

# **Rattan in East and South Kalimantan, Indonesia: a Case Study of the Production-to-Consumption Systems**

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## FORWORD

Rattan has earned a significant place in the socio-economic fabric in most countries where it grows, aided by its wide utility and universal aesthetic appeal. It is, therefore, not surprising that the plant is predominant among non-timber forest resources. Rattan sector, as a whole, lends considerable muscle to rural economies in many developing nations.

There are two aspects that lend importance to the study of Indonesian rattan sector. One, rattan plays a substantial role in the socio-economics of Indonesia; perhaps, more than anywhere else in the world. Second, as the world's topmost rattan producer, Indonesia's policies on the sector have consequences that extend much beyond the country's border. In view of this, INBAR, since its inception, has been commissioning studies on the Indonesian rattan sector, beginning with Socio-economic Infownation on Rattan in Indonesia (1994), and following with studies on rattan production-to-consumption systems in Sulawesi and Java.

This case study on the rattan production-to-consumption systems in Kalimantan is part of an ongoing research on bamboo and rattan production-to-consumption systems in several Asian countries. It is aimed at identifying the flow of rattan from producer to consumer, studying various stakeholders' involvement in the system, identifying their decision-making facilities and constraints, and suggesting an appropriate intervention program for selected target groups in the system.

This study was carried out by Boen N. Purnama, Hendro Prahasto and B.D. Nasendi from the Forest Products and Forestry Socio-economic Reseakh and Development Centre in Bogor, Indonesia. We hope this will lead to further research into the potential of the rattan sector in Indonesia and other countries.

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# 1 INTRODUCTION

Rattan is the most important and valuable non-timber forest product (NTFP) in Indonesia and has contributed significantly to the country's foreign exchange. Indonesian export of rattan in 1994 totalled 87 770 tons, earning the country about US\$292.5 million in foreign exchange and contributing 90% of the total export earnings from NTFPs (Ministry of Forestry 1994). Every year, a wide variety of rattan products in finished and semi-finished forms are marketed both in domestic and international markets. In terms of marketing volume, Indonesia leads the world rattan market, accounting for 80-90% of the world rattan supply (Algamar 1986).

Over the years, various policy changes have been effected in rattan trading. In 1986, the Indonesian government had issued Trade Ministry Decree No. 274/KP/X/1986 banning the export of raw (washed and sulphured, split and roughly polished) rattan, and extended the ban in 1988 to cover the export of semi-finished rattan products (such as finely polished rattan). Although the government lifted the export ban on semi-finished products in 1992 through the Trade Ministry Decree No. 179/KP/VI/92 on "Rattan Export Regulation", the prohibitive export tax (30%) imposed by the Finance Minister's Decree No. 910/1986 has continued to virtually prevent such exports.

Rattan is abundant in Indonesia, but its utilization is yet to be optimized. To achieve optimum and sustainable utilization of rattan, the involvement of government and other related institutions is essential. Efforts on this count must address the development and improvement of rattan production-to-consumption system, and involve financial and other types of incentives to the system participants, particularly to the rural and small-scale operators who form the majority.

In order to promote sustainable rattan utilization, the Forest Research and Development Agency (FORDA), in collaboration with the International Network for Bamboo and Rattan (INBAR), has studied the socio-economic aspects of rattan production-to-consumption systems in Indonesia. Case studies have focused on both intensive and semi-intensive rattan plantation systems, tracing the distribution network from producers to consumers.

The case study presented in this report concerns the production-to-consumption systems in two regencies each in East Kalimantan and South Kalimantan Provinces.

## Location and Methodology

### Location

This study was conducted in Kutai and Pasir regencies in East Kalimantan and Hulu Sungai Utara and Banjar Baru regencies in South Kalimantan. Kutai and Pasir are Kalimantan's main rattan production (semi-intensive) areas, while Hulu Sungai Utara and Banjar Baru have the biggest rattan industries in Kalimantan. Data collection

was carried out for three months, from September to November 1995. The study location's and the rattan flow in Kalimantan and Java are depicted in Fig. 1.

