Working Paper

Rattan futures in Katingan: why do smallholders abandon or keep their gardens in Indonesia's 'rattan district'?

Viola Bizard

World Agroforestry Centre

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About the author

Viola Bizard is a PhD candidate in social anthropology at the School of Anthropology and Conservation at the University of Kent in Canterbury, United Kingdom, with particular interest in environmental anthropology. Since August 2012, she has been conducting long-term fieldwork in Katingan district, Central Kalimantan province, Indonesia. Part of this research is within the scope of a fellowship at the World Agroforestry Centre. Before commencing her PhD studies, she worked as lecturer and research assistant at the Institute of Social Anthropology and the Department of International Politics at Freiburg University, Germany, where she graduated in social anthropology (MA) and political science (MA) in 2011. Apart from the fieldwork in Central Kalimantan, she draws on research experience in Sumatra and Java in Indonesia as well as her work for the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in Viet Nam, all of which centred on the complex relations of humans with their environment.

Abstract

This study addresses the question of why smallholders in Katingan abandon or keep their rattan gardens in Indonesia's 'Rattan District'. During 2008–2013, Katingan district has the official vision of becoming the centre of rattan production and trade in Indonesia. With support from the national government, Katingan strives to develop the local rattan industry and, thus, seeks to turn rattan cultivation into an attractive commodity for local livelihoods, as has been envisioned by non-governmental organisations (NGOs) as well. In the context of these visions, predictions, futures surrounding the 'social life' of rattan in Katingan, this paper seeks to understand the situation on the ground. Rather than exploring these diverse visions, their associated initiatives and any gaps between vision and practice, the author asks, 'Do people in Katingan abandon their rattan gardens or not? Why? And, since people's decision making is at the interface of past experience, present conditions and an anticipated future, what vision do smallholders in Katingan hold for their rattan gardens?'

Keywords: rattan, Katingan, vision, livelihoods, Indonesia

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Contents

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Abbreviations and glossary

adat	Indonesian: local custom or law
datah	Ngaju Dayak: flat, fertile areas along the river
hati rakyat	Indonesian: 'hearts of the people', that is, votes of the people
HPH	Indonesian: Hak Penguasaan Hutan (logging concession)
IKEA	the world's largest furniture manufacturer
IPB	Institut Pertanian Bogor (Bogor Agricultural Institute)
IDR	Indonesian rupiah
jatun rega	Ngaju Dayak: 'there is no price'
kabon uei/uwei	Ngaju Dayak: 'rattan garden'
kereng	Ngaju Dayak: land areas of higher altitude, safe from flooding
KpSHK	Konsorsium pendukung Sitem Hutan Kerakyatan (Consortium for Supporting Community Forestry)
maneseng	Ngaju Dayak: 'to rejuvenate'
NGO	Non-governmental organization
NTFP	Non-timber forest product
NTFP-EP	Non-Timber Forest Product Exchange Programme
REDD+	Reducing Emissions from Deforestation and Forest Degradation plus conservation
tebang banjir	Ngaju Dayak: 'flood logging'
uei/uwei	Ngaju Dayak: 'rattan'
umba rayan uluh	Ngaju Dayak: 'to join in the festivities of people', that is, to follow others
warisan	Indonesian: 'inheritance, legacy'
WWF	World Wide Fund for Nature

Quotes

The vision of Katingan district is 'Katingan as the production and trade centre of rattan in Indonesia'.

Duwel Rawing 2008: VI–2, District Head of Katingan 2003-2013

Let's campaign rattan! RATTANATION: for the nation, sustainable forests and local people's livelihoods.

Consortium for Supporting Community Forestry

Greening the future: certification could be an option!

Non-Timber Forest Products Exchange Programme

Sustainable rattan […] is also a way to safeguard ecosystem processes, species and human livelihoods that are tightly interlinked with the existence of this planet.

World Wide Fund for Nature

My prediction is that 15 years from now only 20% of the current rattan stock will remain.

Rattan trader in Kasongan; interview 19.11.2012

We all have rattan gardens, but people have become lazy to maintain them.

Rattan smallholder in Katingan; pers. comm. 12.2011

Rattan gardens could be a low-carbon economic growth option beyond REDD+.

Meine van Noordwijk, World Agroforestry Centre; pers. comm. 12.2011

The unique knowledge and skills required to collect, manage, and utilize rattan are declining rapidly […] As older generations pass, ancient rattan traditions and irreplaceable ecological knowledge will likely vanish as well.

Siebert 2012: 30

1. Introduction: envisioning rattan

The ‘social life’ of rattan in Katingan district in Central Kalimantan, Indonesia, displays diverse visions, predictions, futures. ‘Rattan’ is the common term for a large and complex group of climbing spiny palms that occur in Old World tropical forests, constituting the world’s most important agroforestry product (cf. Siebert 2012 p. 1).1 For centuries, rattans have been used for tying, basketry, construction, medicine, food and miscellaneous purposes by local communities. Beyond that, rattans have been traded for their solid, strong and highly flexible canes, forming the basis of today’s thriving international industry that receives around 80% of its supplies from Indonesia.

Katingan district made its official vision for 2008–2013 to become the ‘production and trade centre of rattan in Indonesia’ (Rawing 2007). This policy needs to be understood not only as a political strategy to capture the hati rakyat, that is, the votes of rattan farmers during the elections for district head in 2003 and 2008, but also in the context of a macro-political vision of an economy of ‘added value’ as an alternative development paradigm in the aftermath of the Asian Financial Crisis. The policy involves, amongst other growth measures, banning raw material exports—including rattan raw material and semi-finished rattan products—which came into effect in January 2012. Moreover, in order to boost local (and ‘green’) industry development, the Minister of Industry selected Katingan as a rattan production centre and the Ministry of Forestry decided to set up a rattan cluster in Katingan as part of a wider strategy of non-timber forest product (NTFP) development.

Backed by the national government, the district government has developed an impressive masterplan for building the local rattan industry. Apart from that, diverse programs have been more or less successfully executed, for instance, an enquiry into rattan stocks, rattan reforestation, handicraft workshops, the resettlement of Javanese furniture-makers from Cirebon and the establishment of a state-owned factory that is supposed to produce rattan furniture. Hitherto there was a gap between the vision and practice of developing the rattan industry and turning rattan into an attractive commodity for local livelihoods, which has also been envisioned by several NGOs.

With the support of the Consortium for Supporting Community Forestry (Konsorsium pendukung Sitem Hutan Kerakyatan/KpSHK), a local NGO called Teropong was the first to establish a rattan initiative in Katingan. In 2005, it conducted a baseline survey of rattan farms in the district, facilitated the formation of three rattan cooperatives and campaigned for a ‘RATTANATION’ composed of rattan e-farmers whose livelihoods, land rights and bargaining power would be improved, not least through information technology. Over the years, Teropong has shifted its attention to alternative themes and the World Wide Fund for Nature (WWF) has taken the lead in supporting local rattan farmers. Motivated by its concern for protecting biodiversity, the conservation NGO seeks to revitalize the three rattan cooperatives and hopes the world’s largest furniture manufacturer, IKEA, will invest in the local industry. In addition, the Non-Timber Forest Products Exchange Programme (NTFP-EP) envisions farmers’ rattan to be certified through the Participatory Guarantee System (PGS). Certified rattan is considered a ‘green’ alternative to conventional rattan material, resulting in added value for farmers and, therewith, assuring the sustainable management of rattan resources.

[1] Although rattans are usually described as climbing palms, some species do not climb. Yet, since the reproductive features of these shrubby palms of the forest undergrowth link them with climbing species they are included in the rattan genera (Dransfield 2002).

From a different perspective, continuous supply of rattan raw material has also become a serious concern for local traders in Katingan. With the export ban on unfinished and semi-finished rattan material, which was followed by a price drop of 35–40% for semi-finished rattan and 25–40% for unprocessed rattan, local traders have difficulty obtaining raw material. Several traders, in fact, have ceased to buy rattan all together. Against this background, some traders predict a rather dark future for Katingan's rattan. Many rattan smallholders have switched profession or converted their rattan gardens to other land uses, reported a local rattan farmer from Katingan during preliminary research in December 2011.

