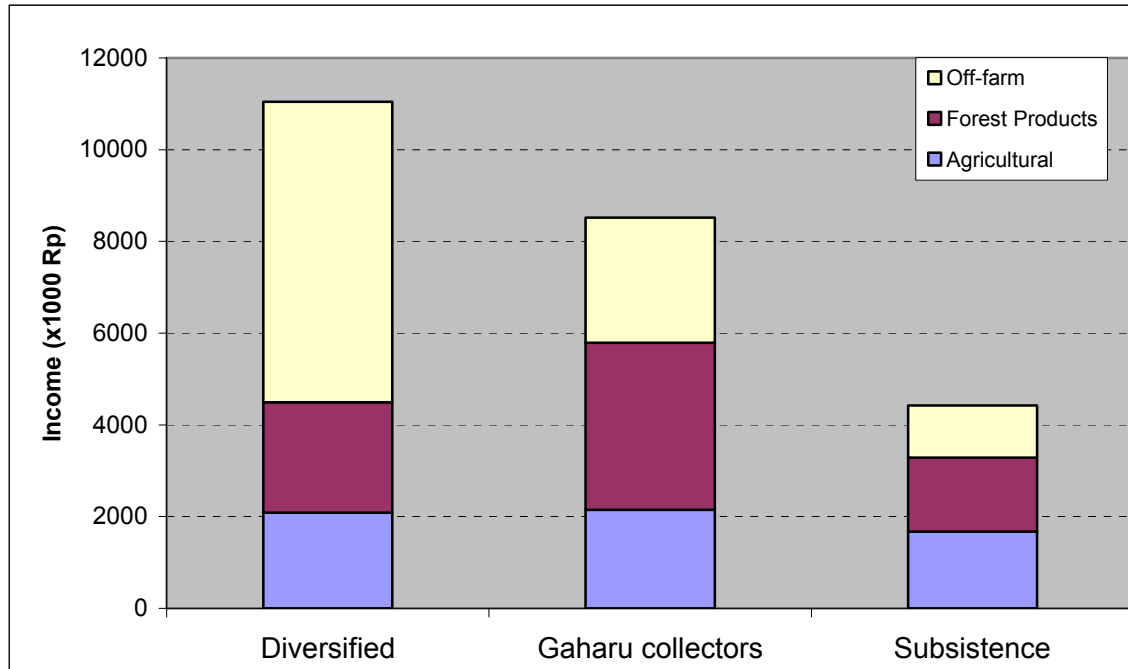
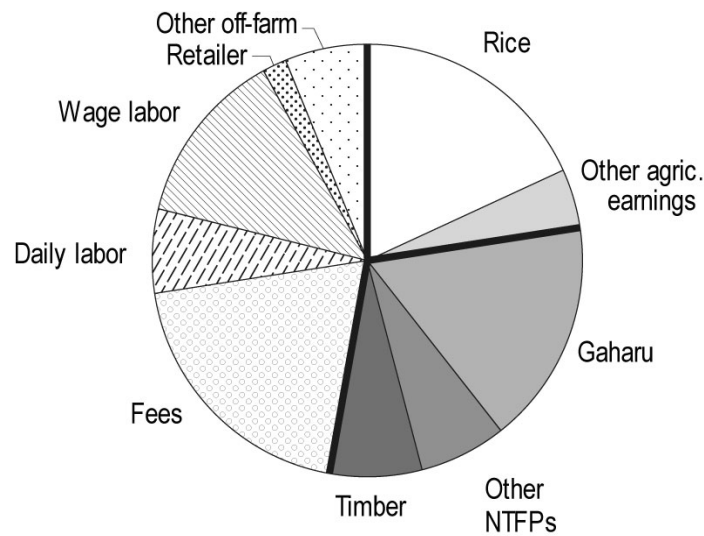


Figure 4 summarizes the average contribution to the total income for all households, independently of the type and location of the settlement. The agricultural sector makes the smallest contribution (22.5%) to the total income, but it concerns 94.1% of households. The forest products sector contributes to 30.4% of the total income and concerns 72.4% of households. However, forest products collection represents the main cash earning activity²⁶ for only 16.5% of households. The off-farm sector provides the highest contribution to the income of the greatest number of households in all areas with good to fair accessibility.

To the question “are Punan households depending on forest products for their cash earnings”, the answer is definitely yes, especially in the remotest areas. However this dependency is quickly decreasing as collection cost becomes prohibitive and as fewer traders remain interested in the *gaharu* trade. To the question “are Punan households dependent on the forest”, the answer is yes, and even increasingly. With the opening up of the remotest forests by road building, a growing number of Punan will increasingly rely on fees from loggers as their main source of income. The future of Borneo’s forests was already a serious matter of concern, recent evolutions unfortunately strengthen the most pessimistic predictions.

