

Do Certified Tropical Logs Fetch a Market Premium?

A Comparative Price Analysis from Sabah, Malaysia

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Abstract

The controversy about the benefits of certification to timber producers has centered on the “market premium” and “market access” arguments. Some studies claim evidence that consumers are willing to pay between 2% and 30% more for sustainably produced, certified timber products. Others doubt or flatly deny this notion. Most of these studies are based on willingness-to-pay surveys of consumer demand leaving aside the crucial question, whether or not the producers of certified logs, which bear the higher costs of sustainable forest management, obtain a financial reward for their efforts.

The paper contributes quantitative evidence to the on-going debate. Time series of prices of certified and uncertified logs (2000 to 2004) provided by three forest management units from Sabah, Malaysia, were examined in a comparative analysis of 6 species groups. For most species groups a significantly higher price was found for certified logs, particularly for those hardwood species, which are in high demand for the export market (e.g. Selangan Batu, Keruing, Kapur). The mean values of certified logs were higher by 5% to 77% depending on the species group. Further, forest certification was found to indirectly enhance log pricing. It serves as a catalyst for amendments to the timber marketing system by sorting of species into user-oriented species groups.

Keywords: forest certification, log prices, sustainable forest management

1. Introduction and Objective

Certification of forest management and labeling of forest products are recognized as a useful tool for promoting sustainable forest management (ITTO 2004). Forests certified under the four biggest certification schemes³ cover 230 million hectares (NN 2005a). The impressive progress in the implementation of certification worldwide has so far been achieved in developed temperate countries, which currently account for more than 95% of the certified forest area either in North America or Europe (Amha 2005). Though forest certification emerged in the 1990's with an initial focus on tropical forests, they cover only a mere 1.6% (3.6 million ha) of the entire certified forest area resulting in a

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³ Forest Stewardship Council (FSC) 53 million ha, Programme for the Endorsement of Forest Certification (PEFC) 58 million ha, Canadian Standards Association (CSA) 69 million ha, Sustainable Forestry Initiative (SFI) 50 million ha.

worldwide supply deficit of certified tropical hardwoods (FAO 2004). The Forest Stewardship Council (FSC) reports that the demand for certified tropical hardwoods exceeds supply by at least 10 million cubic metres round logs (FSC 2005). A study conducted for the UK Timber Trade Federation (TTF) and the Department for International Development (DFID) suggests that there is considerable interest in the UK in sourcing and marketing verified legal and sustainable timber. Major driving forces are the emerging interest of the public sector, efforts to minimise commercial risks associated with illegal timber trade, and procurement requirements established by trade associations (Oliver 2005).

Certification for sustainable forest management induces a rise of management costs in order to cope with the prescribed certification standards. Forest managers who invest in such programmes expect a significant advantage, especially a market advantage in obtaining their certificates (Muthoo 2001). Further benefits of certification other than gaining a “green premium” may entail easier market access, evidence of legality, multi-stakeholder participation, conservation of biodiversity and best forest management practices, particularly reduced-impact logging techniques.

Conjecture about the benefits of certification to timber producers has centered on the “market premium” and “market access” arguments. The market premium for logs is defined as the difference between the price of the certified log and the price of the same log prior to the adoption of certification (Varangis et al. 1995). The issue whether or not certified logs fetch a market premium has been discussed controversially for years (ITTO 1995). Some authors claim evidence that consumers in Europe and in the USA are willing to pay between 2% and 30% more for sustainably produced, certified tropical timber (Baharuddin and Simula 1994; Baharuddin 1995; Hohmeyer et al. 1995; Varangis et al. 1995; Simula and Baharuddin 1996; NN 2004; Oliver 2005, NN 2005). Varangis et al. (1995) estimate that in view of the market share of certified tropical timber on the US and European markets the incremental revenue from the markets assumed to be willing to pay more for certified timber would amount to 62 million USD. The Sabah Forestry Department in 2002 reports from a log auction indicating that buyers do offer premium prices for certified logs by a margin of 51 USD per cubicmetre which is equivalent to a price increase of 44% as compared to uncertified logs (Mannan 2002, Kollert 2002; see also appendix 1, log auctions 41a and 41b respectively).

