

AUSTRALIAN RAINFOREST TIMBERS AS A VALUABLE RESOURCE: COMMUNITY PERCEPTIONS AND PURCHASE HABITS OF RAINFOREST TIMBER PRODUCTS¹

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Australia has some of the highest quality cabinet timber species in the world, sourced primarily from tropical rainforests, and there has been a long tradition of using these to produce furniture. Cessation of logging of Crown rainforest land has reduced resource supply, but there is now considerable interest in growing rainforest timbers on private land. In order to formulate reforestation policy and industry development, it is desirable to know how the community views these timbers. This study provides the first quantitative description of the public's perceptions and purchases of Australian rainforest cabinet timber (ARCT) products in North Queensland. It provides information that contributes to understanding the factors affecting the demand for products made from rainforest cabinet timbers. The majority of the North Queensland community consider Australian rainforest cabinet timbers to be vastly superior to composite wood products. Eucalypt species are also considered superior to exotic conifers which are the main species grown by Australian state forest services. Reasons for reluctance to purchase products made from RFTs include high cost but also desire to protect the rainforests and 'stage of life'. The main purchasing group are clustered in the 25-54 year age category. These findings have implications for government initiatives to promote afforestation with rainforest species.

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1. INTRODUCTION

The rainforests of North Queensland contain some of the finest timber species in the world, in terms of workability, colour and grain for production of high quality furniture. Logging was a pioneering activity, and there is considerable social history associated with cutting of Red Cedar, Queensland Maple, Northern Silky Oak and other cabinet species. The supply of these timbers was dramatically reduced following the declaration in 1988 of the Wet Tropics of Queensland World Heritage Area (WTWHA), covering an area of nearly one million hectares of high quality rainforest. Subsequently, all logging of rainforest timbers of Crown land in Queensland was ceased. Supplies of rainforest cabinet timbers are currently sourced almost exclusively from that freehold land not included in the listed area. Private rainforest areas, although comprising only about 5% of the total area of rainforest in North Queensland, have continued to provide a substantial turnoff, but this resource is being depleted.

In recent years, there has been a sustained effort by all levels of Government along with members of the North Queensland community to re-establish the timber industry lost through World Heritage listing. A focus of these efforts has been the Community Rainforest Reforestation Program (CRRP), which originally aimed to establish 30,000 ha of native rainforest timbers on degraded private farmland. Although the area actually planted fell far short of this target, the CRRP has provided invaluable experience in growing mixtures of rainforest timbers and the demonstration effect has led to strong landholder interest in planting. The state government also introduced a plantation joint venture scheme to support planting of native timber species on private land (reviewed by Harrison *et al.*, 1999), although with a much narrower species list and a focus on single rather than mixed species plantings. Both programs have virtually ceased, though extension efforts are being made to promote reforestation with native species, through the North Queensland Regional Plantation Committee.

In spite of the high quality of rainforest timbers, stumpage prices received by landholders have languished at about \$30/m³ to \$50/m³. This would appear to be due to a variety of factors, including continued supplies due to clearing of rainforest on private land for cane production and the inadequate volume to support a furniture industry based on these species. In order to encourage planting of ARCTs, and ensure a timber resource for cabinet makers, higher stumpage prices are needed. Bringing about these higher prices presents a marketing challenge. A basic requirement is a sound understanding of the markets in which sawmillers and timber merchants operate (predominantly cabinet-making). Also, in order to achieve increased demand for ARCT products and thus derived demand for these timbers, information is required on the attitudes and needs of final consumers, whose purchasing preferences will dictate the use of timber inputs by cabinet makers.

To some extent, a market failure exists in that the growing of rainforest cabinet timbers is not a profitable enterprise unless there are markets for these timbers, yet markets will not develop unless there is resource security and continuity for processors who use these timbers as production inputs. However, improved marketing

can help to overcome this deadlock. Promotion of ARCTs requires an understanding of the final market for products manufactured from them. This paper reports findings of a study designed to gain a greater understanding of community attitudes in North Queensland to products made from rainforest cabinet timbers. A number of surveys were conducted in Cairns and Townsville of community purchasing patterns for products made from ARCTs, perceptions of these timbers relative to eucalypts and composite timbers, and reasons for purchasing or not purchasing these products. The next section reviews literature on the demand for products made from high-value furniture timbers. The research method and questionnaire design for this study are then outlined, after which survey findings are discussed. Finally, some inferences for marketing and industry development are explored.