²⁶ That is to say the activity contributes to more than 50% of the household’s total income.

Figure 4. Average contributions to total income (2002)



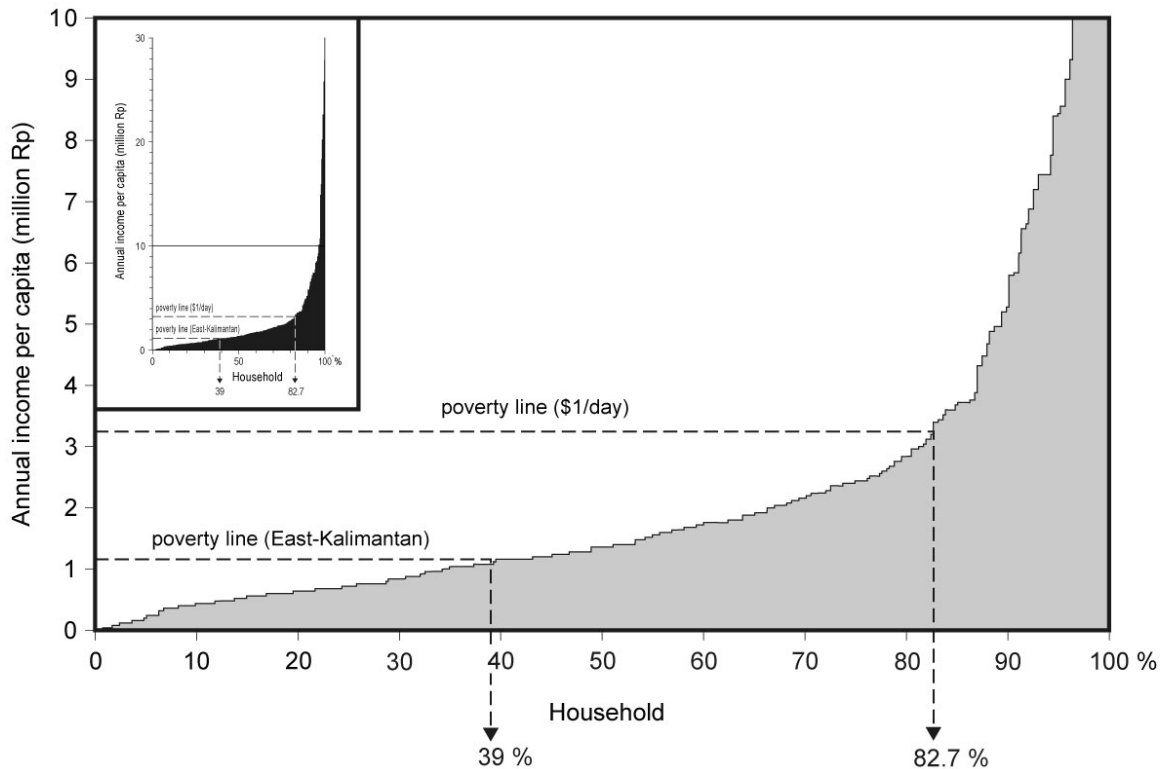
Household and settlement specificities

Are Punan households poor?²⁷ With an average income of more than Rp 9 millions per year, the Punan are far from being poor according to Indonesian standards. However, the range from the poorest (Rp. 180,000 per year) to the richest household (Rp. 121 millions per year) is quite impressive. This huge range is essentially due to factors linked either to the settlement's location or to households' specificities. About 82.7% of households are under the US \$ 1 a day per capita poverty line. According to the Indonesian standards of poverty for East-Kalimantan²⁸ defined by Pradhan *et al.* (2001), about 39.0% of households in our sample are under the poverty line. This ratio is not very far from the 35% of poor in East-Kalimantan rural areas obtained for 1999 by the same authors.

²⁷ Throughout this paper we focus on the economic dimension of poverty. Other dimensions, like the cultural for instance, are not less important but seldom considered in the literature.

²⁸ Poverty line for East-Kalimantan rural areas was calculated at Rp. 92,977 per capita per month in February 1999.