Other authors doubt or flatly deny that the majority of consumers are willing to pay a premium for certified logs (Becker 2000; Lippe and Baumgarten 2000; Freris & Laschefski 2001). Their research indicates that markets for green products are very limited. According to Freris & Laschefski (2001) half of German consumers pay attention to eco-labeled products, but only one third would pay 5% more for them. They claim that “*certified tropical timber sold to an ecologically conscious elite of the First World has little influence on the global dynamics of the timber business*”. Abi and Kugan (2001) report that “*certification alone will neither guarantee greater demand or continuously offer good prices for timbers derived from certified sources*”. This is confirmed by Mannan et al. (2002), which claim that the efforts of certification “*have not yet translated into dollars and cents*”, and that “*the eco-dividend is ... still elusive*”. A recent marketing study conducted in the UK confirms, that there are no premiums to be had for certified softwood products (Oliver 2005).

Objectively verifiable, quantitative evidence of these claims is rare as it is difficult to retrieve reliable sources of log prices, particularly in the tropics. Baharuddin and Simula

(1994) conclude that “*there is not yet convincing evidence on an existing price premium for sustainably produced, certified timber and timber products in the market*”. Ten years after this statement still holds. Further, most studies dealing with the subject are based on willingness-to-pay inquiries investigating whether or not the consumers in Europe or the USA would be ready to pay a price premium. The crucial question whether or not such premium will benefit the producers of certified timber, who also bear the higher costs of sustainable forest management, is usually omitted. Log producers are aware of this deficiency and advocate for a direct “conservation subsidy” of sustainable production rather than a “green market premium”, which they claim they cannot get hold of as it is taken by middlemen operating in the timber trade (Ho 2004).

The objective of this paper is to contribute some new quantitative evidence to the ongoing debate by conducting a comparative price analysis of certified and uncertified logs of the same species groups and quality from a defined timber market in Sabah, Malaysia. Though other benefits of certification rather than a “green premium” are recognized, this study focuses on the mere financial aspect that is frequently put forward as an incentive to licence holders and concessionaires to undergo the certification procedure.

2. Materials and Method

For the period January 2000 to November 2004 (5 years) the study compares monthly prices of tropical logs offered for sale in three different forest management units (see table 1). The timber species were assigned to six different species groups of comparable quality (see table 2). The comparative price analysis is supported by a two-way analysis of variance (ANOVA), which tests with a general linear model (GLM) for price differences among forest management units, species groups and years.

Table 1: Significant features of the three commercial forest management units

Feature	FMU 1	FMU 2	FMU 3
Size (ha)	55,000	906,000	109,000
Location	central Sabah	south-central Sabah	west-central Sabah
Forest type	logged-over lowland dipterocarp forest		
SFM-Certificate	since 1997	none	none
Managed by	Sabah Forestry Department	Parastatal concessionaire	Private concessionaire
Log sales procedure	auction	tender/quotation	tender/quotation

FMU 1 is a logged-over lowland dipterocarp forest that has been certified according to FSC management standards in 1997. It is managed by the state forestry department and has been adopted by the Sabah government as a role model for statewide application. So far, it is the only source of certified logs in Sabah, though other forest management units have undergone pre-assessment procedures and are in the process of becoming certified. FMU 1 also fully complies with Malaysia’s national standard for sustainable forest management (Malaysian Criteria & Indicators, MC&I 2002), which has been field-tested at FMU1 in February 2004.

The FMUs 2 and 3 show very similar resource conditions though they are larger than FMU 1. They have been allocated to a parastatal and private concessionaire

respectively under the “Sustainable Forest Management Licence Agreement” (SFMLA), which secures the land tenure of the concession holder for 99 years. Both companies have made some efforts towards achieving forest certification but have not finished the procedure yet and do not hold a certificate for sustainable forest management.

Certified logs from FMU 1 are sold through auctions with the expectation that a bidding system will increase competitiveness among buyers and hence promote higher log prices (Abi and Kugan 2001). Log auctions have been applied prior to and after certification. To date, 50 auctions comprising a log volume of more than 100,000 cubicmetres were conducted since the start of operations in 1995. A detailed description of the bidding procedure is given in box 1; sales data on each respective log auction are provided in appendix 1.