2. DEMAND AND MARKETING CONSIDERATIONS FOR RAINFOREST CABINET TIMBERS

The significance of the final consumer market has been identified in surveys of cabinet-makers (Herbohn *et al.*, 1997, Smorfitt *et al.*, 1998 and Peterson *et al.*, 1998) where cabinet-makers were asked to rate various factors influencing managers' choices of timber for indoor furniture, kitchen bench-tops and cupboards. Factors considered included "cost", "quality", "suitability" and "customer request". The last of these factors was consistently rated highly relative to other factors by managers of cabinet-making firms.

Sinclair (1992) identified a number of factors affecting the demand for furniture. These factors include personal disposable income, interest rates (and thus the cost of financing purchases), population geographic movement (with resulting replacement of furniture), demographics of the household and household formation. A study by Epperson and Wacker (1989) identified the 25 to 54 year age group as having the highest expenditure on furniture, associated with household formation.

Various promotional and advertising campaigns can be used to increase the market share of products manufactured from ARCTs by increasing the public's awareness of these products. One approach would be to reduce prices, but this does not appear to be feasible under current circumstances where stumpage prices for ARCTs to growers are low. Another approach is to establish a recognized brand name, as has been achieved with a number of southern eucalypt species collectively marketed as 'Tasmanian Oak', which are used extensively in kitchen cupboard manufacturing. Likewise, the Western Australian timber industry has achieved great success with the marketing of Jarrah for outdoor furniture in particular. The success of these timbers has to a large extent being based upon their availability as well as sound promotion and marketing.

In the case of tropical rainforest timbers, a potential strategy is to market them as 'diamond' timbers², as suggested by Johnson and Sarre (1995) from the International Tropical Timber Organisation Secretariat. This principle could in

² Diamond timbers are those suitable for decorative use, e.g. top-of-the-range furniture and feature panelling, and timbers for restoration of antiques and old buildings, musical instruments and hand-made arts and crafts items.

turn be extended to products made from these timbers. Johnson and Sarre have suggested that there is great potential for high prices to be obtained for these timbers because of their aesthetically pleasing characteristics and inherent physical stability. Many Australian rainforest species exhibit the characteristics of 'diamond' timbers and some – such as Red Cedar – already command high prices. Johnson and Sarre also stated that, to be successful, 'diamond management' requires expert market research and, once the markets are understood, promotional activities are required to capture, maintain and increase market share.

Before rainforest cabinet timbers can be promoted and sold as 'diamond' timbers, an understanding of the final markets must be achieved (Johnson and Sarre 1995), particularly in respect to the factors affecting the choice of timber inputs. The current study is an important step in providing such an understanding, by providing information about the public's purchasing patterns and their individual assessments of ARCTs, and why customers buy or do not buy products made from ARCTs.

3. METHODOLOGY

The research method has involved identifying the kinds of information required, identifying target population groups, developing a questionnaire and administering this through personal and phone interviews. Given the focus on North Queensland markets, the major population centres in this region – Cairns and Townsville – were chosen.

Questions were developed which covered:

- characteristics of the sample members (gender, age, education);
- when last purchases of items made from Australian rainforest cabinet timbers took place;
- extent of the respondents' awareness of ARCTs as indicated by respondents rating of ARCTs against composite wood and eucalypt products; and
- reasons why respondents bought or did not buy products, and why they would want to buy products, made from ARCTs.

The rating of ARCTs compared to the two alternatives was on a scale from 'vastly inferior' to 'vastly superior' with the option of 'Don't know' also allowed. Purchase histories were investigated for the last year and various earlier periods. Questions sought level of agreement with a number of statements encompassing product affordability, value, quality, consumer preferences and environmental concerns.