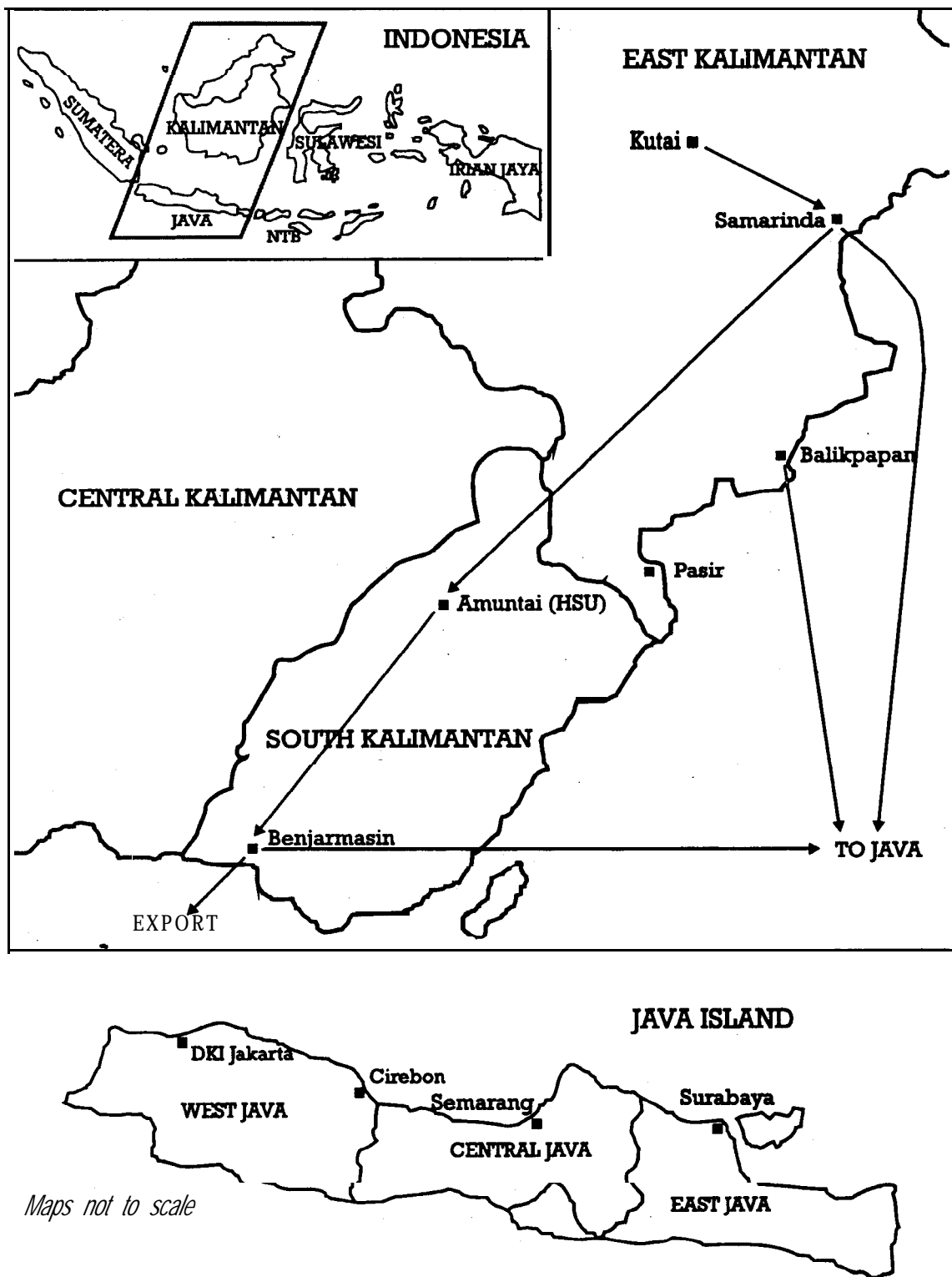


Fig. 1: Study locations in Kalimantan and the flow. of rattan

## Methodology

The study was focused on four target groups that are directly involved in the rattan production-to-consumption system in Indonesia: farmers, craftspersons, traders and industries. The number of research samples in these four groups totalled 65 (Table 1).

Table 1: Number of research samples based on target groups

Sample	East Kalimantan	South Kalimantan
Farmers	15	21
Traders		
Collector/trader	10	10
Wholesaler	5	5
Inter-island traders	3	3
Craftspersons	5	5
Industries		3
Total	28	37

Both primary and secondary data were collected: from various of forestry, industry and trade office, and ASMINDO; through direct interviews with respondents from the target groups; through field observations at research sites; and from other sources.

Data analysis was carried out between December 1995 and February 1996. Data collected from the field were compiled, sorted and tabulated. Data tabulation was done, both quantitatively and qualitatively. From qualitative data, percentage value based on group of respondents was obtained, while variance value, average value, deviation standard, and others were generated from quantitative data. Further analysis was carried out to obtain added value, production cost, profit margin, etc.

A formula developed by Prahasto and Purnama (1994) was used to calculate the value added to rattan products. Value added per unit product was obtained by subtracting the input value per product from the output value. Production costs of rattan industry pertain to raw materials, support materials, equipment, machine and building maintenance, machine and building depreciation, and bank interest. Base price was calculated by adding up production, marketing and overhead costs, while profit margin was taken to be the difference between selling price and base price.

## 2 PRODUCTION-TO-CONSUMPTION SYSTEM

### Overview

Rattan is an important forest product in both South and East Kalimantan Provinces. However, information available on the rattan sector, especially on production-to-consumption system, is far from complete. Because of this, the identification of a proper policy intervention to support a sustainable rattan sector is not easy. This study is designed mainly to fill existing information gaps with regard to rattan production, distribution and consumption.

The rattan production-to-consumption system covers rattan resource, production, trade and distribution. Participants in the system such as farmers, traders and processors are also covered in this study. Two rattan plantations in Kutai and Pasir Districts of East Kalimantan were chosen as sites for rattan resource study. Samarinda District of East Kalimantan, and Amuntai and Banjar Baru Districts of South Kalimantan were studied with regard to rattan processing activities. The field study in Pasir District was undertaken at Kuro Sub-district, covering Modang and Loio villages. The study in Kutai District was done at Damai Sub-district. Trade and distribution activities from resource centres to processing centres were then traced to gain information on trade practices.

### Rattan Resources

Cultivation of rattan in East Kalimantan has been in practice since the 19th century. Most rattan gardens in Pasir as well as in Kutai Districts originated from shifting cultivation areas, which were later planted with rattan by farmers.

Most rattan species grown in East Kalimantan are of small diameter. Large diameter rattans grow mostly in natural forests and until recently, no attempt to cultivate them has been reported in East Kalimantan. Some large diameter rattans are now grown in the area, *semambu* (*Calamus scipionum*) being the main species. Small diameter rattans grow both in natural and plantation forests, as well as in private lands. Many species of small diameter rattans are found in natural forests, including *kotok* (*Daemonorops angustifolia*) and *selutup* (*Calamus optimus*), but species such as *sega* (*Calamus caesius*), *irit/jahab* (*Calamus trachycoleus*) and *pulut* (*Calamitis impar*) are considered to be of a better quality;

The average land ownership of rattan farmers in Kutai District is 10.9 ha, 10.2 ha of which is rattan garden and the remaining rice field (*ladang*). The land ownership in Pasir District averages 5.6 ha, with 4.1 ha of rattan and 1.5 ha of rice. In general, both rattan gardens and rice-fields have low productivity.

Rattans become ready for harvest in 8-10 years. They are harvested by cutting the stems one metre above ground surface, using a machete called *parang*, and pulling them free from their tree supports. The stems are then cut into 3-4 m long



sections. General harvesting cycle for rattan is 3-4 years, with each cluster yielding around 20-25 kg. The harvest volume is limited to a farmer's capability to carry, which is around 40-50 kg. Table 2 shows average productivity levels of rice and rattans from cultivated lands in Pasir and Kutai.

Table 2: Average productivity levels of rattan and rice in cultivated lands in Kutai and Pasir

Land use	Land productivity (kg/ha/y)	
	Kutai District	Pasir District
Rattan garden	735.3	1 365.9
Rice field	482.9	496.7

The productivity level of rattan gardens in Kutai is much lower than in Pasir, while the productivity of rice fields in the two districts is comparable.