Box 1: The bidding procedure for log sales in FMU 1

The date of the log auction is announced in good time in local Malaysian newspapers. Potential foreign buyers are informed through fax or email. The auction is held in a meeting room at the District Forest Office and headed by the Director of Forestry. For admission the bidders have to provide a deposit of USD 2632.- (10.000 Malaysian Ringgit). This deposit is either fully refundable or accounted for in any log purchase. After the up-set price for a certain batch of logs is announced each bidder offers a first bid (or pulls out) in a clockwise sequence. During this first round the bidders also declare whether the purchase is for domestic use or for export. After the first round of bidding the Sabah Forestry Department (SFD) adds the respective royalty rate (e.g. 36 USD for export and 16 USD for domestic use) and continues bidding with the new bid price (increased by the royalty), until the contract is awarded to the highest bidder. After the auction is finished the buyers within 2 weeks time have to fully pay their due and remove the logs from the log yard of the Sabah Forestry Department.

Log auctions started in December 1995 at low volumes. At the first ten auctions the logs were sold in batches of mixed species. No sorting into end-use oriented species groups was carried out. Buyers were mainly local plywood manufacturers who used the timber for their products regardless of species. Foreign buyers were absent as a log export ban (1.5.1993 to 31.8.1997) was still in place. Therefore, the early auctions failed to achieve good prices. Since March 1998 with the FSC-certificate in place and the log export ban lifted, the SFD took a new marketing approach by sorting the extracted volume into end-use-oriented species groups (see table 2). This procedure particularly appealed to foreign buyers who had specific production goals and placed their bid only for certain batches thus avoiding high amounts of unwanted species.

Uncertified logs from the parastatal and private concessions are sold through a common tender-quotation system. Usually, the concessionaire sends a tender to a group of prospective buyers that are known to the company. The customers submit quotations and the logs are sold after case-by-case negotiations. Sorting into species groups does not occur. The producers claim that due to the restrictions of the Forest Management Plan the sustainable Annual Allowable Cut (AAC, measured in cubicmetres) of each species is too low to allow a user-oriented sorting into species groups.

3. Data Quality

In Sabah time series data on log sales are not readily available and hard to obtain. The available sales statistics are compiled by different institutions and offer a number of traps that render a comparative price analysis difficult. Conversions, adjustments and re-

calculations are necessary to avoid comparisons between “apples” and “pears”. Firstly, some statistics give domestic others give export prices, which differ particularly due to different royalty rates. Secondly, some statistics give prices at the stumping point (ex forest road) while others give prices at the sawmill (ex sawmill) or free on board (FOB). Due to the long transport distances of up to 150 km, the difference between these prices is considerable and, if not properly accounted for, can distort the entire price analysis. Thirdly, some prices include royalties others do not. This is of particular significance as royalties are distinct according to species groups and have been adjusted frequently over time. Fourthly, the lowland dipterocarp forests of Sabah produce some 200 commercial species that need to be clustered into uniform trade groups in order to facilitate plausible comparisons, and fifthly, with a rather fragmented price reporting system, it is often difficult to obtain consistent time series for the same species groups and time periods.

The log prices given in this study represent export prices that uniformly encompass the sales price at the stumping point, the export royalty according to species groups and date of sale, and the community forestry cess. The choice of these components required the least amount of adjustments of the log prices reported by the three forest management units. The six species groups for which a consistent database could be established in all three forest management units are given in table 2. These species groups correspond to different qualities and are typically processed in different timber markets. Heavy and medium hardwoods are destined for the sawntimber market while light hardwoods are preferably used in the plywood market.