Areas that were frequented by a wide cross-section of the public were sought for the surveys. The first survey was conducted at a weekend WoodExpo in Cairns. For the Townsville interview survey, management of a number of shopping centres and the Flinders Mall (in the CBD) were approached for permission to conduct interviews. In some cases, shopping centre management would only allow the survey to be conducted from a stationary position, and sought a fee for use of their 'space'. Two shopping centres were willing to allow the survey to be conducted on an intercept basis, viz. the Willows shopping centre in Kirwan, an expanding residential area, and KMART in Aitkenvale, a more established suburb. Ideally,

probability sampling would have been adopted, but the shopper intercept method was necessary due to cost and time constraints. A further survey comprised sampling and phone interviews of households listed in the Townsville Telstra White Pages. The sample was selected from the 077 area code (Townsville, Mount Isa, Cloncurry and Hughenden districts). Random numbers were used to select page numbers, columns and rows of the white pages.

Test interviews were conducted with faculty members as respondents, from which the questionnaire wording and interview procedures were refined. The main surveys were carried out during 1997. Adult respondents (over 18 years) were sought in all five surveys. A sample size of at least about 50 was sought for each of the five sample groups, as a compromise between sampling error and survey expenditure. The average duration of interviews was about 5 minutes. The shopping centre surveys were conducted on two Saturdays, when greatest and most representative levels of patronage occur.

The data from respondents were summarised into frequency tables and cross-tabulations, from which to draw inferences about consumer experiences and attitudes. Gender of respondents was coded as a binary variable (1 for males and 2 for females). Descriptive statistics were derived using a MicroSoft Excel spreadsheet. SigmaStat and SigmaPlot were used for statistical analysis and graphical presentations. Due to the relatively small samples, data from the three Townsville groups were pooled in the analysis.

4. SURVEY FINDINGS

4.1 Demographics of sample members

The proportion of male and female respondents was approximately equal in each of the four survey groups. In terms of high school education (Table 1), all four groups were similar. However, there was a greater proportion with Technical and Further Education (TAFE) training in Cairns and a greater proportion with tertiary training in the telephone survey group.

TABLE 1
EDUCATION LEVELS OF RESPONDENTS (% OF GROUP)

Population sampled	Highest school education			Other education			Education level not disclosed	Number of respondents
	Primary	Junior Cert.	Senior Cert.	TAFE	Tertiary	Other		
K-Mart	9	30	61	13	36	0	1	65
Willows	7	36	58	20	36	0	0	45
Telephone survey	4	32	64	25	72	0	0	50
Townsville combined	7	32	61	19	48	0	1	160
Cairns WoodExpo	7	20	73	39	34	2	10	95
All groups	7	26	67	29	41	1	11	255

Table 2 presents absolute and relative frequencies (in brackets) of respondents' ages³. The Willows group were generally younger, with 57% being under 35 years. The telephone and K-Mart groups had approximately 60% in the 35 years and older classes. These age groups reflect the catchment populations of the samples, with a high proportion of young families shopping at the Willows centre. Older people were most strongly represented in the Cairns group.

TABLE 2
AGE DISTRIBUTION OF RESPONDENTS, ABSOLUTE AND RELATIVE FREQUENCIES

Population group	Age (years)				Number of respondents
	Less than 25	25 to 34	35 to 54	55 and over	
K-Mart	16(25)	10(15)	27(42)	12(18)	65
Willows	20(44)	6(13)	15(33)	4(9)	45
Telephone survey	4(8)	15(30)	23(46)	8(16)	50
Townsville combined	40(26)	31(20)	65(40)	24(14)	160
Cairns WoodExpo	10(11)	18(19)	51(54)	16(17)	95
All groups	50(18)	49(19)	116(47)	40(16)	255

4.2 Purchase behaviour versus age

Table 3 summarises proportions of the overall sample (all groups combined) who have purchased products made from ARCTs, or are interested or not interested in purchasing these products. A chi-squared test reveals a significant relationship between the variables age and buying behaviour ($p = 0.029$). This table reinforces the view that people in the 25 to 54 year age groups have the highest tendency to purchase ARCT products, and interest in purchasing these products is lowest amongst older people. No significant differences were found between gender or education groups in terms of their purchasing behaviour.

TABLE 3
BUYING BEHAVIOUR VERSUS AGE

Age	Buying behaviour (% of respondents)		
	Bought	Interested	Not interested
Less than 25 years	44.0	36.0	20.0
25 to 34 years	51.0	34.7	14.3
35 to 54 years	56.9	25.9	17.2
55 years and over	35.0	25.0	40.0

³ Age categories adopted were based on an American study of household furniture purchases (Sinclair, 1992).