Rattan collection from natural forests is undertaken mostly by local people who have limited work opportunities. Continuous exploitation without regeneration has resulted in a decrease of rattan in natural forests. With decreasing stocks in the forest peripheries, collectors now have to go deeper into forests for rattan, resulting in a decrease in the productivity of collectors.

Development of rattan gardens and rice fields are conducted simultaneously. There are no labour costs since family members are employed for the purpose. Similarly, there are no rattan seed costs involved as they are obtained from the garden. The costs are mainly for food and depreciation of agricultural tools. On a per hectare basis, food costs about Rp 150. 000, while depreciation for tools is less than Rp 15 000<sup>1</sup>. Assuming that the cost burden for rice planting and rattan planting is equal, rattan garden development will cost Rp 82 500 per ha. This is higher than the Rp 58 000 per ha calculated by Lambung Mangkurat University (1996) for Central Kalimantan.

## Rattan Processing and Manufacture

### Raw material source

Raw material comes from two sources: plantations and natural forests. Rattans from private plantations are generally small diameter species such as *Calamus caesius*, *C. trachycoleus* and *C. impar*. Rattans available from natural forests are mostly large diameter rattans such as *Calamus manan* and *C. scipionum*.

Most large diameter rattans supplied in East Kalimantan come from natural forests. If rattan exploitation continues at the current rate without any regeneration efforts, these natural rattan resources would soon be severely depleted.

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<sup>1</sup>All prices and costs quoted in the text are as of early 1997.

## Production process

Rattan processing consists of two steps. First step is to process green rattan into washed and sulphured (W&S) rattan which is usually carried out by traders. Second step involves processing of W&S rattan into final products and this is mostly done by the industry.

In the case of small diameter rattans, harvesting is followed by cleaning and scrubbing with metal brush to remove surface dirt. The cleaned stems are sun-dried for several days, and smoked with sulphur for 12. hours. This is followed by another sun-drying to obtain W&S rattan with optimum dryness and a bright yellow colour.

Processing of large diameter rattan is more simple, and is done by frying (boiling) cleaned stems in kerosene for 30-45 minutes. The frying pan employed in the process is made by joining several laterally cut (halved) drums and usually has a frying capacity of 500 kg/batch. Frying is followed by sun-drying for a couple of days and smoking with sulphur for 12 hours. The sulphured rattan is again exposed to sunlight to obtain optimum dryness.

## Product Types

There are very few large-scale rattan industries in Kutai and Pasir; most units are home-based.

The number of rattan industries in Samarinda is very limited and mostly home-based. All rattan furniture items are made manually using simple tools. Products are marketed in Samarinda and neighbouring areas.

The rattan industry in Kabupaten Hulu Sungai Utara is rather well developed owing to encouragement from the Ministry of Industry, which established industrial centres in Amuntai Utara, Amuntai Tengah and Amuntai Selatan Sub-districts. Amuntai Utara produces mainly craft items and furniture, Amuntai Tengah produces furniture and rattan carpet (*lampit*), and Amuntai Selatan produces only carpet. There are 229 rattan industrial units in Kabupaten Hulu Sungai Utara, and as many as 66.4% of these units produce handicrafts (Table 3). Carpet units come second with a share of 24%, while furniture units are a distant third with only 9.6%.

Table 3: Products of rattan industrial units in Hulu Sungai 'Utara District

Type of product	Sub-district			Total
	Amu'ntai Utara	Amuntai Tengah	Amuntai Selatan	
Rattan furniture	10	12	—	22
Rattan carpet	-	35	20	55
Rattan crafts	152	-	—	152
Total	162	47	20	229

**Source: Office of Industry, South Kalimantan.**

## value Addition, Production Costs and Base Price

Among the three types of products, the handicrafts account for the highest value addition (366%), followed by carpet (327%) and furniture (273%). Carpet industry has the smallest variation in the value added owing mainly to the homogeneity of products.

Home-based and small-scale industries have less number of production cost components. For example, the labour cost is absent as family labour is employed and there is hardly any equipment maintenance cost since simple and disposable\* tools are used. Also, there is no interest rates involved since credit facilities are seldom used.

Raw material is an important component in the production costs, contributing significantly more to the costs incurred by small-scale and home-based industries than by the large-scale industry sector (Table 4). Raw material cost accounts for 99% of the total production cost in the rattan craft industry and 86% in the furniture industry. In large-scale industries, it makes up only an average 51.2% of the total production cost.

In small-scale and home-based industries, the base prices of rattan products are equal to production costs, assuming that there is no marketing cost and general expenditure incurred (Table 5).

Table 4: Average production cost of rattan products

Product type	Unit	Production cost (Rp)						Total	
		Raw material	Support material	labour	Maintenance	Depreciation	Interest rate		
Furniture									
Guest chair	set	63	215	7	275	-	-	2 640	- 73 130
Shoe shelf.	piece	1	435	170		-	-	40	- 1 645
Carpet	m <sup>2</sup>	8	460	472	4	586	154	1 600	1 243 16 519
Craft items									
Food cover	kodi	1	615	-	-	-	-	-	- 1 615
Fan	kodi	1	515	-	-	-	-	-	- 1 515

Note: 1 kodi = 20 pieces

## Selling Price and Profit Margin.

As said earlier, rattan furniture and craft items are usually produced by small-scale and home-based industries, and the products are sold in domestic markets. However, rattan carpet is produced by large-scale industries and most of the products are exported. The products made for domestic markets usually have a low quality and low prices. Average selling prices are given in Table 6.

Profit per unit from rattan furniture varies from 135% to 204%. For a rattan mat, the profit is 115% to 519%, and the average profit from a rattan carpet is about 35% (Table 7).