Since rattan gardens, like agroforestry systems in general, fulfil various ecological functions—biodiversity conservation, hydrological regulation, soil protection, carbon sequestration and thus climate control (Asbjørnsen et al 2000 p. 24, Belcher et al 2005 p. 248)—the conversion of rattan gardens to other land uses is of wider concern. Research has shown that agroforestry systems are the land-use system most at risk in Indonesia, owing to conversion to monocultural tree crops, and should be integrated into any policy to reduce carbon emissions from deforestation and forest degradation (van Noordwijk et al. 2010 p. 23).

While from a climate perspective the loss of carbon sinks owing to the conversion of rattan gardens might be of primary concern, however, such a land-use change might go far beyond ecological repercussions. As Siebert (2012 p. 30) aptly notes in his reflection on the rattan cultures of Southeast Asia, vanishing rattan gardens might imply a transformation, or even loss, of people's culturally distinctive resource management practices, uses, meanings and values associated with the rattan–swidden complex and the resource itself, that is, the preconditions for sustainable rattan development and thus of the overall integrity of the natural environment in situ.

Against this background of multiple perspectives on the future of rattan in Katingan, an investigation seems plausible. But rather than explore these diverse visions, associated initiatives and any gap between vision and practice, this paper seeks to provide an understanding of the situation on the ground: 'Do people in Katingan abandon their rattan gardens or not? Why? And, since people's decision making is at the interface of past experience, present conditions and an anticipated future, what vision do smallholders in Katingan hold for their rattan gardens?' Integrating images of the future into the analysis allows for understanding present actions, livelihoods' conditions and perceptions of local rattan farmers in Katingan, particularly if coupled with an appreciation of the past.

2. Methodology

This study follows a grounded, explorative approach. In line with event social science (Vayda 2009, Vayda and Walters 2011), concrete human actions at the village level—for example, converting a rattan garden—serve as starting points for exploring why farmers actively manage or abandon their rattan gardens. These specific actions can be explained by progressively contextualizing them forwards and 'backwards in time, either outwards in space, or through "densification" of context, inwards […] and "up" in levels of society and governance' (McCay 2009 p. 15). This is not to say that 'anything goes', which would make things extremely relative. Rather, by being open and not a priori prioritizing some factors over others, one tries to reveal which endogenous and exogenous factors

affect the decision making of rattan farmers and, thus, *peu-à-peu* entangles the social–ecological complexity in which they operate.

In order to trace the question at hand (as well as the objectives of the overall PhD project), I am conducting long-term fieldwork, August 2012–December 2013, mainly in different villages in Katingan. The study uses and pilots a mix of quantitative and qualitative methods, such as diverse interview techniques (structured, semi-structured, in-depth, expert interviews and focus-group discussions), participant observation, cultural domain analysis (freelisting, pilesorts, identification and ranking exercise), seasonal calendars or diaries. While some of these methods were used to explore other aspects of the PhD research than the question addressed here, often they nonetheless informed my overall understanding of livelihoods' conditions and, thus, of local rattan management. For the analysis of the quantitative data, simple statistics were used. The qualitative data were transcribed, coded and analysed by means of NVivo software. However, as data collection is continuing not all data have been analysed yet and the findings presented thus need to be considered as preliminary.

Rather than presenting a complete overview on why farmers in Katingan abandon or keep their rattan gardens, the paper provides glimpses into two cases of rattan management in Katingan. The sites were selected owing to their variation in location, that is, lowland village versus upland village, implying also a difference in livelihoods' activity; distance to the district capital; infrastructure; and religious background. This was designed to provide diverse insights into Indonesia's self-proclaimed Rattan District.

3. What are rattans?

Rattans occur in the Old World tropical forests of Equatorial Africa, South and Southeast Asia, northern Australia and Fiji (Sunderland and Dransfield 2002). Belonging to the *Calamoideae* sub-family in the palm family (*Arecaceae*), a distinctive character of *Calamoideae* palms is their scaly fruit (Dransfield et al 2008 p. 141). Following a recent update on rattan genera, the number of species and their distribution (Figure 1), approximately 553 rattan species in 12 genera have been identified, of which *Calamus* and *Daemonorops* are the largest genera (Dransfield et al 2008 p. 141–207). Three genera (*Eromospatha*, *Laccosperma* and *Oncocalamaus*) are endemic to Africa; the other nine genera occur primarily in the tropical forests of Southeast Asia (Dransfield et al 2008).[2]

Genus	Species number	Distribution
Calamus	ca. 374	Equatorial Africa, Himalayas to south China, Malay Archipelago, north-eastern Australia and Fiji
Daemonorops	101	India to southern China through Malay Archipelago to New Guinea and the Philippines
Ceratolobus	6	Malay Archipelago, Sumatra and Borneo

[2] The broad range of ecological niches in which rattans grow not only explains the wide geographic distribution and the abundance of species of rattan but also the high endemism occurring within this palm group (Siebert 2012 p. 10). Lowland and hill forests tend to have the highest rattan abundance and species diversity but the palms occur also across seasonally flooded swamp forests to high montane forests above 3000 m (Dransfield 2002). Detailed introductory information on rattan ecology is provided in Dransfield et al (2008 p. 141–207).

Eremospatha	10	Equatorial West and Central Africa
Korthalsia	Approx. 26	Southeast Asia to New Guinea
Laccosperma	5	Equatorial West and Central Africa
Myrialepis	1	Southeast Asia and western New Guinea
Oncocalamus	5	Equatorial West Africa and Congo Basin
Plectocomia	Approx. 16	Himalayas to southern China and Southeast Asia
Plectocomiopsis	5	Southeast Asia and New Guinea
Pogonotium	3	Malay Archipelago and western Borneo
Retispatha	1	Borneo

Figure 1. Rattan genera, number of species and their distribution

Source: Dransfield et al 2008 p. 141–207

Rattan inventories have shown that Peninsular Malaysia and Borneo are home to the greatest abundance and diversity of rattans, with 146 species recorded so far for Borneo alone (for example, Dransfield 1992a, 1992b, van Valkenburg 2002).[3] Yet, despite burgeoning research into rattan taxonomy since the 1970s, two of the most prominent rattan botanists assess the rattan flora of both Africa and Southeast Asia as 'poorly known' (Sunderland and Dransfield 2002 p. 10). The lack of a comprehensive taxonomic base is considered critical not solely from a botanical point of view. Reliable data on rattan taxonomy is also essential for the conservation and sustainable development of the world's most significant, widely used and traded agroforestry product (cf. Dransfield and Manokaran 1994 p. 28, Siebert 2012 p. 20). While most rattan comes from 'wild' stocks, Hani people in southwestern China (for example, Xu 2007, Xu et al 2009) and different Dayak groups in today's Central and East Kalimantan in Indonesia have cultivated rattan as part of their rice–swidden system since long ago.

3.1 Kalimantan's rattan gardens

When rattan cultivation began in Kalimantan is unknown. Sources indicate that people in what is now Central and East Kalimantan have planted rattan since at least the mid-19th century (van Tuil 1929 cited in Pambudhi et al 2004 p. 349, Weinstock 1983 p. 60, Dransfield and Manokaran 1994 p. 34).[4] Different authors have documented Kalimantan's traditional rattan cultivation system (for example, Weinstock 1983, Mayer 1989, Godoy 1990, Godoy and Feaw 1991, Fried and Mustofa 1992, Fried 2000, Belcher 2001, Gönner 2001, Belcher et al 2004,Arifin 2003,Matius 2004, Sasaki 2007). Descriptions have been drawn of different sub-groups of the Luangan Dayak people living between the middle reaches of the Barito River in Central Kalimantan and the middle section of the Mahakam River in East Kalimantan. But no detailed account has been found of the cultivation system in Katingan. While the particularities of rattan cultivation differ from grower to grower and place to place, the basic features of the system seem to be similar.

[3] Dransfield (2002) provides an overview on the state of rattan taxonomic knowledge by country.