4.3 Respondents last purchase of ARCT products

Table 4 indicates the history of purchases of furniture items produced from rainforest cabinet timbers, for the five groups and in aggregate. Overall, one third had purchased items in the last year and over half in the last five years. The purchase rate was highest for the Cairns WoodExpo group, followed by the telephone group.

TABLE 4
TIME AT WHICH LAST PURCHASE MADE OF PRODUCT
PRODUCED FROM ARCTS

Population group	When last item purchased (% of sample)					Number of respondents ⁴
	Last year	1-5 years	6-10 years	More than 10 years	Never	
K-Mart	18	37	10	10	25	60
Willows	18	16	13	4	49	45
Telephone survey	26	22	10	12	30	50
Townsville combined	21	25	11	9	35	155
Cairns WoodExpo	45	18	3	6	28	94
All groups	33	21	7	8	31	249

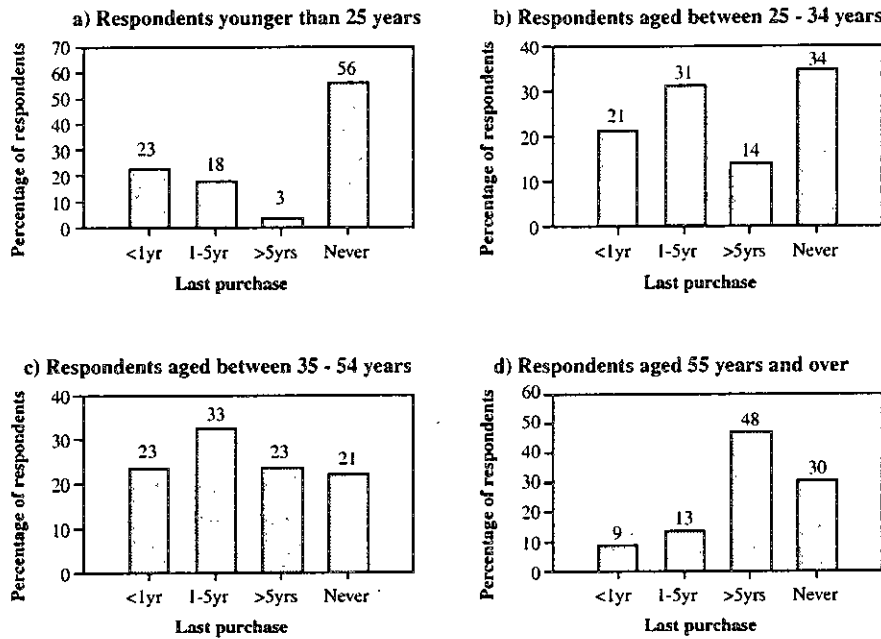
Figure 1 also provides information of recent purchases, for the Townsville combined sample, but divides respondents according to age. The proportion who made purchases in the last five years is highest for the 35-44 year age group (54%) and the 25-34 year group (52%), and is only 22% for respondents aged 55 years or over. Among older respondents, there is a high rate (48%) who purchased items more than five years ago, but also a high rate (30%) who have never purchased ARCT products. A large proportion (56%) of young respondents (less than 25 years) have never purchased ARCT products.

4.4 Perceptions of quality of products made from ARCTs and other timber types

Respondents from all survey groups appeared to have clear views on preferences for products made from ARCTs as compared with composite wood products. As indicated in Table 5, more than 85% of all respondents felt that ARCTs are 'slightly superior' or 'vastly superior'. The lower proportion of Willows respondents (78%) who rated ARCTs as vastly superior may be accounted for by the greater proportion of respondents (44%) who fell into the less than 25 years age group, reduced availability of these products in recent years, and perhaps the slightly lower education levels in this survey group. No significant differences were found between the sexes in their rating of the relative timber value of ARCTs and composite wood products.

⁴ The number of respondents varies between tables, because some questions were not answered by some respondents.

FIGURE 1
REGENCY OF PURCHASES OF PRODUCTS MADE FROM ARCT
EXPRESSED AS A PERCENTAGE OF THE TOTAL RESPONDENTS IN
EACH AGE GROUP, TOWNSVILLE COMBINED SAMPLE



In contrast, respondents appeared to have difficulty in rating ARCTs against eucalypt species (Table 6). An average of 40% of the combined Townsville groups felt they were unable to make a judgement. The lower level for the Cairns group (24%) is to be expected considering the nature of the WoodExpo and thus the likely interests and knowledge of patrons.