Table 5: Average base price of rattan products

Type of product	Unit	Costs (Rp/unit)			Base price (Rp/unit)
		Production	Marketing	General	
Furniture					
Guest chair	set	73 130	-		73 130
Shoe shelf	piece	1 645			1 645
Carpet	m <sup>2</sup>	16 519	980	720	18 219
Craft items					
Food cover	kodi	1 615	-	-	1 615
Fan	kodi	1 515	-		1 515

Note: 1 kodi = 20 pieces

Table 6: Average selling prices of rattan products at producer level

Product type	Unit	Selling price (Rp/unit)
Furniture		
Guest chair	set	172 730
Shoe shelf	piece	5 000
Carpet		
Local	m <sup>2</sup>	6 250
Export	m <sup>2</sup>	36 800
Woven		
Food cover	kodi	10 000
Fan	kodi	3 250

Note: 1 kodi = 20 pieces

Table 7: Average profit margins for rattan products

Product type	Unit	Base price (Rp)	Selling price (Rp)	Profit (Rp)
Furniture				
Guest chair	set	73 130	172 730	99 600
Shoe shelf	piece	1 645	5 000	3 355
Carpet	m <sup>2</sup>	18 219	27 635	6 346
Craft items				
Food cover	kodi	1 615	10 000	8 385
Fan	kodi	1 515	3 250	1 735

Note: 1 kodi = 20 pieces

## Marketing and Distribution

### Marketing volume and value

Rattan from East Kalimantan is marketed both locally as whole and split W&S cane, and to other islands as whole W&S cane (both large and small diameter rattans). In the local market, the main buyers are large-scale industries located in South Kalimantan. Semarang and Surabaya in Java are also important markets for rattan. In South Kalimantan, rattan is exported mostly as carpets and sabrina mats (Table 8).

Data pertaining to 1993 and 1994 show an increase in the market presence for some products, such as carpet (6.81%), cushion (37.56%) and tray (42.45%). At the same time, some products have shown a decline: mat (20.54%), basket (38.59%), rug beater (14.32%), decorative items (49.57%), seat (42.77%) and rattan furniture (89.59%).

Table 8: Volume of rattan export from South Kalimantan (1993-94)

Product type	Unit	Volume	
		1993	1994
Carpet	m <sup>2</sup>	862 234.10	920 927.00
Mat	m <sup>2</sup>	452 379.21	359 447.00
Basket	piece	59 084.00	36 281.00
Rug beater	piece	66 120.00	56 648.00
Decorations	m <sup>2</sup>	7 919*53	3 993.50
Seat	piece	12 394100	7 093.00
Cushion	piece	2 050.00	2 820.00
Ring	piece	—	60 000.00
Furniture	piece	5 093.00	530.00
Pillow	piece	—	46 262.00
Tray	piece	1 404.00	2 000.00
Sabrina mat	m <sup>2</sup>	—	286 644.32

Source: Forestry Regional Office of South Kalimantan Province 1995

The export value of rattan products in 1994 has risen by about 14.7% from the 1993 value. The reasons for this increase are the introduction of new products and the general increase in the prices of rattan products (Table 9).

### Distribution channels

Distribution channels for rattan products in East and South Kalimantan involve rattan farmer, trader, industry and retailer. Ten distribution patterns were observed

for rattan, beginning with rattan farmer and ending with domestic consumer or exporter.

Table 9: Export value of rattan products from South Kalimantan (1993-94)

Product type	Value (US\$)	
	1993	1994
Carpet	8 966 292.59	9 997 899.87
Mat	1 549 630.21	1 146 993.06
Basket	104 166.41	123 833.31
Rug beater	48 ~00.00	43.009.20
Decorations	164 070.24	03 627.14
Seat	14 433.70	7 305.50
Cushion	8 150.001	13 726.00
Ring		17 450.00
Furniture	35 041.24	7 756.50
Pillow		91 014.40
Tray	4 635.60	7 250.00
Sabrina mat		960 533.37
TOTAL	10 896 027.99	12 500 399.55

Source: Forestry Regional Office of South Kalimantan Province 1995

1. Rattanfarmer -> green rattan trader-> local trader (W&Srattan) -> inter-island trader.
2. Rattan farmer -> green rattan trader-> inter-island trader.
3. Rattan farmer -> green rattan trader-> local trader (W&S rattan)-> carpet industry-> consumer.
4. Rattan farmer-> split rattan trade-> local trader(W&S rattan) ->carpet industry -> consumer.
5. Rattan farmer-> green rattan trader-> local trader (W&S rattan) -> carpet industry-> exporter.
6. Rattan farmer-> split rattan trader-> carpet industry-> exporter.
7. Rattan farmer-> green rattan trade-> local trader (W&Srattan) -> rattan craft worker -> rattan 'products trade-> rattan products retaile-> consumer.
8. Rattan farmer-> green rattan trader-> rattan craft worker-> rattan products trader -> rattan products retaile-> consumer.
9. Rattan farmer+ green rattan trader+ rattan craft worker+' rattan products retailer + consumer.
10. Rattan farmer+ green rattan trader-> rattan craft worker -> consumer.

The marketing channels 1 and 2 show rattan flow to Java, while 3, 4, 5 and 6, show marketing of rattan to the carpet industry, both for domestic and export consumption. Marketing channels 8, 9 and 10 show rattan distribution to rattan craft workers.

## Price and profit margin

Price of green rattan at farmer level in Kutai was approximately Rp 350 000 per ton. The price of green rattan in Pasir, where farmers sell rattan in split form, was Rp 400 000 per ton. By an additional simple processing to produce split rattan, farmers can get a value addition of about Rp 104 000.

Traders in Kutai usually buy green rattans from farmers. These are then cleaned, smoked with sulphur for 1-3 days, and sun-dried to obtain a bright yellow colour. This treatment will reduce rattan weight. *Calamuscaesius*, for example, decrease in weight by 50% and *C. impar* by 60%.

At village trader level in Kutai, the price of *C. caesius* ranges from Rp 950 000 to Rp 1 000 000 per ton. Applying a simple processing to green rattan will give a value addition of Rp 125 000 to Rp 150 000 per ton.

The village traders in Pasir usually buy split rattan from farmers. It is usually baled based on length and quality. The price of split rattan at village trader level ranges between Rp 45 000 and Rp 50 000 per bale. This trading may give a gross profit of about Rp 3 000 to Rp 5 000 per bale to the village trader.

Local traders in Kutai buy rattan either from village traders or farmers. The green rattan from farmers is cleaned and sulphured, while the cleaned rattan bought from village trader is sulphured to get a brighter colour.

The price of rattan at local trader level in Samarinda is Rp 1 200 000-Rp 1 300 000 per ton. The operational cost at local trader level is approximately Rp 275 000 per ton. The profit margin of a local trader is between Rp 250 000 and Rp 450 000 per ton for split rattan, and Rp 125 000 and Rp 225 000 per ton of green rattan.