[4] It has been suggested that rattan gardens first emerged in the areas around the Barito, Kapuas and Kahayan rivers in Central Kalimantan and gradually dispersed to other regions in Central, South and East Kalimantan (van Tuil 1929 cited in Pambudhi et al 2004 p. 349).

Rattan cultivation is closely intertwined with swidden agriculture. Farmers plant rattan seeds—mostly *uei/uwei sigi* (in Ngaju Dayak. Indonesian: *rotan sega/taman.Calamus caesius*) and *uei/uwei irit* (Indonesian: *rotan irit.Calamus trachycoleus*)—either directly in the swidden together with rice or other annuals like maize or cassava used for subsistence or commercial purposes, or cultivate them in a nursery to be transplanted as seedlings in the subsequent year.[5] Farmers might also collect seedlings from productive rattan gardens and transplant them into their swiddens after harvest. The rattan plants are left to grow during the fallow period with the secondary vegetation to develop into a rattan garden (Ngaju Dayak: *kabon uei/uwei*), which can be harvested for the first time approximately 7–10 years after planting. Depending on the species, rattan can be harvested successively over a span of 30–50 years (Belcher et al 2005 p. 247), with large harvests possible every 2–3 years and small harvests whenever there is need to obtain some immediate cash, as was reported by rattan smallholders in Katingan.[6]

4. Katingan: geographical and ethnographic overview

Named after the Katingan River, which curls 650 km from the Schwaner Mountain Range in Borneo's interior to the Java Sea, Katingan district is located at the heart of Central Kalimantan province (Figure 2). With an area of 153 564 km^2, Central Kalimantan is the third largest province after Papua and East Kalimantan. Given this expanse, the province is sparsely populated. According to the 2010 census, only about 2.2 million people live in Central Kalimantan, with a population density of 14 persons/km^2 (BPS 2010). A large share of the province's inhabitants is found in the provincial capital of Palangka Raya and larger towns. The remaining residents live in small settlements widely dispersed along a network of rivers and streams through dense lowland rainforests of mangroves, freshwater swamps, peat swamps and dry *Dipterocarp* forests and agriculture land.

The majority of Central Kalimantan's population are Ngaju Dayak, who are the most numerous and dominant Dayak group within Southeast Borneo (Knapen 2001 p. 89). Ot Danum and different Muslim groups—including Malay, Buginese, Banjarese, Javanese and Madurese—are also part of the provincial population (cf. Casson 2001 p. 1). *Ngaju* means 'upstream' and traditionally refers to swidden cultivators living along the middle and lower reaches of the province's waterways, including the Katingan (Baier 1977 p. 3, Schiller 1997 p. 14–16).

With 17 800 km^2, Katingan district is the second largest district in Central Kalimantan. It was established at the end of Indonesia's decentralisation (1999) in 2002. The latest government figures count 150 642 (2011) inhabitants of Katingan, with an average population density of 8 persons/km^2 (BPS 2012). Some of Katingan's inhabitants live in the district capital Kasongan and in Tumbang Samba further upstream. However, the majority of the district population resides in small hamlets of a

[5] Other species cultivated in the rattan–swidden system are *Daemonorops crinita*,*Calamuspinisilatus*, *Calamus ornatus*, *Calamus scipionum* and *Calamus manan* (cf. also Gönner 2001, Belcher et al 2004, Pambudhi et al 2004, Sumardjani 2011).

[6] If the species have clusters of stems, the rattan clump develops between 40–60 stems over the following decades. Some rattans, such as *uwei marau* (Indonesia: *rotan manau;Calamus manan*), have solitary stems.

few hundred people along the Katingan River and its countless creeks. Industrial development is limited, even though wage labour in the palm oil industry increasingly represents an alternative income source. The majority of Katingan's population, including people in the study sites, continue to rely heavily on natural resources to sustain their livelihoods, that is, fishing, swidden agriculture, (artisanal) gold mining and rattan production.

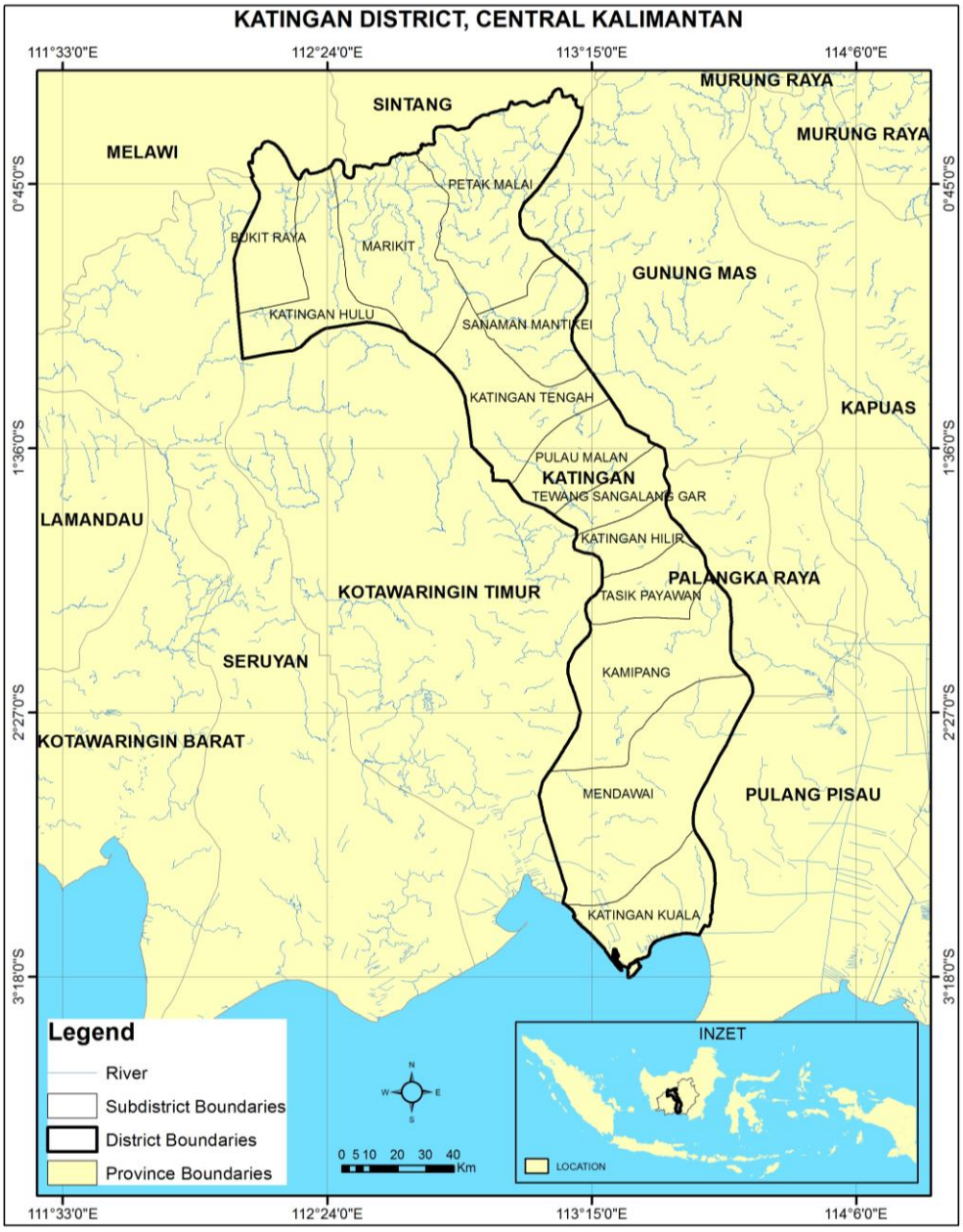

Figure 2. Map of Katingan district

4.1 Tumbang Dahanen

Surrounded by secondary swamp and peat-swamp forest, Tumbang Dahanen (hereafter Dahanen) is located in the lowlands of Katingan. With a population density of 2.3 persons/km2, the area is sparsely populated. The village counts 74 households with a total population of 370 (October 2012), almost all of whom are Muslim. Since 2011, a road connects Dahanen to the district capital of Kasongan and, since January 2013, there is electricity at night.