Table 2: Species groups used for the comparative price analysis

Species group	Abbreviated species group name	Vernacular name	Scientific name
Heavy Hardwoods			
1	SB	Selangan Batu Merah, Selangan Batu	Shorea spp.
Medium Hardwoods			
2	KR	Keruing	Dipterocarpus spp
3	CR	Kapur	Dryobalanops spp.
Light Hardwoods			
4	YS/WS/MP	Yellow Seraya, White Seraya/ Urat Mata, Melapi	Shorea spp./Parashorea spp.
5	RS/OS	Red Seraya, Obar Suluk	Shorea spp.
6	MIX	ca. 30 species ¹⁾ , (e.g. Bintangor, Impas/Kempas, Jelutong, Laran/Kelempayan, Medang, Obah, Pauh Kijang, Rengas, Resak and Sepetir)	ca. 30 species ¹⁾ (e.g. Calophyllum spp., Koompassia malaccensis, Dyera costulata, Neolamarckia cadamba, Lauraceae, Eugenia spp., Irvingia malayana, Gluta spp., Vatica spp., Sindora spp.

¹⁾ For the price analysis only the 10 most frequent species were used

4. Results

4.1 Comparison of Forest Management Units (FMUs)

Comparing the average prices (mean values) over the observed 5 years period it was found that FMU 1 achieved the highest prices. Compared to FMU 2 the price difference ranges from +16% to +59%; compared to FMU 3 from +5% to +77% (see table 3 and figure 1 on next page). The results of the general linear model show that the observed differences of the average prices between FMU 1, and FMU 2 and 3 were highly significant ($p < 0.001^4$), while there was no significant difference found between the average prices of FMU 2 and FMU 3.

Table 3: Comparison of average prices (mean) among FMUs and species groups

Species group	Avg. price FMU1 USD	Avg. price FMU2 USD	Avg. price FMU3 USD	Price difference %	
				FMU1 to FMU 2 (FMU2 =100%)	FMU 1 to FMU 3 (FMU3 =100%)
Selangan Batu	193.35	121.77	108.93	+ 59%	+ 77%
Keruing	160.17	104.34	107.13	+ 54%	+ 50%
Kapur	143.29	96.35	107.13	+ 49%	+ 34%
Yellow & White Seraya	117.82	101.35	108.22	+ 16%	+ 9%
Red Seraya	141.14	97.95	110.96	+ 44%	+27%
Mixed Species	87.71	70.42	83.88	+ 25%	+ 5%

Further, FMU 1 shows the largest variation of price ($COV\% = 20$ to $40\%^5$; see figure 1 on next page), but still, the mean values for all species groups are significantly higher than the mean values of FMU 2 and FMU 3. This gives rise to the conclusion that the mode of sale through auction may be responsible for the high variation of log prices. Price variation in FMU 2 is considerably lower than in FMU 1 ($COV\% = 10$ to 20%) reflecting a poor response of FMU 2 to market demands. FMU 3 was found to have the lowest price variations over time and among the investigated species groups ($COV\% = 5$ to 8% ; not visible in fig. 1). This low variation in log prices may be assigned to the following issues: (a) the logs are sold to processing mills that are close to the producing company and the prices do not reflect real market prices and (b) the log prices are only recorded as an average price for a 3 months period.

⁴ The p-value says how likely the observed difference is true or not. In our case there is almost certainly a true difference in prices between the FMU's, or, in other words, the price difference has a larger than 99% chance of being true as $p < 0.001$.

⁵ The coefficient of variance ($COV\%$) is the ratio of the standard deviation to the mean value. It is a commonly used measure of the degree to which a variable is distributed around its mean value. A low COV (e.g. below 10%) indicates a very low degree of dispersion of the observed values around the mean value.