Figure 5. Distribution of annual income per capita (2002)



The highest occurrence of poor families can be found in the remotest areas. There, households depend strictly on their swiddens for their staple and on forest products for their cash earnings. The contribution of forest products for consumption²⁹ is very high, especially for wild boar meat, the Punan's favorite. But cash earnings are generally problematic, mainly because traders show little eagerness to visit these remote locations. In the upper Tubu, for instance, 66% of the households are under the poverty line as defined by Pradhan *et al.*

In intermediate locations, most households make a living from *gaharu* collection. In settlements which do not benefit from fees paid by logging companies, families are on average close to the poverty line. But wherever fees are made available, all families move above the poverty line. Such consideration appears to be a strong incentive for local communities to accept the deals proposed by 'investors'³⁰.

In locations well connected to the market, only very few families can be labeled as poor. In Respen Sembuak, for instance, only 23% of households are under the poverty line as defined by Pradhan *et al.* In such villages, there are usually more job opportunities than people willing to grasp them. The contribution of forest products to household consumption is close to nil, something often resented by elderly women who remember

²⁹ The assessment of the actual contribution of forest products to household consumption is still under way.

³⁰ Some communities do not wait for investors to contact them. They send emissaries to cities to attract investors to their village.

the good old days when wild boar was plentiful and for free. “Nowadays if you want to eat you have to pay” is a popular lament in resettlement areas.

At the household level, poor families are generally headed by elderly people no longer fit to work or by lone standing women. Disabled heads of households often experience utter destitution. Chronic poor are generally supported by the extended family and the rest of the community. However, help is limited to a share of consumption goods like cassava and wild boar. Help in cash is so to say never provided, which does not enable the poorest families to access to health care or education. *Gaharu* collecting is not an activity for the disabled, the women and the sick. Our survey shows clearly that *gaharu* collection is an activity favored by young heads of households, while older people concentrate more on agricultural activities³¹. In that sense, *gaharu* collection cannot be considered as safety net for the poorest households³².

A last category of people belonging to the chronic poor is the one the villagers themselves label as the ‘sloth’. Whoever worked in a Punan community must admit that this category has quite a large number of representatives. Such a consideration is in line with the Punan’s reputation among other ethnic groups, and it is not meant -in our eyes at least- to be detrimental to the Punan. Sharing is a highly praised value and a strong component of the social organization typical to all forest people. Such value has many beneficial effects on the group but is a heavy burden to the individual. It almost prevents personal enrichment and capitalization in productive goods (Bahuchet *et al.*, 2000). But attitudes are changing. In Respen Sembuak for instance, the age-old tradition of sharing wild boar catches among family and neighbors is no longer valid. Wild boar meat has become a cash earning commodity.

The high number of very rich households is also proof of changing times. There are two kinds of rich families among the Punan: the ‘incidental rich’ and the ‘chronic rich’. A Punan can become incidentally rich thanks to a lucky find: an *Aquilaria* tree full of first class *gaharu*, a new birds’ nest cave or by getting a well-paid job in Malaysia. Such lucky finds are rarely invested in productive assets, but rather in expensive watches, jewelry, chainsaws, outboard engines, electronic goods and trendy clothes. Soon after, all relatives come to ask their share of the wealth, marriage arrangements and the ever increasing bride prices get the better of the goods. Bad storage conditions and lack of appropriate care also considerably reduce the life expectancy of most goods. In a very short time the lucky finder is back to the start line.

The chronic rich belong to the highest class of the Punan society: the *lakin*, a kind of aristocratic group³³. Not all *lakin* are rich, but most rich Punan are *lakin*. Belonging to the elite of the village, they are the most educated, they are chosen or elected to represent the community, they serve as intermediaries with the outside world: government officials,

³¹ Highly significant negative correlation between age and *gaharu* earnings; positive correlation between age and earnings from agriculture.

³² In Amazonia, Pattanayak and Sills also report that forest products for cash are generally collected by the relatively wealthier households in a community (2001).

³³ The *lakin* is probably not an original Punan concept, but has been adopted from Dayak stratified groups like the Kenyah and the Merap, when the Punan decided to settle (Sellato, *pers. comm.*).

investors, NGOs and research institutes. Hence they are in the best position to grasp whatever opportunity passes at hand. They organize the deals with the concessionaires or illegal loggers, they get the lion's share of the fees and redistribute the leftovers. In our sample, the richest households are the ones who participate most actively in the plunder of their community's forest resources.

Opinion poll³⁴: pros and cons for living in and out of the forest

Do forest people live in the forest by free choice or by obligation? If the motivations and choices of local people are the primary focus, their views and interpretations need to be understood and accessed directly (Sheil and Wunder, 2002). Therefore we carried out an opinion poll in two very contrasted areas: the upper Tubu, at a four to six days trip by boat and on foot from Malinau, and Respen Sembuak, a resettlement area just opposite the district capital of Malinau.