Elders of Dahanen remember a time when people mainly lived from swidden agriculture, fishing, rattan harvesting and the collection of tree bark. Like most Dayak groups, they used the organic soils or very shallow peat areas close to the river banks for cultivating dry rice, vegetables and rattan. However, with the arrival of logging concessions (Hak Penguasaan Hutan/HPH) in the area in the 1970s, patterns of livelihoods slowly began to alter. During the 1970s and 1980s, people were still busily engaged in the harvesting and processing of rattan. Villagers followed the logging railways into the forest to extract tree bark. However, with the government ban on exports of rattan raw material in 1986 and on semi-finished rattan products in 1988, rattan became less lucrative and villagers started to increasingly engage in logging. Sponsored by middlemen, people dug channels into the surrounding forest in order to extract valuable timber species—such as ramin (*Gonystylus* sp), meranti (*Shorea* sp) and martibu (*Eugenia* sp)—during times of favourable water table, known as flood logging (*tebang banjir*). With the logging operations, however, the peat swamp lost its ecological function, becoming prone to fires during the dry season and floods during the rainy season. Until the logging was finally ended in 2006, it was the major income source for villagers of Dahanen. Fishing, rattan harvesting and minor agricultural activities functioned as supplements.

Nowadays, people mainly make a living from fishing, wage labour in a recently established palm-oil plantation in the village territory and occasionally from harvesting *rattan irit* and *rattan sigi*. Fourteen 'wild' rattan species grow in the area, some of which once were of economic value. Besides benefitting from rattan as a source of cash income, people in Dahanen continue to use rattan mainly for weaving baskets, making fishing tools, as food and as tying material, albeit on a lesser scale than in the past.

4.2 Tumbang Sapan

Tumbang Sapan (hereafter Sapan) is located in the uplands of Katingan along a tributary of the Katingan River. The area is covered by primary and secondary lowland rainforest, agroforests and swidden plots. Also here, the population density is low, namely 3.1 persons/km^2 (BPS 2012). The village has 54 households for a population of 237, almost all of whom follow the Kaharingan religion. In the official discourse, Sapan would probably be classified as a 'left behind and isolated village' given its rather remote location and poor infrastructure. A road connecting to the sub-district capital and a middle school (Sekolah Mentengah Pertama/SMP) have just recently been established. Drinking water is drawn from the river despite the extensive gold mining activities upriver. Electricity is only available to those who can afford a generator.

Based on what Dove (2011 p. 13–17) has called a 'dual or composite economy' of swidden agriculture coupled with rattan as source of cash income, subsistence livelihoods remain widespread. However, while the harvesting and processing of rattan were lucrative during the 1970s and 1980s, today cash is obtained mainly from gold mining. The latter became popular after logging ended in 2006. Yet, compared to Dahanen, in Sapan logging experienced a much shorter boom, from 2001 to

2006. And while in lowland Dahanen people's logging activities were primarily determined by the watertable of the forest, in Sapan the villagers adjusted their logging operations to the swidden calendar, which even during the time of logging retained its importance.

For a long time, swiddening has not only been the central pillar of the household economy for people in Sapan but a cultural practice, involving in line with Kaharingan belief a sequence of rituals structuring the annual cycle. While swiddening allows households to cover their rice and vegetable needs, hunting has become the major source of protein since fish stocks have drastically decreased as a consequence of the mining upriver. Hunting is, in addition to mining, a means for villagers to obtain cash, given that their rattan gardens do not yield any profit.

Notwithstanding the present unimportance of rattan as a cash crop, rattan remains significant in everyday life in Sapan. People use it for weaving, tool making, dyeing, as food, as a construction and tying material and in ritual contexts. A freelisting exercise and discussion with villagers suggested 39 rattan species exist in the area of Sapan. Owing to time constraints, only 31 species have been verified so far, many of which grow in people's gardens.

5. Why do farmers abandon or keep their rattan gardens?

In both Dahanen and Sapan, the majority of households possess rattan gardens (Figure 3). In Sapan, 79% of all households have a rattan garden, with 4.6 plots on average. In Dahanen, 81% of all households possess 1.48 rattan plots on average.

The picture changes, especially for Dahanen, when examining individual families. However, this study takes the household as the unit of analysis. In Dahanen, of those households that do not possess a rattan garden, 12% never had one and 12% are interested in (re-)obtaining a rattan garden. In Sapan, by contrast, only 9% of the 'do not have' households never had a rattan garden and 36% of them expressed interest in (re-)gaining one. This differing interest is also reflected in the variation of planting activities during the last three-to-four years (Figure 4). →

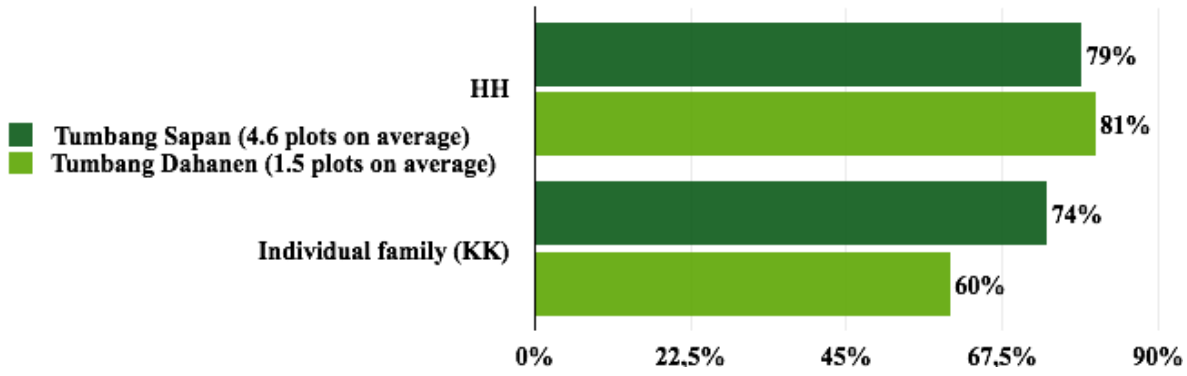

Figure 3. Ownership of rattan gardens

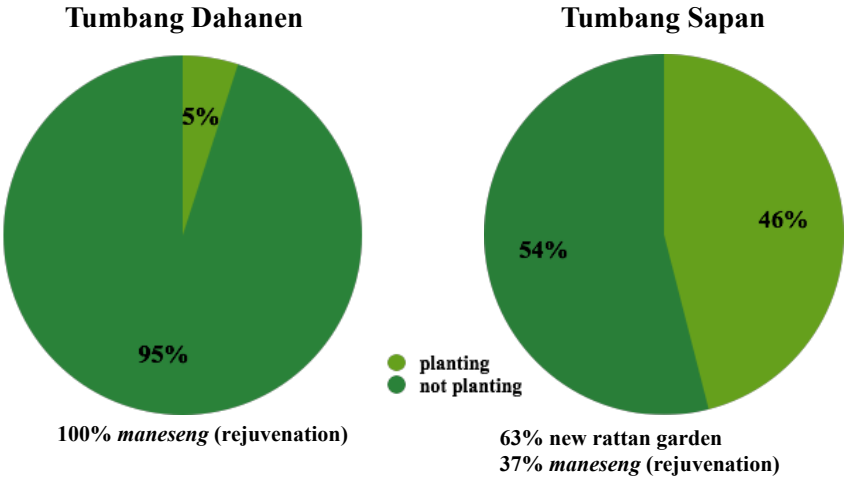

Figure 4. Planting activities in the last three-to-four years

In Dahanen, only 5% of all households planted rattan in the last three-to-four years. These farmers did not establish new rattan gardens but rejuvenated plots by transplanting seedlings, a practice called *maneseng* in Ngaju Dayak. In the upland village of Sapan, people had been much more active in planting: 46% of all households had planted rattan in the last three-to-four years; of which 63% established new gardens following their rice harvest; and 37% of all households rejuvenated old ones. If we also take into account planting activities in, and before, 2009, it seems clear that people in Sapan are more active in managing rattan than people in Dahanen, where 75% of all households have never (trans-)planted rattan (Figure 5).