Although the local traders in Pasir sometimes buy split rattan directly from farmers, most of the supplies come from village traders. Payments are done in cash, sometimes with an advance payment. At local trader level, the price is about Rp 50 000 per bale. A local trader obtains a gross profit of Rp 5 000 to Rp 8 000 per ton of split rattan (after deducting transportation costs). Profit margins at different levels of rattan marketing are illustrated in Fig. 2.

## Sub-sector Analysis

Fig. 3 shows the linkages in the rattan production-to-consumption system in East and South Kalimantan Provinces. The raw material sources in these two provinces are natural forests and plantations. Rattan from natural forests is harvested by collectors, while plantation rattan is harvested by farmers. Rattan collectors sell all their green rattan to traders, while rattan farmers sell their produce to traders both in green or split forms.

Green rattan is processed further by fumigating with sulphur into W&S rattan. Traders sell this type of rattan either to other traders or to small-scale/home-based industries. On the other hand, the split rattan traders usually sell to large-scale industry, particularly the mat industry. Large traders sell most of W&S rattan to inter-island traders who transport it to Java.

Small-scale/home-based industries sell their product either to retailers or directly to domestic consumers. Domestic consumers buy finished products from both home-based industries and retailers.

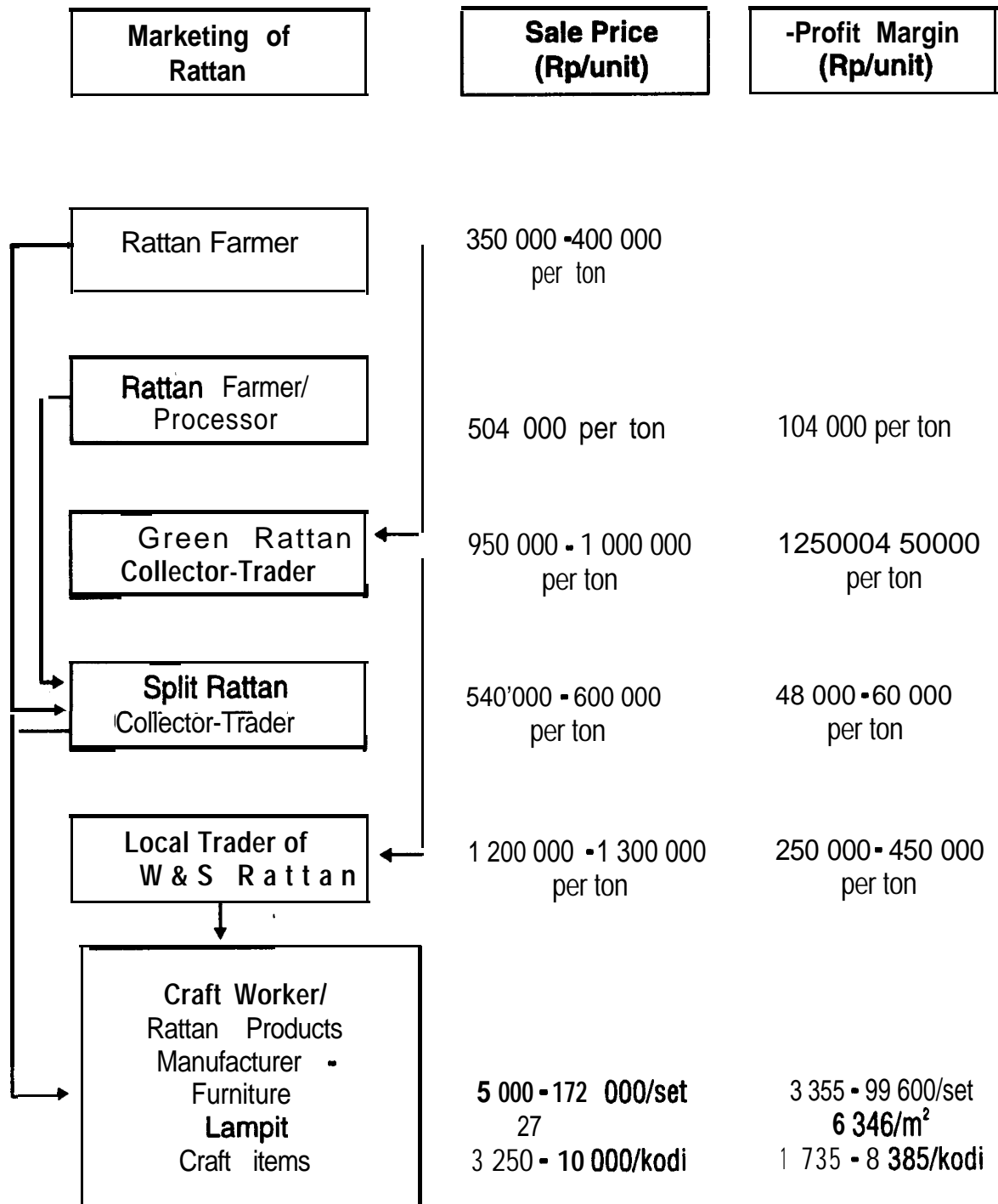


Fig. 2: Profit margins at different levels of rattan marketing in East and South Kalimantan