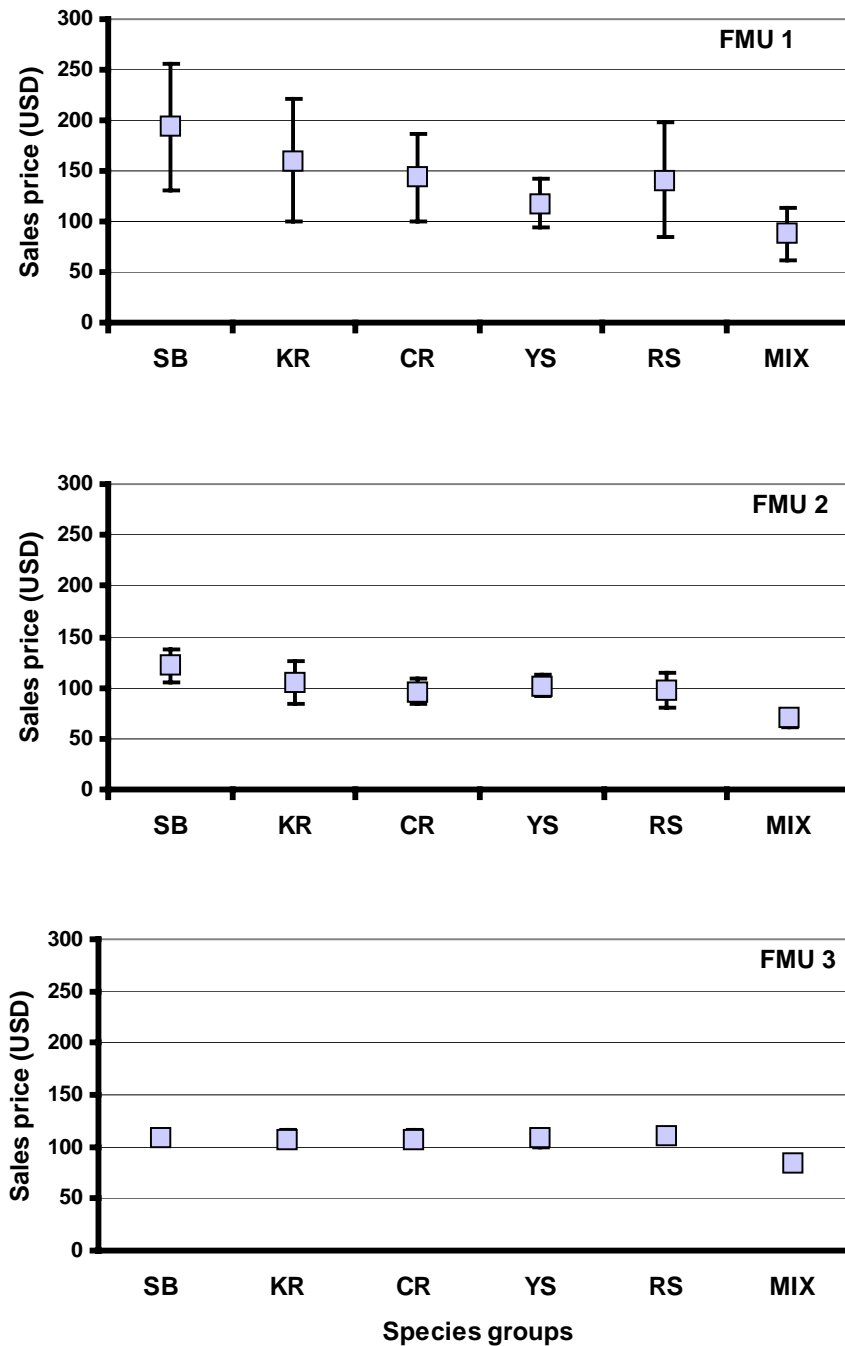


Fig.1: Average sales prices observed over a 5-years period (Jan. 2000 to Nov. 2004) for three FMUs and six species groups. Error bars indicate standard deviation.

Legend:

SB: Selangan Batu; KR: Keruing; CR: Kapur; YS: Yellow Seraya/White Seraya/Melapi; RS: Red Seraya/Obar Suluk; MIX: Mixed Species.

4.2 Comparison of Species Groups

Price differences between all 6 species groups are highly significant ($p < 0.001$). Selangan Batu, the high-quality heavy hardwood, is the most expensive timber in FMU 1 and FMU 2, while the Mixed Species group across all three FMUs always represents the cheapest timber.

For each FMU there are significant differences within the species groups (see table 4). FMU 1 shows three significantly different species groups ($p < 0.001$): (1) Selangan Batu and Keruing together form the most expensive group followed by (2) Kapur and Red Seraya, with (3) Yellow & White Seraya and Mixed Species representing the cheap timber group. FMU 2 shows a very similar situation. Selangan Batu represents the expensive timber, too, however there is no significant difference among species groups 2 (Keruing) to 5 (Red Seraya), while Mixed Species again forms the cheap group. In FMU 3 only the Mixed Species group is distinctly cheaper than all the others, which show no significant differences in price.