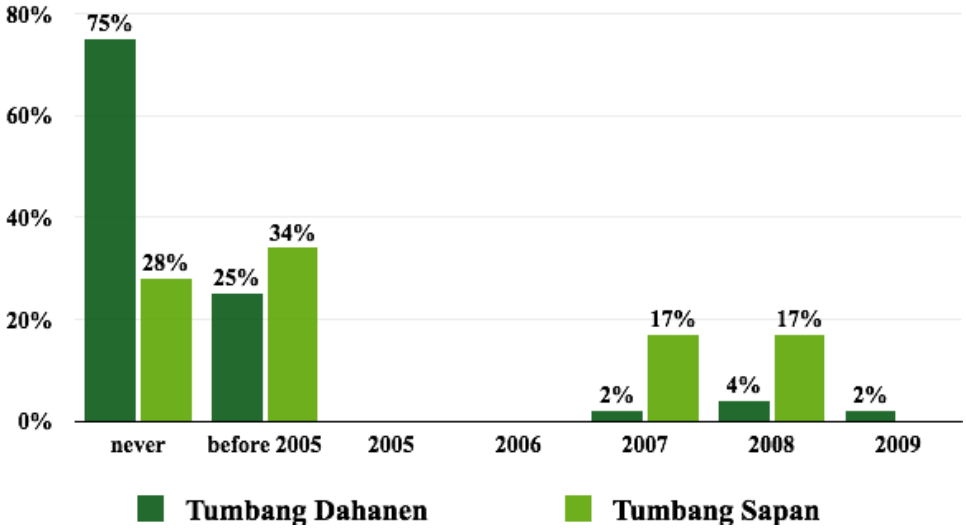

Figure 5. Planting activities in 2009 and earlier

Taking into consideration the sale and conversion of rattan gardens to other land-uses, the picture, however, becomes more complicated. As Figure 6 shows, hardly any households in Dahanen ever sold or converted a rattan garden. In upland Sapan, by contrast, 46% of all households reported that they had previously sold or converted a rattan garden, with the majority replacing rattan with rubber (74%); 42% selling their rattan garden; and 26% turning them into gold mines (Figure 7). Either people mine by themselves in their garden or they allow others to mine there, receiving a 10% share of any profits or an initial payment as compensation.

How can these contrasting pictures be explained? On the one hand, a high rate of sale and conversion of rattan gardens paired with more active planting activities and considerable interest in (re-)obtaining a rattan garden; and, on the other, a low rate of sale and conversion of rattan gardens together with a low rate of planting activities and general lack of interest in (re-)gaining a new rattan garden?

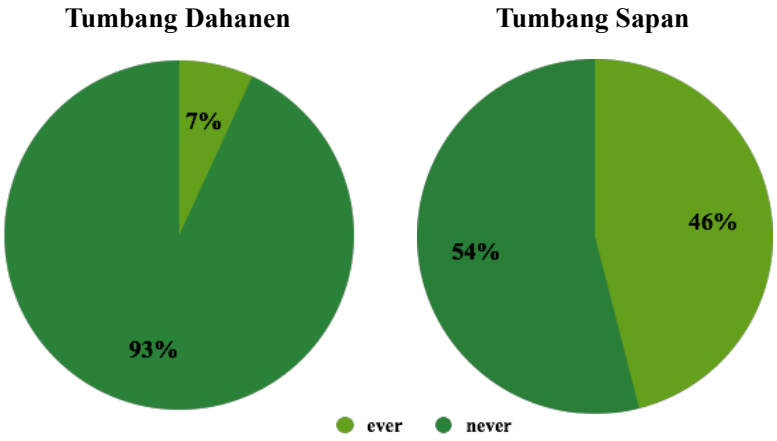

Figure 6. Sale and land-use change

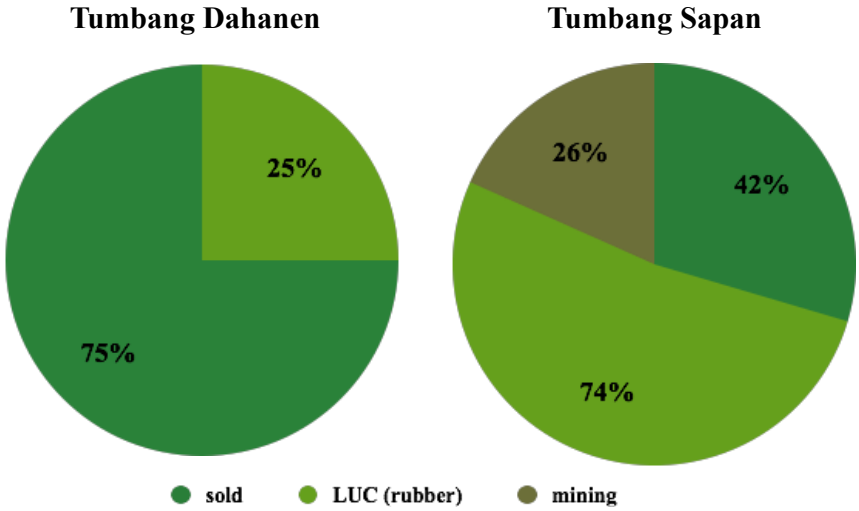

Figure 7. Sale and land-use change according to purpose

5.1 Reasons for not harvesting

People in both Sapan and Dahanen frequently reported that they had become lazy to harvest rattan because *jatun rega*, literally, 'there is no price', which, in the case of upland Sapan, can also mean an absence of a buyer.

Both of these were given as primary reasons why the people of Sapan were not harvesting in 2012 but it must be noted that they were also busy with mining, allowing them to obtain cash income (Figure 8).

In Dahanen, a combination of a low rattan price, availability of alternative livelihoods, as well as a labour shortage, explains the low harvesting activities in 2012. Villagers engaged in fishing and wage labour in the adjacent palm oil plantation, the latter making it difficult to find other people to sharecrop their gardens.

Tumbang Dahanen **Tumbang Sapan**

Figure 8. Reasons for not harvesting

Thus, in 2012, only one household in Sapan harvested rattan, based on the rumour that a trader would come to the village to buy rattan. Since it was indeed only a rumour, the farmer was not able to sell their rattan.

In Dahanen, with a rattan trader in the village, 12% of all households harvested in 2012, mainly because of economic needs (Figure 9). The relatively active harvesting in the village one year before is explained by the absence of palm-oil wage labour as an alternative and a relatively high rattan price owing to the export of unfinished and semi-finished rattan not yet being banned. In 2011, the farm gate price for 1kg of wet (unprocessed) *irit* reached IDR1800, whereas 1kg of wet *sigi* cost IDR2000, corresponding to the present average minimum price expected by people in Dahanen.[7]

[7] The minimum price expected my people of Dahanen was IDR1812 for 1kg of wet *irit* and IDR2267 for 1kg of wet *sigi*. In Sapan, the expected minimum price for 1kg of wet *sigi* was IDR1920.