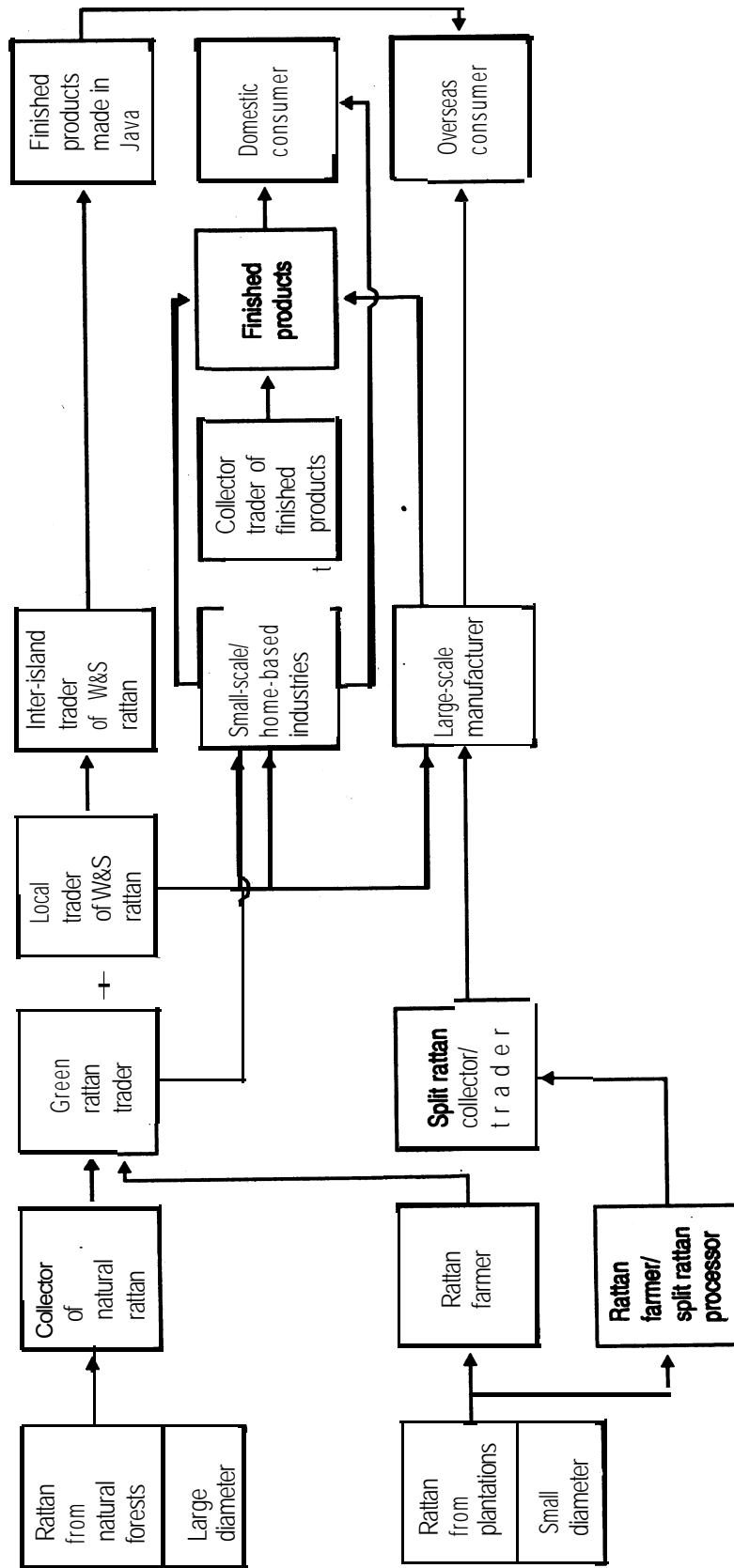


Fig. 3: Linkages in the rattan production-to-consumption system in East and South Kalimantan

### 3 DISCUSSION

#### Raw Materials

Raw materials for the rattan industry in Banjarmasin originate from Central Kalimantan (60%), East Kalimantan (30%) and other places within the province (10%). The raw material requirements of small rattan processing industries in Amuntai are met by supplies from East Kalimantan (45%), Central Kalimantan (40%) and South Kalimantan (15%).

Three product categories – carpet, sabrina mat and mat – are the major rattan products that are primarily produced for export. Raw material needs per m<sup>2</sup> of product are as follows:

Carpet	:	8.0-9.0	kg of W&S rattan
Mats	:	2.5-3.0	kg of W&S rattan

On the basis of available information, it is estimated that the total W&S rattan requirement for the entire processing industry is 12 000-16 500 tons per year. This is equal to 24 000-33 000 ton per year of raw rattan.

*Calamus caesius* dominates cultivated rattans in Pasir. Price of rattan in Pasir is relatively higher (Rp 400 000/ton) when compared with the price in Kutai (Rp 350 000/ton). This difference could be because of the better quality of rattan from Pasir.

As said earlier, village traders generally pay farmers in cash against delivery. However, some of them pay an advance (Table 10).

Table 10: Transaction types at farmer level in Kutai and Pasir

Study area	Transaction types			
	Cash-on-delivers'		Advance-and-cash	
	Total	%	Total	%
Kutai District	15	71.43	6	28.57
Pasir District	13	86.67	2	13.33
Average	14	77.78	4	22.20

Advance payment, used mainly by traders from other villages, guarantees the supply of raw material. Besides, it also helps maintain a relationship between traders and raw material suppliers (farmers and collectors). Traders also lend money to suppliers, with the money lent being considered by the latter as a pre-payment for rattan.

Rattan gardens have gradually diminished in area as a result of their conversion to oil palm gardens. The conversion at Modang village in 1992-93 was about 33 ha by 18 households. In 1993-94, about 55 ha were converted for oil palm cultivation. On an average, every household has converted 1.6 ha of rattan garden during the last two years.

The main economic reasons for conversion are: (1) oil palm starts to produce palm kernel after 4 years compared with rattan which takes 8 years; and (2) income from oil palm is high at about Rp 2 515 000/ha/year or Rp 4 024 000/household/year from 1.6 ha.

Table 11: Activities and tools used in rattan production-to-consumption system

Participant	Activities	Tools
Farmer	Planting Harvesting	Broad hoe Chopping knife Short sword Rope
Green rattan collector/ trader ..	Cleaning Cutting Sun-drying	Chopping knife Short sword Rope.
Rattan lath collector/ trader	Cleaning Cutting Splitting Sun-drying Sorting	Chopping knife Short sword Rope
Local trader	Scraping Washing & polishing Sun-drying Fumigation Weighing Baling Transporting	Frying pan (drum) Petroleum oil Sulphur Sheet-iron Sand (granular)
Craft worker	Skinning Splitting Plaiting	Knife Drill Tweezers
Carpet industry	Bundle length uniforming Diameter sorting Rough skinning Fine skinning Scraping Grinding Colour selection Edge bending Drilling Sewing Fumigation	Grinder Hole needle Thrasher needle Chopping knife Sand Thread Glue Sulphur Tweezers
Seller/Exporter	Packaging Transporting Promotion	

## Processing Industry

Rattan processing in South Kalimantan is both small-scale and large-scale. There are 17 large-scale rattan industrial units. In general, these units produce only certain types of products, such as carpets or mats. There are 7 000 to 8 000 home-based industrial units producing carpets. The tools and technologies employed are relatively simple (Table 11).