Among the eleven advantages of living in the forest recorded by the communities of the upper Tubu the abundance of forest products for food come first (76.9% of votes). The free and easy access to land to open swiddens comes second (65.2%) and the availability of forest products for materials comes third (54.5%). Others advantages appear as secondary to the people polled. On the negative side, the absence of dispensary and medicine comes first (67.4%), the high price of basic goods (59.1%) and the bad accessibility (40.6%) follow.

In Respen Sembuak, the main advantages of living close to the city of Malinau are: easy access to health care (75.9%), access to formal education (57.8%), followed by the access to information (37.1%), and the numerous work opportunities (32.8%). On the negative side, the lack of security comes first³⁵ with (62.1%), followed by drug and alcohol problems (54.3%) and by the loss of the Punan culture (45.7%).

These results are not very surprising and much in line with other forest people in the world. Forest people deplore the disappearance of the forest and of the fauna, but they sell bushmeat and work for logging companies. They praise the specificity of their political and social organization, but do not want to be confined in a backward lifestyle. They want to see their community thrive, but they move to towns, resettlement posts or concessionaires' camps to benefit from immediate wealth. They praise the efficiency of traditional techniques, but rush to buy manufactured goods. They wish to preserve their religious practice and medicinal plants, but frequent dispensaries and follow the new beliefs (Bahuchet *et al.*, 2000).

The Punan definitely want to change their way of life. They want to be part of the modern world, not to lag back in destitution. They want to benefit from all what the outside world has to offer, and in order to reach this goal, they are ready to sell their forests.

³⁴ The detailed results of the poll will be presented in a separate publication.

³⁵ Insecurity and drug use in Respen are closely related and caused by youngsters from neighboring villages. Once drunk, these youngsters -from a dominant Dayak group- take a wicked delight in terrorizing the Punan.

CONCLUSION: WHAT FUTURE FOR FORESTS AND FOREST PEOPLE?

Preserving forests as a safety net for poor forest people?

Our data leaves little doubt: the Punan have a wonderful knowledge of their environment, they are second to none for finding eaglewood and hunting wild boars, but they cannot be labeled as ‘natural conservationists’. The Punan culture has nothing like a traditional ideology of harmony with nature, or an explicit organic link with the forest (Sellato, 2000). While drawing on subsistence goods they may show a certain restraint³⁶ which could be deemed as a kind of natural resource management. However, when it comes to commercial forest products the only rule which applies is “have it before others take it”. Providing forest people with ‘extractive reserves’ where they could carry on in an undisturbed way the wonderful life of the noble savage is not a realistic scenario (Redford and Stearman, 1993; Terborgh, 2000).

The Punan are increasingly becoming members of the modern world. As other forest people they claim the right to benefit from basic infrastructures like schools, dispensaries, roads and airstrips (Bahuchet *et al.*, 2000). Relegating the Punan to a backward way of life would be tantamount to condemning a whole population to illiteracy and one child out of three to death.

Contrary to what might be the case in other parts of the world, forest products gathering does not serve as an insurance against bad harvests for the Punan. Since the forest no longer provides the staple, it is agriculture that serves as a safety net, an insurance against bad luck during the search for vanishing forest products. Up until now, collectors rarely return to the village empty-handed. In the worst case they can still bring back bushmeat and wild boar fat. The average find is generally sufficient to pay back the trader’s loan. But a lucky find can instantly turn the poorest collector into an ephemeral rich man. Presently, the average returns provided by eaglewood collection are so low that the only reason for the survival of this activity is the hope for hitting the jackpot. *Gaharu* collecting is definitely a gamble, not a social security system.

The Punan claim secure tenure rights over their homelands. Dispossessed by the central government as other local communities in the past, today they are facing the greed of their more powerful and better connected neighbors. It is high time to put an end to the marginalization of the Punan. The Punan deserve secure rights over their lands. However, one should not hold the unrealistic assumption that providing secure tenure rights will save the forest. It will just enable the Punan to strike better deals with the loggers. Quite contrary to *gaharu*, fees paid by concessionaires have the potential to become a temporary safety net. Or more precisely a welfare system, a rent on which to draw until the last economically interesting log will be pulled out of the forest. And this will probably not take long.

³⁶ Punan do not seem to exert much restraint during hunting parties. Whatever -edible or not- crawls, swims, runs or flies becomes a target. Wasting is a common attitude. Shotgun hunters show more restraint and are stricter in choosing their targets only because cartridges are expensive and difficult to procure.