Females were found to rank cabinet timbers more highly in relation to eucalypts than males (chi-squared statistic significant at the 0.01% level). The ranking of ARCTs versus eucalypts also differed significantly with age of respondent (one-way ANOVA test significant at the 0.01% level), with young people ranking the difference more strongly than other age groups.

4.5 Reasons why respondents purchase or don't purchase ARCT products

Respondents who had purchased ARCT products within the past five years were asked to indicate their level of agreement with seven statements concerning reasons for purchase (Table 7). More than 50% of respondents agreed with each of the following reasons: 'realistically priced', 'good value for money', 'better quality',

TABLE 5

RATING OF ARCTS AGAINST COMPOSITE WOOD PRODUCTS (%)

Population group	Vastly inferior	Slightly inferior	Comparable	Slightly superior	Vastly superior	Don't know	Sample size
K-mart	0	0	0	5	91	5	64
Willows	0	2	4	7	78	9	45
Telephone survey	0	0	2	6	88	4	50
Townsville combined	0	1	2	6	85	6	159
Cairns WoodExpo	0	0	1	1	97	1	95
All combined	0	0	2	3	91	3	254

TABLE 6

RATING OF ARCTS AGAINST EUCALYPTUS SPECIES (%)

Population group	Vastly inferior	Slightly inferior	Comparable	Slightly superior	Vastly superior	Don't know	Sample size
K-Mart	0	3	27	22	16	33	64
Willows	0	9	16	20	16	40	45
Telephone survey	0	0	22	14	16	48	50
Townsville combined	0	4	21	19	16	40	159
Cairns WoodExpo	0	0	26	19	31	24	95
All combined	0	2	24	19	23	32	254

TABLE 7

LEVEL OF AGREEMENT WITH STATEMENTS CONCERNING REASONS FOR PURCHASE OF PRODUCTS MADE FROM ARCTS OF RESPONDENTS WHO HAVE PURCHASED ARCTS DURING THE PAST FIVE YEARS, TOWNSVILLE COMBINED SAMPLE

Statement	Level of agreement (% of respondents)				
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Realistically priced	1	28	16	50	4
High value for money	0	9	12	57	22
Better quality	1	4	4	50	40
Preferred to other materials	1	7	3	65	24
Australian timbers	0	1	4	59	35
Destruction of rainforest	4	38	24	28	6
Heirloom	1	21	10	45	22

Notes: n = 68, except for heirloom, where n = 67.
Rounding errors are responsible for some rows not adding to 100.

'preference for ARCTs to other materials', 'liking for Australian timbers' and the 'desire to pass the product down as an heirloom'. There did however appear to be a number of respondents who felt that buying products made from ARCT may lead to the destruction of rainforests.

Respondents who were interested in buying ARCT products but had not done so in the last five years were asked to indicate their level of agreement with a number of statements concerning reasons for not making a purchase (Table 8). 'Value for money', 'poor quality', 'preference for other products' and 'destruction of rainforest' did not appear to be of major concern. Approximately 40% regarded these products as 'too expensive', while 50% were undecided about whether these timbers are still available.

TABLE 8
LEVEL OF AGREEMENT WITH REASONS FOR NOT PURCHASING
ARCT PRODUCTS, FOR RESPONDENTS WHO INDICATED AN
INTEREST IN PURCHASING ARCTS BUT HAVE NOT DONE SO
DURING THE PAST FIVE YEARS, TOWNSVILLE COMBINED SAMPLE

Statement	Level of agreement (% of respondents)				
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Too expensive	4	24	35	29	8
Low value for money	14	55	18	10	2
Substitutes better quality	16	63	16	4	0
Prefer other materials	8	59	22	8	2
Destruction of rainforest	0	35	20	24	20
Timbers not available	6	22	51	20	0

Notes: n = 49.

Rounding errors are responsible for some rows not adding to 100.