The total annual production capacity of the rattan industry in South Kalimantan is about 2 129 000 m<sup>2</sup> of carpet and mats (Purnama et al. 1993). An increasing trend in export volume was detected since 1994-95 (Table 12). There was also a notable increase in the average price of rattan product since 1991-92; for example, in 1991-92 the price per m<sup>2</sup> of carpet was US\$11.26, which increased to US\$13.38 in 1995-96.

Table 12: Volume and value of carpet exports from Indonesia

Year	Volume (m2)	Value (US\$)	Average price (US\$/m2)
1991-92	3 061 488.00	34 470 691.00	11.26
1992-93	1349 933.43	15 855 532.79	11.75
1993-94	939 383.74	10 226 252.76	10.89
1994-95	988 406.90	12 522 396.36-	12.66
1995-96	1 144 228.35	15 307 159.83	13.38

Source: ASMINDO 1997

About 65% of exported carpets were hand-made and the rest machine-made. The export price of hand-made carpet is lower than that of machine-made (Tables 13, 14).

Table 13: Volume and value of hand-made carpet export from Indonesia

Year	Volume (m2)	Value (US\$)	Average price (US\$/m*)
1991-92	1 989 967.20	15 919 737.60	8.00
1992-93	863 957.40	7 775 616.60	9.00
1993-94	610 599.43	5 495 394.87	9.00
1994-95	626 976.44	6 625 119.56	10.57
1995-96	766 277.61	8 383 351.77	10.94

Source: ASMINDO 1997

The price of hand-made carpet can be enhanced by improving the quality through better selection of raw material and raising the skill level of workers.

Table 14: Volume and value of machine-made carpet export from Indonesia

Year	Volume (m2)	Value (US\$)	Average price (US\$/m2)
1991-92	1071 520.80	18 550 953.40	17.31
1992-93	485 976.03	8 079 916.19	16.63
1993-94	328 784.31	4 730 857.89	14.39
1994-95	362 430.46	5 897 276.80	16.27
1995-96	377 950.74	6 923 808.06	18.32

Source: ASMINDO 1997

## Employment

Rattan farmers in the East Kalimantan generally have big families: an average of 6 persons per household in Kutai and 5 persons in Pasir. Education level of these farmers is low, which makes it difficult for them to obtain non-agricultural jobs.

Rattan cultivation activities – planting, harvesting and transporting – in Kutai are carried out mainly by men. In contrast, rattan production process – which involves more labour such as cleaning, smoking and splitting – in Pasir has the participation of women and children also.

The income sources of rattan farmers are mainly rice fields and rattan gardens, although these give low yields (Table 15).

Table 15: Annual household Income of rattan farmers in Kutai and Pasir

Source	Annual household income			
	Kutai District		Pasir District	
	(Rp)	%	(Rp)	%
Rice field	304 200	12.64	670 200	23.68
Rattan garden	2 102 450	87.36	2 160 000	76.32
Total	2 406 650	100.00	2 830 200	100.00

Farming activity accounts for around 87% of family income in Kutai and 76% in Pasir. Considering that rattan farming contributes significantly to farmers' income, particularly in these two areas, there is room for the promotion of rattan plantation program by the government.

Small-scale rattan industry is labour-intensive. The average age of people involved in this industry is 28 years in Samarinda and 27.5 years in Hulu Sungai Utara. They have small families averaging 3.5 members per household in Samarinda and 3 in Hulu Sungai Utara. Craft workers in Samarinda have a higher education level (00.5 years of schooling) compared with those in Amuntai (6 years of schooling). Most craft workers in Hulu Sungai Utara learned their skills from their parents. Craft

workers in Samarinda have been involved in the business only for the last 10 years.

Table 16 shows rattan furniture gives a higher income than craft items. The average annual income of rattan craft worker in Amuntai is Rp 762 500. On an average, a rattan furniture producer in Samarinda and Amuntai earns an annual income of Rp 3 374 000 and Rp 2 288 000, respectively.

Table 16: Average annual household income of a rattan craft worker

Product type	Income of craft worker	
	Samarinda	Hulu Sungai Utara
Furniture	3 374 000	2 888 000
Craft items		762 500
Average	3 374 000	1 825 250

In 1993, the average wage for labour per month was Rp 198 024 in East Kalimantan and Rp 156 530 in South Kalimantan (BPS 1994). The "minimum physical need" (Kebutuhan Fisik Mimum or KFM) per month for a family with two children is Rp 200 509 in East Kalimantan and Rp 130 942 in South Kalimantan. Hence, the income of rattan industry workers in South Kalimantan is below the average wage as well as KFM.

Rattan carpet manufacture is considered as a large-scale industry since it involves many workers and needs large investments. The net annual profit in this industry may touch Rp 217 910 400 to Rp 258 047 250. The government earns in taxes Rp 108 105 600 to Rp 129 717 750 annually. The annual income of a worker in the carpet industry is approximately Rp 160 to Rp 184 million (Purnama et al. 1993).

## 4 TARGET GROUPS AND OPTIONS

### Target Groups

#### Stakeholders' interest

Rattan sector development involves many stakeholders with different interests. For instance, the forestry and industry sectors may be interested in developing rattan plantations. At the same time, however, they may also want to develop other commercial crops, such as oil palm, in the land available.

In rattan trade too this type of diverging interests of different stakeholders – farmers, trader, industry and the government – is evident. Often, the course of sector development policies would be decided by the stakeholder who has the stronger bargaining power. Research shows that farmers have a low bargaining power; they are basically price takers and it is the traders who determine the price.

It is the traders, who are also small business entities, who have access to information on domestic and export market demands. As such, they set the market price range of rattan. In practice, however, a farmer may choose a trader who offers a better price for his product. Large traders with export-oriented business have the power, through their trade association, to influence government policies on export and raw material supply.

The government is interested in increasing its revenue by raising the forest products royalty (IHH). Although the payment of this royalty is the obligation of traders, it is likely that the burden is borne by farmers who receive a low price for their product. It may be pointed out here that such taxes are more appropriate for rattan from natural forests than from plantations.

#### Target groups and decision making environments

The target groups for policy intervention include collectors, farmers and small-scale/home-based industries. Collectors and farmers may need more attention since their position, in many aspects of the sector, is weak.