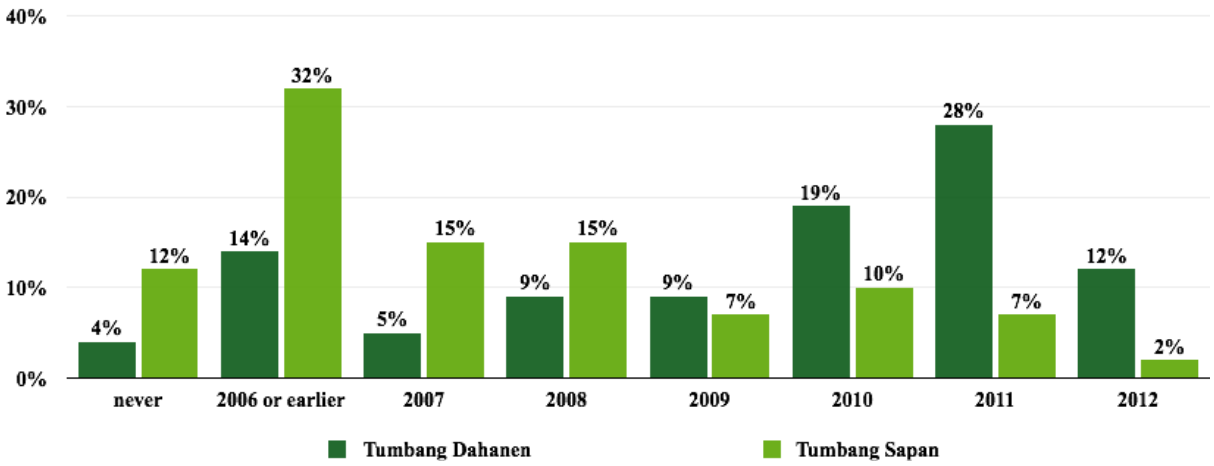

Figure 9. Harvesting activities

As mentioned above, people in lowland Dahanen usually sell their rattan to a fellow villager. Although people commonly receive a lower price, if they harvest on the basis of credit—usually IDR5000–10000 per 100kg of wet rattan—they are protected from unrestrained profit-takers because the middleman is kin, unlike the situation experienced by the villagers of Sapan. The latter sell their rattan to outside traders who are seeking profit at the expense of the villagers, whose bargaining power is weak vis-à-vis these downstream traders. First, farmers receive a lower price owing to the relatively remote location of the village. Moreover, price drops of 50% of the initial offered price or even non-collection of the rattan have been frequently experienced. Rattan harvesting, thus, is a risky undertaking not only economically but also when the phenomenological experience of harvesting is taken into consideration (Figure 10). The analysis of qualitative statements by rattan harvesters clearly shows that harvesting rattan is, foremost, ‘painful’. A 52-year-old farmer explained:

> Rattan harvesting is the hardest work on Earth. First, the spines; second, you have to pull hard; third, you have to climb; fourth, you have to peel the skin off; fifth, you have to carry the rattan to the river; sixth, you have to bundle the rattan; seventh, you have to release it into the water and then lift it again; and eighth, there are many mosquitoes and other insects. In fact, harvesting rattan just makes trouble.
>
> Interview with a rattan farmer; 17.10.2012

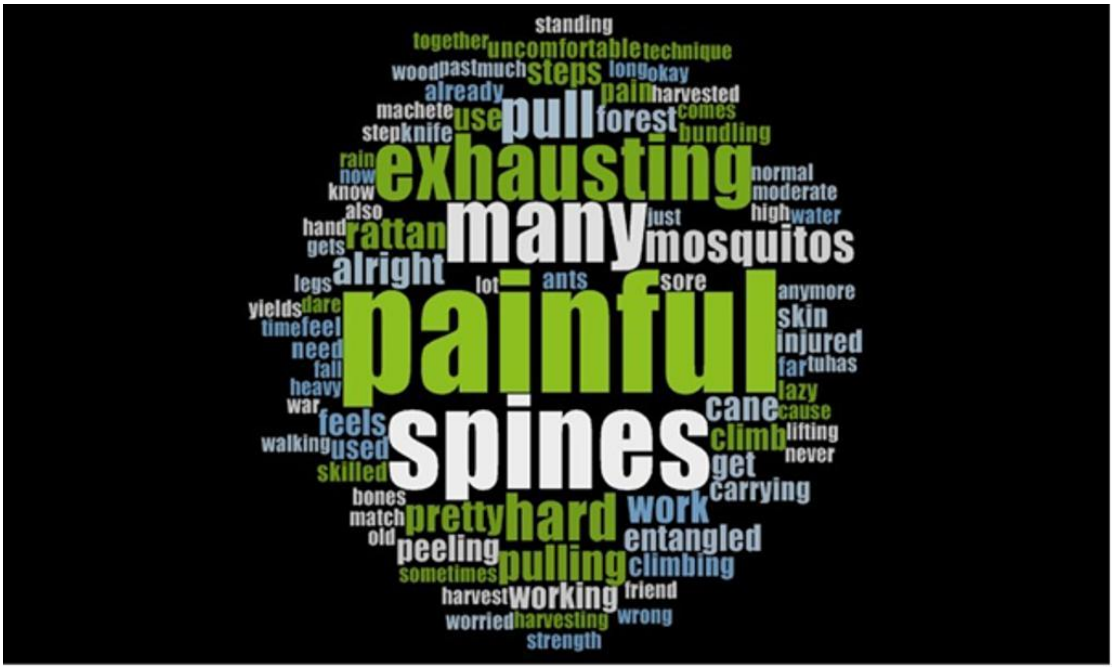

Figure 10. Sensual experience of rattan harvesting

The negative perception of rattan harvesting was confirmed by a ranking exercise (n=42) of livelihoods opportunities conducted with villagers of different ages and gender. Independent of their status, harvesting rattan was considered the most unpleasant activity in terms of work and yields: IDR 52000 per day per person did not justify the effort.[8] Hence, engaging in less exhausting and labour-intensive work and investing in rubber as an alternative cash income source seemed logical.

5.2 Rubber: the new hope

Rubber has become the new hope, especially for people in Sapan. In Dahanen, 52% of all households possess a rubber garden; and 22% of all households can already tap rubber (Figure 11). These productive gardens mainly stem from the 1970s and frequently are mixed with rattan. The young rubber gardens were established following the ban on logging in 2006, with the support of WWF, to develop rubber as an alternative livelihood. Since the fertile, organic soils along the riverbanks—where rattan gardens are located—have become prone to flooding because of upstream and in-situ logging, recent rubber gardens have been established at higher altitudes, locally called *kereng*. So, rather than converting a rattan garden and taking the risk that the young rubber plants will die owing to flooding, people in Dahanen have selected less fertile but higher areas to establish rubber gardens.

[8] This number is based on a rattan price of IDR 1500 per kg and farmers' reports that on average a couple could harvest 70 kg per day. Yields vary depending on individual skills and condition of the rattan.

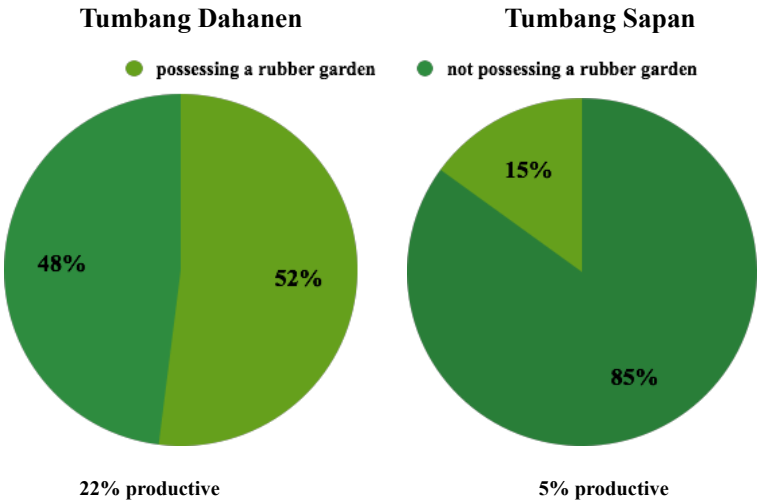

Figure 11. Ownership of rubber gardens

In Sapan, 85% of all households possess a rubber garden, yet so far only 5% of these households have already tapped rubber. Rubber is a recent trend in Sapan, confirmed by both what people have planted in their swidden following this year's harvest and what they intend to plant in their fallow swiddens or empty land. In 2013, 85% of those households planting cash crops following the rice harvest planted rubber (Figure 12). Ninety-five percent (95%) of those households intending to plant something in their fallow swiddens and empty land said that rubber was their priority. These plans trace back not only to the fact that the village has recently been the focus of a rehabilitation project by the forestry office, providing them with rubber seedlings, but also needs to be understood against psychological factors. By planting rubber people adhere to the principle of *umba rayan uluh*, literally, to 'join in the festivities of people': they don't want to be excluded from a hopefully prosperous development.