Table 4: Significant differences among the species groups in each FMU

Black = expensive timber group, grey = medium, white = cheap timber group

Species group	FMU 1	FMU 2	FMU 3
1) Selangan Batu	Black	Black	Grey
2) Keruing	Black	Grey	Grey
3) Kapur	Grey	Grey	Grey
4) Yellow & White Seraya	White	Grey	Grey
5) Red Seraya	Grey	Grey	Grey
6) Mixed Species	White	White	White

An analysis of the buyers of the different species groups from FMU 1 indicates that the expensive timbers Selangan Batu and Keruing are predominantly for the export market (74% and 71% of the sales volume respectively, see fig. 2). Half of the sales volume of Kapur, a medium-priced timber, is for the export market, while the other half is for domestic use. The two Seraya groups and the Mixed Species group, which comprise cheaper, low quality timbers, are mainly destined for the domestic market (75% and 96% of the sales volume respectively; see figure 3).

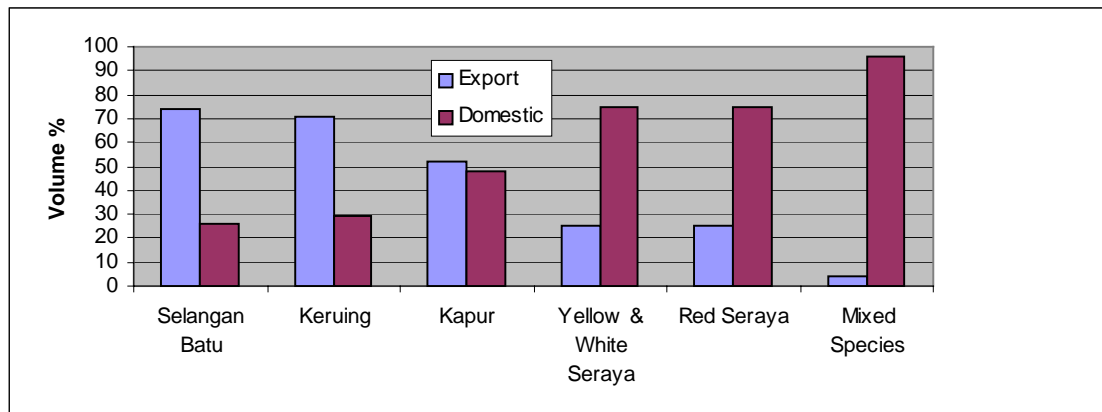


Fig.2: Buyers' Statistics for FMU 1

5. Conclusions

1. The results of the general linear model applied in this study suggest that forest management certification achieves a market premium for certified logs. The mean values of certified logs as compared to uncertified logs were higher by 5 to 77% depending on the species group. In particular high quality timbers (e.g. Selangan Batu, Keruing, Kapur) predominantly destined for the export market fetch a price premium of considerable magnitude (+34% to +77%). Lower quality timbers such as light hardwoods used for the production of veneer also fetch a price premium. However the price difference is less pronounced as with high quality timbers (+5% to +44%).

2. From a financial point of view forest managers are advised to obtain a forest management certificate and to aim at producing high-quality timber species particularly in view of the worldwide supply deficit for certified tropical hardwoods. The considerably higher sales prices of certified logs exceed the additional direct costs of forest management certification, which range from 0.5 to 2.5 USD per cubicmetre and year (Hohmeyer et al. 1995, Simula and Baharuddin 1996, Mannan et al. 2002, Steel 2005).

3. The results of the comparative price analysis have to be interpreted with caution and should be examined by further studies. The certified forest management unit (FMU 1) investigated in this study applies sales and marketing procedures that are different from those applied in the uncertified timber concessions. Their impact on the log prices may superimpose the effect of certification. Sorting the logs into end-use oriented species groups and selling the assorted logs by auction attracts motivated foreign buyers who help to initiate competitive bidding and push prices upwards to world market levels. Thus certification indirectly serves as a catalyst for amendments to the timber marketing system.