Rattan farmers have a low education level, which may influence their capability to absorb knowledge transferred and make decisions. This condition also applies to collectors, who are mostly off-work farmers. Rattan planting is undertaken as a farming sub-system, under which rattan is one of the many agricultural products. Technology adaptation is limited, and traditional farming techniques are employed. Area of land owned is limited, and only a few own large tracts of land. Utilization of land is also not optimum

Small-scale/home-based industries are sensitive to both national and international market fluctuations. For example, production of carpet in Hulu Sungai Utara is sensitive to Japanese market changes. Production activities decreased in 1989 after

experiencing a substantial demand increase two years earlier. The development of large-scale rattan industry in 1987-88 has affected the availability of raw material for small-scale/home-based industries since the performance of existing cooperatives is not up to the mark. Access to credit facilities is limited. In general, the decision making environment of this group is characterized by weak management capabilities.

## **Types of Intervention**

### **Production system**

Better technologies should be introduced to the farmers in Kutai and Pasir to increase the productivity of plantations, and to improve cultivation techniques from seeding up to tending (such as better seed selection, determination of proper transplanting time and intensive tending). Extension and demonstration plots should be established to intensify transfer of knowledge.

The farmers are also in need of financial assistance. As this requires capital, which is a constraint to this group, soft loans (5-10 years) such as credit for Conservation Project should be made available.

Rattan farmers have a very limited knowledge and access to information regarding the rattan business. Lower prices at farmer's level are also caused by the long trading chain that exists in the rattan production-to-consumption system. The intervention alternatives for obtaining better prices for rattan at farmer's level include:

- a. Shorten the rattan trading chain from producers to consumers through
  - 1) processing raw rattan into W&S rattan and split rattan at farmers level; and
  - 2) selling W&S rattan and split rattan produced by farmers or their cooperative directly to an inter-island trader or rattan processing industry to ensure that the profit otherwise captured by rattan traders accrues to the farmers.
- b. Enforce standardization that reflects a quality-price relation so that the farmers may improve their bargaining position.
- c. Increase and improve rattan utilization, particularly of small diameter rattan into export products, to facilitate a better price environment for farmers.

### **Processing**

Rattan processing techniques need improvement, both in small-scale/home-based industries and large-scale industry, especially in product design and development. Better product designs and variations are expected to strengthen the performance of rattan processing industry in both domestic and international markets.

The main problem of the industry is its limited capability to find, and communicate and bargain directly with the buyer. Therefore, intervention is needed to create a partnership between large-scale and small-scale industries based on mutually benefit. Through such a partnership, promotion and marketing of products made



by the small-scale and home-based industries can be taken over by the export-oriented large-scale industry.

### **Trade and marketing**

In terms of interventions required, rattan marketing may be taken as to include the trade of whole/split cane and finished products from producer to domestic/international consumers. While the price of whole cane (particularly *Calamus caesius*) at farmer level' in both Kutai and Pasir has been remaining practically the same for the last 10 years (Capricorn Indonesia Consult 1988; Purnama et al. 1993, the price of final products has been steadily increasing both in domestic and international markets.

## 5 CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

#### Production system

1. Average land ownership in Kutai is 10.9 ha/family, including 10.2 ha of rattan garden. In Pasir, it is 5.6 ha/family, including 4.1 ha of rattan garden.
2. Productivity of rattan gardens in Kutai and Pasir is 735.3 kg/ha/year and 1 365.9 kg/ha/year, respectively. The rattan species commonly planted is the small diameter rattan *Calamus caesius*.
3. Rattan planting techniques employed are still traditional, such as irregular spacing, relatively small number of plants per hectare, improper seed selection and non-use of rattan nursery.
4. The average establishment cost for a rattan garden is approximately Rp 82 500/ha, of which Rp 75 000 is labour cost and the rest the depreciation of agriculture equipment/tools.
5. Contribution of rattan to family income – about 87% in Kutai and 76% in Pasir – is larger than that of agricultural produce.

#### Processing

1. Rattan produced in Pasir is mostly transported to South Kalimantan as raw material for the rattan industry. Carpet industry is the largest in terms of export value, which is about 80%. Rattan produced in Kutai is mostly transported to other islands, particularly to Java.
2. Rattan processing techniques differ based on its diameter. Small diameter rattan is sun-dried for a few days and then washed and fumigated with sulphur for 12 hours. Large diameter rattan is fried in kerosene for 30-45 minutes, before sun-drying and sulphur fumigation.
3. Finished rattan products can be grouped into three types: furniture, carpet and craft items. The number of rattan processing unit in Amuntai is 229 units.
4. Rattan craft contributes the highest percentage (366%) of value added while value addition for carpet is only 327%.
5. The largest profit margin is for rattan chairs (around Rp 99 600/set) and the lowest margin is for hand-fan (Rp 1 735/20 pieces). Carpet gives a profit -margin of Rp 6 345/m<sup>2</sup>.
6. The annual wages earned by a furniture maker in Samarinda and Amuntai are Rp 3 374 000 and Rp -2 888 000, respectively. Earnings from furniture making are higher than KFM while those from craft working are below KFM.

## **Marketing and distribution**

1. The value of rattan exports from South Kalimantan province was US\$10.8 million in 1993, which increased to US\$12.5 million in 1994. The number of rattan products exported increased from 9 to 13 types during the same period.
2. There are 10 trading patterns for rattan.
3. Local traders make the largest profit, followed by collecting traders. Farmers get the lowest profit.
4. Payments are made in cash. Sometimes an advance payment is made by traders mainly to maintain the business relationship with farmers.

## **Recommendations**

1. Farmers should be given assistance to improve their cultivation techniques. Demonstration plots may be established to further rattan resources development. There should also be efforts to find, introduce and develop superior species.
2. Simple technologies need to be introduced among the farmers. The profit margin of farmers can be increased if options other than selling green rattan are open to them.
3. It is necessary to improve the trading system through measures such as implementing quality standards that reflect price, better access to market information and an effective policy on raw material allocation.
4. To promote rattan plantations, forest products fee (IHH) should not be collected from smallholder plantations.
5. To improve rattan prices (green and W&S rattan) at farmer's level, an auction system needs to be introduced in rattan production centres.
6. Practicable and simple post-harvest technologies should be developed and introduced to rattan farmers to improve the quality of harvest so that they may get better prices.

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