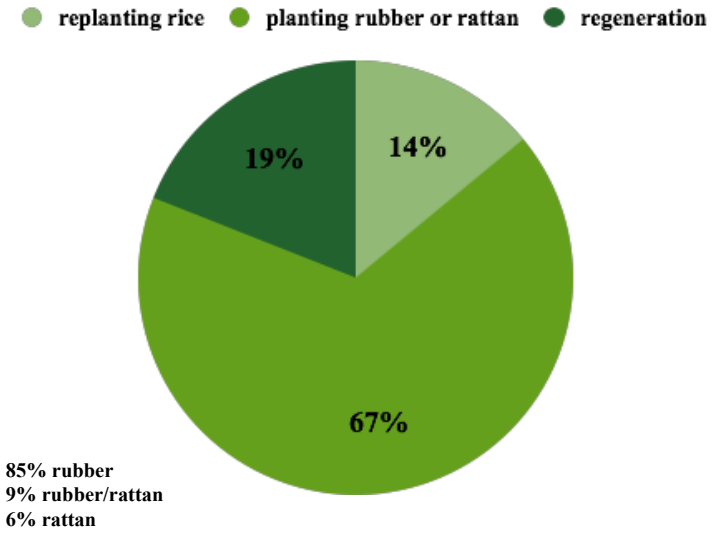

Figure 12. Planting activities in 2012/13 swidden cycle in Sapan

5.3 Swiddening and engagement with land

As becomes evident, people in upland Sapan are active swidden farmers. Figure 13 shows that 92% of all households had established a swidden during the last three years and 79% of all households could cover their rice needs on a subsistence base last year (2012/13). Soil fertility and distance to the village are decisive factors in field selection. Rattan gardens, located on the flat, fertile areas along the river—locally called *datah*—which are easier accessed by motorized canoes, are preferred for swiddening, usually followed by planting rattan or, lately, rubber. Planting and replanting are the customary ways of engaging with the land for people in Sapan. Also, replacing rattan with rubber does not necessarily lead to complete abandonment of rattan gardens, given the average amount of 4.6 rattan plots per household. Rather, establishing a rubber garden is a way of diversifying a household's economy.

In the lowland village of Dahanen, by contrast, only 10% of all households tried to establish a rice swidden during the last three-to-four years. They all failed because of flooding. The majority of households have never established a rice swidden (61%). Rather, 'people have been practising swiddening on trading vessels for decades', as reported by an elder of Dahanen, meaning that rice had long been bought from Banjarese traders. Nowadays, only a few households plant cassava, maize and vegetables on small plots. Agricultural activities are thus limited, not least owing to poor soils in an environment of mainly peatland and unpredictable floods that regularly destroy harvests.

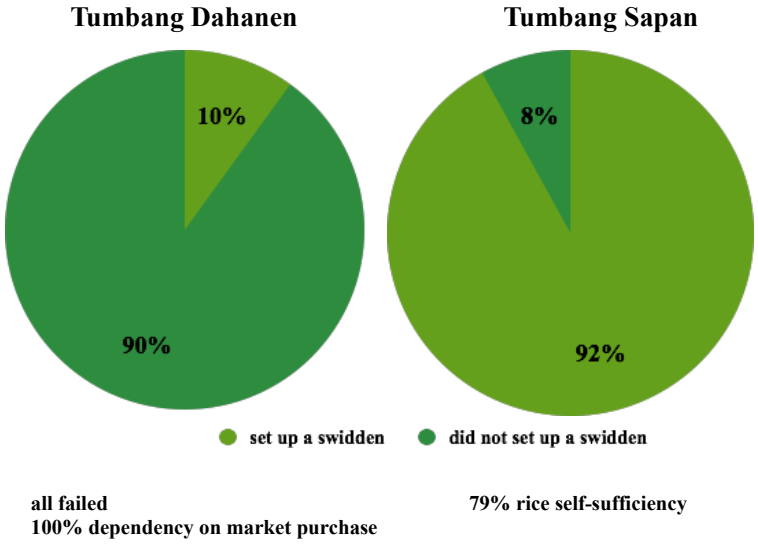

Figure 13. Rice swiddening in the last three years

5.4 Ways of obtaining rattan gardens

This variation in agricultural practice and engagement with land is also evident if we consider the way people have obtained their rattan gardens (Figure 14).

In lowland Dahanen, most rattan gardens have been inherited. In Sapan, by contrast, gardens have mainly been established by people independently, with only some gardens having been inherited or obtained as bride wealth.

In Dahanen, 37% of all households possess inherited rattan gardens that are owned on a family basis, that is, gardens have not been divided amongst the children but were received, and now managed, as collective property. This phenomenon is absent in upland Sapan, where, in line with cognatic kinship, rattan gardens are usually divided on an equal basis amongst male and female children.[9]Whereas individual ownership puts decision-making at the level of the individual family, collective ownership constrains conversion of rattan gardens insofar as common agreement needs to be reached.

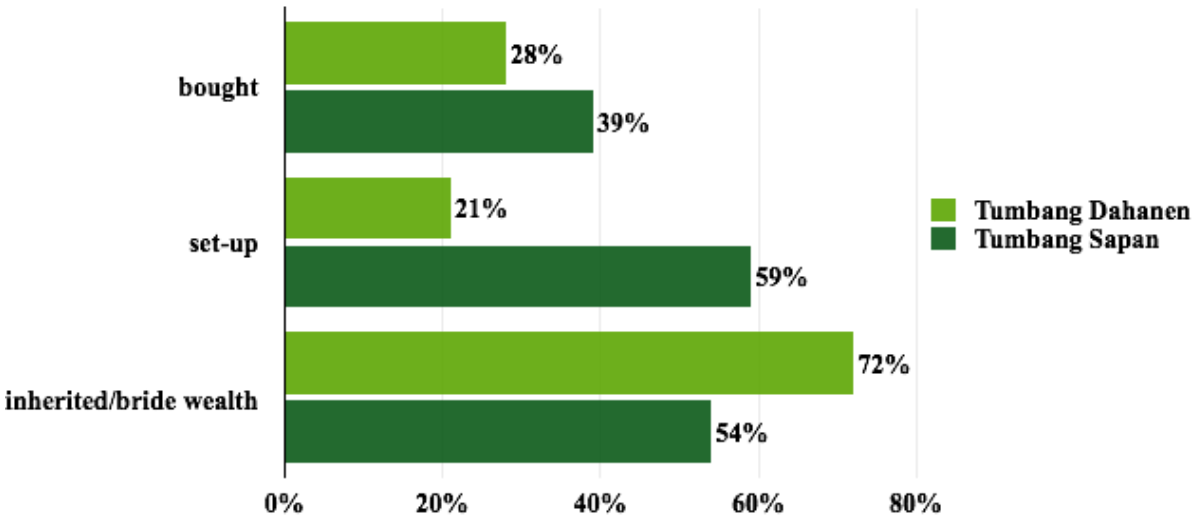

Figure 14. Ways of acquiring rattan gardens

The inheritance of gardens from parents, however, is of deeper, emotional meaning, as pointed out by research into rattan cultivation in East Kalimantan (Belcher et al 2004 p. 86). In Dahanen, rattan gardens are considered legacy (*warisan*), creating a sense of belonging, connecting people to their ancestors. Some rattan gardens have been handed down from generation to generation since the late 19th century. For the people of Dahanen, rattan gardens are part of their history, of their identity. Exploring why smallholders keep their gardens, despite the unstable rattan price and low returns during the last years, farmers emphasized the low labour input required for maintenance, their role as a safeguard in times in need (cf. Belcher et al 2004 p. 85, Pambudhi et al 2004 p. 362) and expressed hopes for a higher rattan price in the future. However, the psychological meaning of rattan gardens as a legacy is the main reason why the villagers of Dahanen keep their gardens, irrespective of the latter's present unprofitability.

In Sapan, by contrast, people hardly associated the conservation of their rattan gardens with a legacy, which corresponds with most gardens having been established independently, as mentioned above. Emotional aspects seem mainly to play a role in regard to these gardens as bride wealth. According to

[9] Although in Dahanen kinship is likewise recognized bilaterally, given the influence of Muslim tradition, male children frequently receive a larger share compared to their sisters.

adat (local custom or law), rattan gardens received as bride wealth can be converted to other land uses, but cannot be sold.