4. High market demand and good prices for sustainably produced timber help to pursue sustainable forest management standards and have been a key driver for improvements in forest management in some forests of the tropics. Thus certification has the potential to increase the contribution of the timber industry to sustainable development.

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Appendix1: Log Sales by Auction from FMU 1, 1995 to 2004
(1 USD = 3.8 Malaysian Ringgit (RM))

Auction No	Date	Total volume m3	No of logs	Avg. Vol./ log m3	Avg.Price USD/m3
Phase 1: 12/95 to 6/97 no certificate, sale in batches of mixed species, no foreign buyers as log export ban in place					
1	Dec-95	188.61	100	1.89	71.05
2	Mar-96	149.26	80	1.87	65.79
3	May-96	1,300.65	340	3.83	86.84
4	Jul-96	890.3	246	3.62	72.37
5	Aug-96	2,386.98	719	3.32	72.37
6	Oct-96	2,480.68	665	3.73	67.11
7	Nov-96	3,606.19	844	4.27	65.79
8	Dec-96	2,463.00	600	4.11	60.53
9	Apr-97	1,630.82	398	4.10	60.79
10	Jun-97	4,154.82	1,018	4.08	53.16
Phase 2: 8/97 to 1/98 FSC certificate, sale in batches of mixed species, no foreign buyers (log export ban was lifted on 1.9.1997)					
11	Aug-97	3,700.56	817	4.53	77.63
12	Nov-97	4,307.96	923	4.67	65.79
13	Jan-98	1,408.27	319	4.41	66.84
Phase 3: 3/98 to 11/98 FSC-certificate, batches sorted according to species groups, no foreign buyers					
14	Mar-98	1,003.59	206	4.87	67.24
15	Jul-98	1,280.12	361	3.55	99.23
16	Aug-98	1,325.35	383	3.46	83.83
17	Aug-98	1,351.76	328	4.12	117.20
18	Sep-98	2,018.18	475	4.25	116.94
19	Oct-98	2,115.87	412	5.14	113.03
20	Nov-98	1,732.81	342	5.07	139.25
Phase 4: 1/00 to date FSC certificate, batches sorted according to species groups, foreign buyers					
21	Jan-00	908.34	228	3.98	289.42
22	Apr-00	1,583.63	336	4.71	215.88
23	Jul-00	1,548.70	358	4.33	159.09
24	Aug-00	2,684.44	658	4.08	150.44
25	Nov-00	1,276.38	227	5.62	167.22
26	Jan-01	509.60	101	5.05	47.85
27	Feb-01	2,880.14	656	4.39	98.80
28	May-01	415.62	75	5.54	86.05
29	Jun-01	392.45	93	4.22	87.14
30	Jun-01	1,625.33	344	4.72	67.69
31	Jul-01	345.49	97	3.56	81.41

Appendix 1 continued

32	Aug-01	99.19	24	4.13	58.38
33	Aug-01	1,522.04	352	4.32	90.48
34	Aug-01	2,976.69	679	4.38	85.82
35	Oct-01	3,117.99	760	4.10	88.32
36	Nov-01	2,051.69	562	3.65	94.90
37	Jan-02	514.59	122	4.22	94.68
38	Mar-02	961.66	207	4.65	91.48
39	Apr-02	4,838.16	1,082	4.47	98.97
40	Jun-02	4,424.73	920	4.81	113.59
41a	Aug-02	4,897.42	1,131	4.33	166.48
41b*	Aug-02	1,245.87	260	4.79	115.60
42	May-03	4,809.59	1,515	3.17	184.94
43	Jun-03	700.27	220	3.18	135.94
44	Aug-03	3,823.40	1,134	3.37	113.10
45	Oct-03	2,895.47	847	3.41	115.73
46	Dec-03	2,330.15	711	3.28	155.53
47	Apr-04	5,474.45	1,472	3.72	177.74
48	July-04	6,098.85	1,606	3.80	137.00
49	Sept-04	5,911.78	1,739	3.40	136.13
50	Nov-04	2,336.30	684	3.42	119.08
Total		114,696.19	28,776	3.99	106.82

* Uncertified logs harvested after expiry of the FSC-certificate. The certificate was renewed prior to the log auction of May 2003.