Alleviating poverty

Considering Indonesian standards, the only Punan which can be considered as poor are those living in the remotest settlements, those having the best access to forest resources and the lavish bounties of mother nature. Though everyday survival is generally not at stake, living conditions are far from optimal in these villages. An unhealthy environment³⁷, a dubious hygiene and a total lack of access to health care makes 'living in harmony with nature' a dangerous gamble. The extremely high infant and child mortality, and short life expectancy are incompatible with present standards even in third world countries. Illiteracy is a strong handicap for any development initiative.

Providing services

Alleviating poverty among the Punan means first of all securing access to health care and education for people in the remotest areas. This cannot be done simply by opening schools and dispensaries. Thanks to individual initiatives and to the help of the Yayasan Adat Punan, some schools could be opened in remote villages. Securing the funds for the building of the school proved easier than securing a regular wage to the teachers. Independently from financial problems, none of the teachers –educated Punan already used to live in towns- could endure the reclusion in the forest for more than a couple of months. Even highly motivated ministers hold on with difficulty. As for dispensaries, they are still lacking in less remote areas, thus isolated Punan settlements are the last priority for health services.

Providing access to the market

Building access roads would open up the remotest areas and enable better communication with the outside world. Thus, forest people would gain easier access to health care, to education and to the market. No longer isolated, the area would eventually be able to hold back teachers and health workers. The better access to the market would considerably lower the price of essential goods and open new opportunities to local products. The building of roads to connect their village to the towns is the dearest wish of all isolated forest people. It is also a top priority of all district development plans.

However, road building also presents many drawbacks (see APFT, 1999). For instance, in the district of Malinau, where many roads are already under construction, the contractors were allowed to log the forests as far as one kilometer on both sides of the road. No doubt that the logging will not stop there.

Providing a better integration

Some thirty years ago, as the Indonesian government was still unable to build access roads to remote settlements, it proved cheaper to resettle whole villages closer to towns, where they could benefit from better access to services. Such solution has been much criticized –especially by foreign scholars and NGOs- in the past. Thirty years later one has to confess that economic, health and educational conditions are by far better in

³⁷ Malaria outbreaks take a heavy toll on the weakest members of the community.

resettlement areas than in the areas of origin of the villages. Though many problems still remain unsolved³⁸, there is no doubt that resettled Punan experience a much better integration in the modern economy.

The ability of forest people to take up economic and other opportunities is held back by intractable individual and structural obstacles. As forcible resettlement is no longer a solution to be considered, facilitating the integration of forest people living in remote areas will bear a high cost. In order to reach a better integration, the Punan will need the help of the international community. Environmental payments could be considered as a relevant option to both preserve the last stands of the high forest and to alleviate poverty. Environmental payments could be used to provide forest people with scholarships and healthcare, training and capacity building. But again, it must be reminded, that forest people need international help to reach a better and smoother integration³⁹. They do not need some romantic Westerners to confine them in an anachronistic way of life, which traps them in poverty.

The Punan have a dream, they want to catch up with their more developed neighbors and outsiders, and become rightful members of the modern world. What they do not know however, is that in order to reach their goal they will have to give up their culture, their values, and their social organization. Would they know, they would probably regret it but carry on their way.

And what will happen once the forest is gone? For the time being, the forest is all they have got. But does this mean that they will be left without resources after the last log has been pulled out? Probably not. The Punan have already shown that they are very opportunistic. They have been easily switching from sago collection to rice cultivation. Over time they switched from one forest product to another: dammar to rattan, to *gaharu* and to timber. They can as well switch to plantation crops, to forestry plantation, to ecotourism, or any other opportunity. Clearly, education and capacity will be determining in order to fetch new opportunities. People in villages close to cities have a definite advantage over the communities living in remote settlements. The Punan have no other choice than integration or increased marginalization. Alleviating poverty and preparing the future means facilitating integration. Therefore we should not focus on romantic ways to help the last Punan to stay in the forest if it is not their choice. To some forest people, the best choice might well be to get out of the forest, in order to get out of poverty.

Bogor, April 21, 2003

³⁸ Since the implementation of regional autonomy and the revival of *adat* law, conflicts over land claims often turn violent and nowadays many Punan consider moving back to their tribal land.

³⁹ We are not unconditional advocates of integration. Integration presents advantages but also many drawbacks. Forest people want to acquire the goods procured by the outside world, especially those making their life easier : outboard engines, chainsaws, generators, rice mills, rice cookers... and less boring: radios, televisions, VCDs... By opting for integration, they often have to leave their ancestral lands and feel uprooted, marginalized, and experience poverty or, worse, the feeling to be poor. Change goes hand in hand with conflicts between generations, a loss of prestige and authority of the elders, social disorder, alcoholism and sometimes prostitution (Bahuchet *et al.* 2000). However, integration is what forest people want.

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