This is not to deny that the villagers of Sapan have strong affiliations with the surrounding landscape. In Dahanen, while these emotions may relate to single rattan stems planted by ancestors, in upland Sapan social affiliations to the landscape have not only been created through the inheritance of gardens and land but through people's own active engagement and reworking of the latter. Against this background, villagers in Sapan hardly mentioned legacy as a reason for keeping their gardens but foremost emphasized that rattan gardens provided a safety-net in times of need, as was also mentioned by rattan farmers in East Kalimantan (cf. Belcher et al 2004 p. 85, Pambudhi et al 2004 p. 361). Moreover, in memory of the glorious times of rattan during the 1980s, when rattan was of much higher value than today, farmers of Sapan, especially, expressed hopes for a better rattan price in the future. This leads to the question of what visions smallholders have for the future of their rattan gardens?

5.5 Smallholders' visions

While only 7% of all households in Dahanen considered the possibility of converting their rattan gardens to other uses, in upland Sapan, 61% of all households were interested in transforming them (Figure 15). Of these households, 84% wanted to replace rattan with rubber and 16% planned to allocate their garden for mining, which corresponded to the interest in establishing rubber gardens and the importance of mining as a source of cash income.

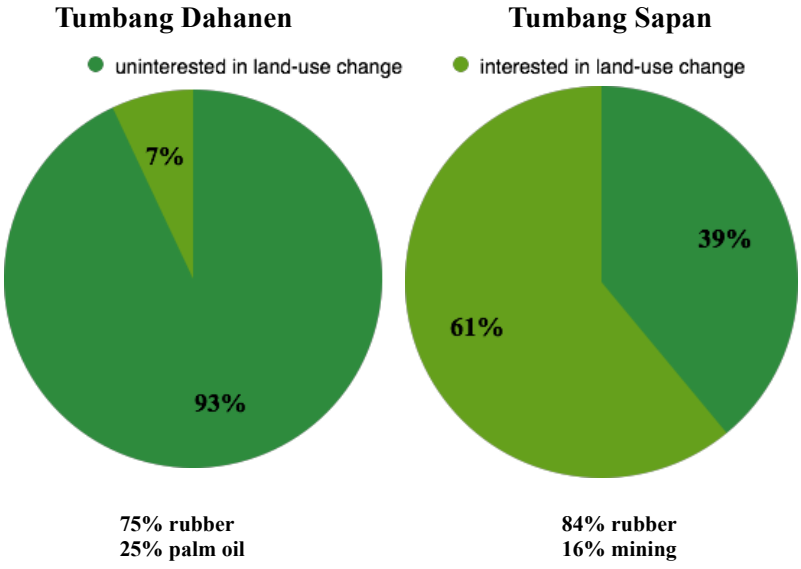

Figure 15. Interest in land-use change

Notwithstanding these figures and that several villagers of Sapan were rather vague about the future of their rattan gardens, the study revealed that in both villages the majority of people hoped that their children and grandchildren would still be in possession of a rattan garden (Figure 16).

In the upland village of Sapan, parents primarily held that their children needed to have rattan gardens because they were a sign of ownership (cf. Belcher et al 2004 p. 86, Pambudhi et al 2004 p. 362), protected them in times of need and served male children as bride wealth.

In Dahanen, most people just considered it as norm that rattan gardens were inherited from parents, providing the children with a safeguard during times of hardship and guaranteeing their future.

Tumbang Dahanen **Tumbang Sapan**

Figure 16. Rattan futures

6. Concluding remarks

Rattan farmers both in Dahanen and Sapan are hardly aware of Katingan's vision of becoming Indonesia's rattan district, the national government's protectionist measures of banning the export of unfinished and semi-finished rattan in order to boost the national furniture industry, or the initiatives undertaken by NGOs to support local rattan farmers. A few individuals might occasionally partake in NGO- or government-led activities, however, often they are left with hopes, not seldom with disappointment about the gap between visions and practice.

Rattan smallholders at the two fieldsites might not envision certified 'green' rattan nor a booming local rattan industry nor orderly and 'proper' rattan plantations. However, the studies of Dahanen and Sapan have shown that rattan farmers in Katingan do have visions and hopes concerning the future of their rattan gardens. At least at the time of writing, smallholders in Dahanen and Sapan not only still consider rattan gardens as an integral part of their present livelihoods' portfolio (notwithstanding the low returns) but also envision rattan gardens as being part of their children's future: as safeguard in times of hardship; as potentially lucrative income source in case of a rising rattan price; as bride wealth; or as a legacy from the ancestors. In their basic essence, namely the continued existence of rattan gardens, these visions do not differ from the ones projected by the government and NGOs.

Overcoming weak coordination, poor cooperation and competition through common coherent action in the present are preconditions for turning the common vision into practice. Moreover, listening to

the multiple voices of rattan farmers and taking into account what future they envision for their gardens gives some insight into why smallholders in Indonesia's self-proclaimed 'rattan district' abandon or keep their gardens and, thus, helps us to understand the complex world in which rattan farmers find themselves at present.

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29. Essai d'analyse de la prise en compte des systemes agroforestiers pa les legislations forestieres au Sahel: Cas du Burkina Faso, du Mali, du Niger et du Senegal.
30. Etat de la recherche agroforestière au Rwanda etude bibliographique, période 1987-2003

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31. Science and technological innovations for improving soil fertility and management in Africa: A report for NEPAD's Science and Technology Forum.
32. Compensation and rewards for environmental services.
33. Latin American regional workshop report compensation.
34. Asia regional workshop on compensation ecosystem services.
35. Report of African regional workshop on compensation ecosystem services.
36. Exploring the inter-linkages among and between compensation and rewards for ecosystem services CRES and human well-being
37. Criteria and indicators for environmental service compensation and reward mechanisms: realistic, voluntary, conditional and pro-poor
38. The conditions for effective mechanisms of compensation and rewards for environmental services.
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59. Kajian Kondisi Hidrologis DAS Talau, Kabupaten Belu, Nusa Tenggara Timur.
60. Kajian Kondisi Hidrologis DAS Kapuas Hulu, Kabupaten Kapuas Hulu, Kalimantan Barat.
61. Lessons learned from community capacity building activities to support agroforest as sustainable economic alternatives in Batang Toru orang utan habitat conservation program (Martini, Endri et al.)
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73. Impact of the Southeast Asian Network for Agroforestry Education (SEANAFE) on agroforestry education capacity.
74. Setting landscape conservation targets and promoting them through compatible land use in the Philippines.
75. Review of methods for researching multistrata systems.
76. Study on economical viability of *Jatropha curcas* L. plantations in Northern Tanzania assessing farmers' prospects via cost-benefit analysis
77. Cooperation in Agroforestry between Ministry of Forestry of Indonesia and International Center for Research in Agroforestry
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79. Land tenure and agricultural productivity in Africa: A comparative analysis of the economics literature and recent policy strategies and reforms
80. Boundary organizations, objects and agents: linking knowledge with action in agroforestry watersheds
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82. Mainstreaming climate change into agricultural education: challenges and perspectives

83. Challenging conventional mindsets and disconnects in conservation: the emerging role of eco-agriculture in Kenya's landscape mosaics
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107. Tree domestication by ICRAF and partners in the Peruvian Amazon: lessons learned and future prospects in the domain of the Amazon Initiative eco-regional program
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109. Percepciones sobre la Equidad y Eficiencia en la cadena de valor de REDD en Perú – Reporte de Talleres en Ucayali, San Martín y Loreto, 2009. Proyecto REALU-Perú.
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111. Programa Alternativas a la Tumba-y-Quema (ASB) en el Perú. Informe Resumen y Síntesis de la Fase II. 2da. versión revisada
112. Estudio de las cadenas de abastecimiento de germoplasma forestal en la amazonía Boliviana

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116. How can systems thinking, social capital and social network analysis help programs achieve impact at scale?
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118. NTFPs as a Source of Livelihood Diversification for Local Communities in the Batang Toru Orangutan Conservation Program
119. Studi Biodiversitas: Apakah agroforestry mampu mengkonservasi keanekaragaman hayati di DAS Konto?
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125. A Comparative financial analysis of current land use systems and implications for the adoption of improved agroforestry in the East Usambaras, Tanzania
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