A similar set of statements were presented to respondents who had not purchased ARCT items and said they were not interested in doing so (Table 9). 'Cost', 'value for money', 'poor quality', 'preference for other products' and 'destruction of rainforest' did not appear to be of major concern. Again, 50% were undecided about whether these timbers are still available. Sixty percent felt it was due to their stage of life; this may include both the young who don't have the need for (or the funds to purchase) these products, and older respondents who are more likely to have fully furnished households.

4.6 Reliability of Results

The above results must be interpreted in terms of the reliability of a sample survey. Selection of members of the public attending the WoodExpo could lead to bias, in that enthusiasts of native timbers would be over-represented and the expo was designed to increase community awareness of native timbers. Intercept at shopping

TABLE 9

LEVEL OF AGREEMENT OF RESPONDENTS WITH REASONS FOR NOT PURCHASING ARCT PRODUCTS FOR RESPONDENTS WHO INDICATED NO INTEREST IN PURCHASING ARCTS AND HAVE NOT PURCHASED ARCT PRODUCTS DURING THE PAST FIVE YEARS, TOWNSVILLE COMBINED SAMPLE

Statement	Level of agreement (% of respondents)				
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Too expensive ¹	2	30	37	28	2
Low value for money ²	12	45	33	10	0
Substitutes better quality ³	17	44	32	7	0
Prefer other materials ²	5	40	26	29	0
Destruction of rainforest ¹	2	21	2	33	42
Timbers not available ²	7	45	36	10	2
Stage of life ¹	0	26	12	30	33

Notes: 1. n = 43; 2. n = 42; and 3. n = 41.

Rounding errors are responsible for some rows not adding to 100.

malls may have led to some bias in respondents relative to the characteristics of the overall population. For example, purchasing behaviour could be different at smaller cities and towns. In some cases the number of respondents in cells in cross tabulations was relatively low, and only limited statistical analysis has been possible. In spite of these limitations, the survey results are considered to be reasonably representative of attitudes in the North Queensland population, and some relatively clear patterns have emerged. However, it would be hazardous to translate these results to the whole of Queensland, since interest in purchasing products made from ARCTs is probably much stronger in the north, where there has been a long tradition of manufacture and use of these products.

5. REVIEW OF FINDINGS AND POLICY IMPLICATIONS

This study provides the first quantitative description of the North Queensland public's awareness of Australian rainforest cabinet timbers and reasons for purchase or non-purchase of products made from them. Most purchases took place in the 25 to 54 age groups, which is consistent with the finding of Epperson and Wacker (1989) concerning expenditure on furniture purchases. Respondents have clear preference for ARCTs against eucalypt and composite wood products. This was particularly notable in the lower age groups, and stronger amongst women than men. The findings were broadly consistent with those of earlier studies on demand for high value or 'diamond' timbers. High cost does appear to be of some concern, especially for those respondents who are interested in buying ARCT products but have not done so recently. These people represent a very real potential demand for manufacturers of these products. Greater promotion of ARCTs and products made

from these timbers needs to be undertaken, especially to overcome the lack of knowledge of respondents as to the availability of these timbers. If the public feel the timbers are no longer available due to World Heritage listing or any other reason, they simply will not ask for products to be made from the timbers. The public also need to be made aware of the source of these timbers, especially those grown in plantations, to allay fears of rainforest destruction. Any attempts at marketing ARCT products to the public would appear best be directed towards the 25-54 year age group. Younger people possibly are not in a financial position to purchase products of this nature, and the older groups can be expected to have fully furnished households.

ARCT products may need to be marketed as 'diamond timber' products, due to reduced availability and high cost of these timbers as inputs and thus the corresponding high price charged for ARCT products. Rainforest timber resources currently available would not readily justify industry equipping and tooling their business for mass producing these types of products as is the case with composite wood products and other solid timber inputs such as radiata pine. This may change in the distant future as supplies of ARCTs come onto the market from current plantings. Higher prices also allow for improved returns to be paid to landholders which would in turn encourage further planting of these timbers.

The North Queensland community preferences for products made from ARCTs and other solid timbers is of relevance to the various groups currently planting or considering planting rainforest and eucalypt species. Providing a threshold quantity of these timbers is produced to ensure resource security for millers and cabinet-makers, and orderly marketing is achieved (which the recently formed timber grower cooperatives should ensure), there is a prospect of rainforest timbers becoming an economically viable landuse. Potentially, this will generate regional employment, export products and environmental benefits.

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